Building a Resilient Future through Multistakeholder Learning and Action:

Ten Years of Regional Centres of Expertise on Education for Sustainable Development

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REGIONAL CENTRE OF EXPERTISE ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

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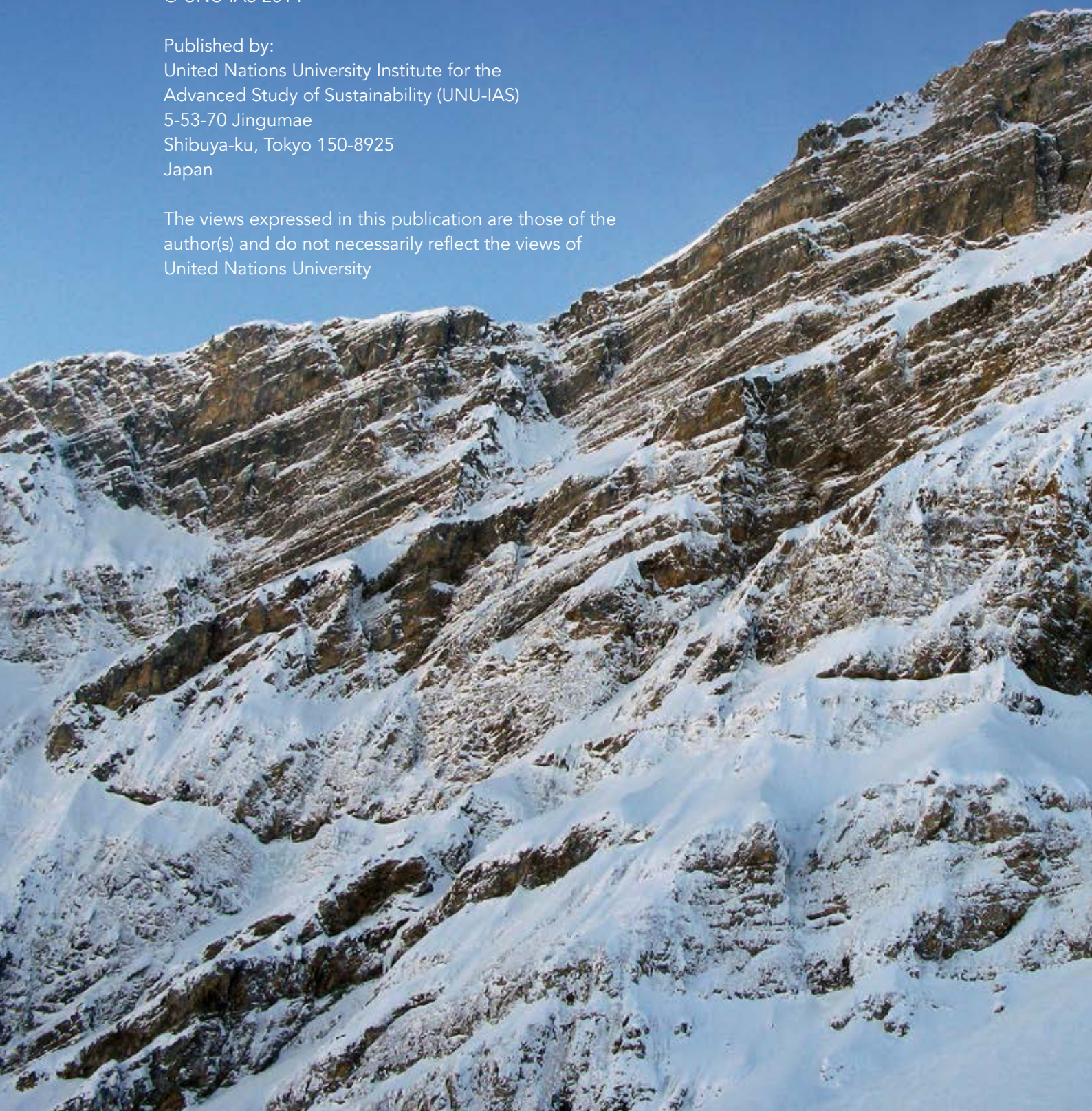

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Message from the Editors

We dedicate this book to
global citizens sharing the values and eager to learn
the wisdom of networking in local communities
in searching for sustainable development solutions
and collectively, as inclusive constituent networks,
providing global learning spaces on education for
sustainable development (ESD).

The global movement of Regional Centres of Expertise on ESD (RCEs), having reached a decade of existence and of constantly contributing to change through learning and action, is deserving of a commemorative memento. As the United Nations Decade on Education for Sustainable Development (DESD), upon which the RCE movement was founded and to which it was dedicated, draws to a close, it is also a critical time to look towards the future of the RCE community against the backdrop of the new processes taking shape in sustainable development and education.

This publication is the tale of an extraordinary grassroots movement conceived at the turn of the century and dedicated to the proposition that unless local stakeholders work together to find and implement local solutions to local sustainable development problems, all efforts to translate global sustainable development policy and vision into local realities might be in vain. By creating partnerships among groups and individuals as diverse as educators, researchers, policymakers, scientists, youth, leaders within indigenous communities and throughout the public, private and non-governmental sectors, RCEs are able to provide a framework for strategic thinking and action on sustainability, creating tangible improvements in their communities and making multistakeholder partnerships the core of each individual RCE and of the global RCE network.

This book draws upon earlier analyses and publications as well as recent reflections of the RCEs showing the colourful diversity of organizational cultures and approaches in promoting ESD worldwide. On the other hand, it renders possible the identification of common tendencies and emerging qualities, despite the different cultural, social and economic contexts, target groups and action areas. A variety of signs are mirrored by the RCEs from Asia-Pacific, Europe, Africa, and the Americas. Authors from different organizations and RCEs across all continents prepared the articles and other contributions to this book, demonstrating the interplay of unity and diversity in the global RCE network.

Work on the book has enabled the contributors to reflect on the past and, most critically, to chart new directions for the development of RCEs – as local networks, regional movements and an international force contributing to international sustainability processes.

All members of the Editorial Team have been connected with the RCE community for a significant amount of time, some from the very development of the RCE concept; it is thus a special pleasure and privilege for the team to be a part of the RCE journey. The Editorial Team is profoundly grateful to all who have made this journey a success, especially those who have contributed to this commemorative book: members of the RCEs, members of the Ubuntu Committee of Peers for the RCEs, UNU leadership, members of the UN Interagency Committee for the DESD, regional advisors, and supporters in the regions representing governments, international organizations, and others. We also acknowledge the unwavering support of the excellent team at the Global RCE Service Centre and the UNU-IAS community.

May this book be a part of the continuing, never-ending learning process in pursuit of sustainable development!

The Editorial Team
Zinaida Fadeeva
Unnikrishnan Payyappallimana
Mario Tabucanon
Kiran Banga Chhokar

Regional Centres of Expertise on Education for Sustainable Development

RCEs around the world

There are 129 acknowledged RCEs as of April 2014


North Sweden
West Sweden
Espoo
Uppsala
Skåne
Nizhny Novgorod
Lithuania
Samara
Hamburg
Oldenburger Münsterland
Nuremberg
Munich
Vienna
Graz-Styria
Middle Albania
Central Macedonia
Crete
Jordan
Cairo
Kyrgyzstan
Hohhot
Beijing
Inje
Incheon
Ulju
Greater Sendai
East Arunachal Pradesh
Tongyeong
Chubu
Changwon
Yokohama
Hyogo-Kobe
Okayama
Kitakyushu
Srinagar
Chandigarh
Guwahati
Anji
Greater Shangri-la
Kunming
Delhi
Mumbai
Lucknow
Greater Dhaka
Pune
Goa
Kodagu
Bangalore
Greater Phnom Penh
Ilocos
Cebu
Cha-am
Southern Vietnam
Bohol
Trang
Northern Mindanao
Penang
Greater Eastern Uganda
Kakamega-Western Kenya
Nyanza
Greater Nairobi
Greater Pwani
Greater Dar es Salaam
East Kalimantan
Bogor
Yogyakarta
Harare
Lusaka
Zomba
Mutare
Maputo
Lesotho
KwaZulu Natal
Pacific Island Countries
Western Australia
Murray-Darling
Greater Western Sydney
Gippsland Victoria
Waikato

Five years have already passed since the United Nations University Institute for the Advanced Study of Sustainability (formerly the United Nations University Institute of Advanced Studies) brought forward lessons from the RCE community in the publication *Five Years of Regional Centres of Expertise on ESD*. As the saying goes, "Time flies." On this occasion, I would like to congratulate the institute for its successful compilation of the publication *Building a Resilient Future through Multistakeholder Learning and Action: Ten Years of Regional Centres of Expertise on Education for Sustainable Development*. I would also like to take this opportunity to express my heartfelt gratitude to those concerned for their 10 years of endeavours toward achieving the goals of the United Nations Decade of Education for Sustainable Development (DESD).

At the World Summit on Sustainable Development held in Johannesburg, South Africa, in September 2002, the Japanese government proposed to cooperate with non-governmental organizations in actively promoting education for sustainable development (ESD) in various countries around the world on the basis of international cooperation, and succeeded in having the period from 2005 to 2014 designated as the UN DESD. In 2005, coinciding with the start of the Decade, the concept of Regional Centres of Expertise (RCEs) was established by the United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS) for the purpose of achieving the long-term goals of ESD, such as environment stewardship, social justice, and improvement of quality of life.

The development of RCEs got underway in conjunction with the DESD. From an initial seven RCEs worldwide at launch, the number has grown steadily, totalling 75 RCEs at the five-year mark, and 129 as of June 2014, as we approach the 10-year mark.

Individual RCEs are located in regions of a certain size, which share major economic cultural and social characteristics. Since the issues faced by RCEs vary depending on each area of activity, the challenges that they deal with and the content of their activities are also varied. However, as the number of RCEs increases, this will lead to individual regions working together to address common problems and themes through a stronger RCE network. Global-scale issues in particular, such as climate change and biodiversity, require an international approach that goes beyond single regions and countries. Consequently, it is likely

that RCEs will continue to spread, and more and more will be expected of their great efforts. I am currently serving as the Secretary-General of the Parliamentary Members Caucus for ESD Promotion. In addition, I have worked for the spread and promotion of ESD in my capacity as the Parliamentary Secretary of the Environment, the Director of the Environment Division of the Liberal Democratic Party, and now as the Senior Vice-Minister of the Environment. Since 2014 is the final year of the DESD, the Ministry of the Environment convened the "Round Table Conference on Measures for Promoting Environmental Education after the DESD" for the purpose of examining measures for the promotion of ESD in Japan after the conclusion of the Decade. The conference was chaired by me and joined by experts and others. In terms of its achievements, a report is currently being compiled in which RCE activities are also highlighted. We recognize that the activities of RCEs and other organizations will need to be further strengthened even after the conclusion of the DESD.

Also in 2014, as we reach an important milestone marking the DESD's final year, Japan will host the UNESCO World Conference on ESD. In addition to celebrating the achievements of the past 10 years, participants at the World Conference will be able to discuss and debate measures for promoting ESD beyond 2014. In this, RCEs will play a significant role. Arising from these discussions, the Global Action Programme and the Aichi-Nagoya Declaration on ESD are expected to be launched.

As we continue to further strengthen our cooperation with United Nations University, both I and the Ministry of the Environment of Japan are committed to making the best use of our precious time in steadily promoting RCEs and other initiatives for ESD.

I would like to express my deepest respect for the dedicated efforts made by UNU-IAS and all those concerned. I sincerely hope that this publication reaches a wide readership, and that it will serve to deepen the understanding of RCEs and ESD.

Tomokatsu Kitagawa
Senior Vice-Minister
Ministry of the Environment, Japan
August 2014

As the UN Decade of Education for Sustainable Development (2005-2014), for which UNESCO is the lead agency, reaches its conclusion, we can take stock of the major advances made during this time throughout the world by people who share the same passion and vision of an achievable sustainable future.

Much progress has been made in 10 years. Yet, we cannot be complacent. The underlying issues remain constant and challenging. Poverty, climate change, frequent natural disasters and dramatic social inequities make the need to empower everyone to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future more pressing than ever. Sustainable development cannot just be achieved through technological solutions, political regulations or financial instruments. The reality is that sustainable development can only be achieved if individuals and societies change the way they think and act. This is where education plays a central role in bringing about change. Education can help current and future generations find solutions for social, environmental and economic sustainability challenges – at both local and global levels.

We can see the growing trend where the role of education is being recognized as a vital element in helping societies create sustainable futures. The global network of Regional Centres of Expertise on ESD, launched during the UNU-UNESCO International Conference on Globalisation and Education for Sustainable Development in June 2005 in Nagoya, has been an important contribution to the UN Decade of ESD. Promoting ESD at the local level through multistakeholder, cross-sectoral partnerships, the global community of RCEs, coordinated by UNU-IAS, is clearly a success story to build on. Boosting its size from seven RCEs in 2005 to the current 129, the network demonstrates the success of its unique concept – building partnerships for thinking globally while acting locally.

More recently, in 2012, the UN Conference on Sustainable Development (Rio+20) set the stage for the future of sustainable development. In Rio, countries made a strong commitment to ESD, resolving to promote ESD beyond the end of the UN Decade. And now, in line with this commitment, the 2014 World Conference on ESD will see the launch of the Global Action Programme on ESD (GAP), which has already been endorsed by the 37th session of the UNESCO General Conference.

Knowing that effective and innovative solutions to sustainable development challenges are frequently developed at the local level, one of the five Priority Action Areas of the GAP will focus on accelerating the search for sustainable development solutions at the local level through ESD. This will include encouraging local communities and municipal authorities to develop community-based ESD programs. Clearly, the aforementioned experience of the RCE community provides an important foundation to build upon in driving forward this Priority Action Area to help diversify and expand existing networks.

ESD can only be successful when we continue fostering and building strong partnerships that bring together the global and the local level. The global network of RCEs can serve as a model for both – strong partnerships and local engagement. Using these good examples of what works for ESD we can face the world's ongoing challenges together with confidence. This is why we count on our continuing good collaboration and enhanced action within the framework of the Global Action Programme on ESD.

Soo-Hyang Choi
Director
Division of Teaching, Learning and Content
Education Sector
UNESCO

If there is a reason to celebrate as the United Nations Decade on Education for Sustainable Development comes to an end in 2014, it would be because of the successful implementation of the visionary idea of the Regional Centres of Expertise in Education for Sustainable Development launched at the start of the Decade. A brainchild of the United Nations University and its Institute for the Advanced Study of Sustainability (the UNU Institute of Advanced Studies), it opens up a new vista of thinking, organizing and implementing the concept of ESD so that it can be better realized, in more concrete and tangible ways that are readily understood and governable, as a unique platform for collaboration among the various stakeholders. It is no wonder that in the last decade the number of RCEs multiplied from a mere seven in 2005 to 129 by June 2014, spanning institutions and communities the world over.

This is an important testimony not only to the tremendous interest in addressing issues related to sustainable development across the globe but, more importantly, to the practicality of RCEs as vehicles for multistakeholder and cross-sectoral partnerships for ESD in diverse communities, regions and nations, transcending borders and other conventional geopolitical barriers. The fact that the number of RCEs continues to grow despite the rigorous selection criteria and process shows a high degree of acceptance of the idea as a game-changer in shifting the notion of education forward in the context of sustainable development. Indeed, the idea has given rise to many more useful lessons drawn from the numerous experiences provided by each RCE currently operating on a myriad of issues and situations to make ESD a reality.

Each of these experiences is a case study in its own right, in meeting what is known as the of education today, namely, to be directly engaged with the community to co-learn and co-create relevant long-term and sustainable solutions for the well-being of the members of the community. Collectively, the array of case studies can present a catalogue of best practices in dealing with the issues of sustainable development from the educational perspective, ranging from curricular design to pedagogy, and eventually translating into pragmatic solutions on the ground. Unlike the present tendency to implement a one-size-fits-all solution, the experiences of the RCEs are sensitive to multiple differences – be they sociocultural, geopolitical or economic – making them more adaptable and flexible for sharing and implementing all that education should be about.

These are just some of the reasons that call for celebration as we endeavour to take the RCEs to the next level and continue to expand the idea for many generations to come. On that note, on behalf of the International Association of Universities, I offer our warm congratulations on work well done, as reflected in this commemorative volume. We pledge our utmost support for the further development of the RCEs in the next decade and beyond.

Dzulkifli Abdul Razak
President, International Association of Universities, Paris;
Founder-Convener, RCE Penang, Malaysia

At the 2002 World Summit on Sustainable Development, the Johannesburg Plan of Implementation recommended the designation of a decade dedicated to education for sustainable development. It was indeed historic when the UN General Assembly declared the period spanning 2005 to 2014 as the UN Decade of Education for Sustainable Development. The Ubuntu Alliance, comprised of the world's foremost educational and scientific/technological institutions including United Nations University, signed the Ubuntu Declaration at the Johannesburg Summit in an effort to make integrated solutions work for sustainable development and to mobilize the education sector to contribute to it.

The establishment of the ESD Programme within the United Nations University system, currently anchored at the UNU Institute for the Advanced Study of Sustainability, constituted a strong foundation of multistakeholder partnerships aimed at responding to the DESD call for action, particularly in terms of advocacy and dissemination of ESD principles, promotion of regional or local approaches to ESD learning, strengthening of ESD activities of higher education institutions, and capacity development of educators and change agents. UNU-IAS conceived of and enabled the launching of the multistakeholder, community-rooted, global initiative known as Regional Centres of Expertise on ESD. RCEs build platforms where ESD stakeholders are empowered, share information and experiences, and seek partnerships for action in the local and regional communities.

As Secretariat of the Global RCE Service Centre, UNU-IAS is proud that the RCE movement has exceeded expectations and risen to become an ESD learn-

ing force to reckon with. RCEs around the world manifest the paradigm of change – that only when global concerns are addressed locally, local actions are aligned with national and global policies, and when communities of action take diverse and multiple stakeholders on board, can the ambitions of the DESD have a transformative impact.

The achievements of the RCE community are praiseworthy as they display real contributions to societal transformations. As the global education sector marks the end of the DESD, it behoves the RCE community to take stock of and reflect on the achievements and challenges of the Decade, learn lessons from it, and look beyond 2014. In cooperation with like-minded organizations and networks, it is expected that the RCE community will contribute significantly to the implementation of the Global Action Programme on ESD and to the realization of the Sustainable Development Goals (SDGs).

This commemorative publication underpins our commitment to effective implementation of the Global Action Programme on ESD as the global RCE community. This compendium of RCE achievements, contributions and challenges in the pursuit of creating sustainable societies serves as a source of inspiration for all ESD stakeholders. At the same time it offers a resource for ESD learning for action. The RCE community deserves to be complimented on releasing this splendid work in commemoration of the successful conclusion of the DESD.

Kazuhiko Takemoto
Director, UNU-IAS

Tongyeong Declaration on RCEs and Education for Sustainable Development

Adopted in Tongyeong, Republic of Korea, 24 September 2012

The global network of Regional Centres of Expertise on Education for Sustainable Development (RCEs), acknowledged by the United Nations University with the support of the Ubuntu Alliance, having met in Tongyeong, Republic of Korea, and reaffirming all previous declarations related to education for sustainable development (ESD), hereby declare their **commitment to implementing strategic actions that build a global learning space on ESD**.

As the world looks to 2014 and beyond, RCEs recognize their distinctive ability to respond to our global systems in crisis and their moral responsibility to act on these well beyond the end of the Decade on Education for Sustainable Development.

RCEs **are a tool for transformation to a more sustainable society**, combining education and action for sustainable development. RCEs reaffirm their strong commitment to improving their systems of governance and quality of their actions. They are committed to expanding their collaboration with as wide a number of stakeholders as possible, and further expanding the global network in five years, thereby increasing their global impact.

RCEs are dedicated to building their capacities to plan and implement collaborative ESD projects critical for establishing a global learning space. Capacity development will be viewed as a transformative learning process, generated from within the RCE network.

RCEs will put sustainable development issues into a scientific and social context, provide a constructive critique and help to develop new policies, program and projects. At the same time, RCEs will continue to dedicate themselves to advancing sustainable market opportunities and other sustainable livelihood strategies for all individuals – especially for the most marginalized – to improve human well-being and ecosystem health.

RCEs recognize their unique position, as grassroots, multistakeholder networks, with distinctive capacities for research and innovation that can revitalize education at all levels through flagship projects. As **regionally based yet globally connected** networks, RCEs form a global learning space on ESD, working to ensure that all individuals have the opportunity to learn the values, behaviours and lifestyles required for a sustainable future and for positive social transformation.

Part I
RCEs: The Beginning and Progression

In 2003, United Nations University spearheaded a global program on education for sustainable development through a multitude of initiatives for learning. With UNU envisioning learning across the local-global space as its strategic core, while keeping communities at centre stage, Regional Centres of Expertise on ESD (RCEs) were introduced as a multistakeholder initiative of learning for change, with higher education and school communities as the lead actors. Thus what began as a modest story of a small network of seven acknowledged RCEs soon picked up momentum across regions to become, in a decade, a large network of 129 RCEs.

This book begins with a narrative of the RCE concept and the context in which it evolved. Part I highlights the initial assumptions and expectations of thought leaders in the movement about the characteristics and results of RCE work. It also outlines the trajectory of diverse metaphors, meanings and methods through which individual RCEs as well as the RCE network developed, ranging in ideas from engines of mobilization and knowledge hubs to communities of practice and sustainability commons.

Chapter 1 Regional Centres of Expertise on Education for Sustainable Development: Evolution of Concept and Practices

Chapter 1

Regional Centres of Expertise on Education for Sustainable Development: Evolution of Concept and Practices[1]

Zinaida Fadeeva and Yoko Mochizuki

At the UNU-UNESCO International Conference on Globalisation and Education for Sustainable Development held in June 2005 in Nagoya, Japan, which celebrated the Asia-Pacific launch of the United Nations Decade of Education for Sustainable Development (DESD), United Nations University (UNU) declared the establishment of the first group of seven Regional Centres of Expertise on Education for Sustainable Development (RCEs). The network of RCEs continues to expand and, as of August 2014, there were 129 RCEs worldwide, in Africa, North and South America, Asia-Pacific and Europe.

The RCEs have significantly contributed towards the implementation of the DESD. Designed as networks of formal, non-formal and informal education organizations to deliver education for sustainable development (ESD), RCEs have generated excitement, relevance and value in engaging various stakeholders to foster sustainability.

This chapter provides a historical background of the RCE initiative and clarifies the underlying beliefs, values and principles that drove its creation. It discusses the evolution of the concept and practice of RCEs, reporting on the development of a global network of RCEs and emerging "communities of practice".

1 This publication draws upon two earlier published articles with some additional insights and reflections. These articles are Mochizuki, Y. & Fadeeva, Z. (2008). Regional Centres of Expertise on Education for Sustainable Development: An overview. *International Journal of Sustainability in Higher Education,9(4)*, 369-381; and, Fadeeva, Z. & Mochizuki, Y. (2010) Roles of Regional Centres of Expertise on Education for Sustainable Development: Lessons learnt in the first half of the UNDESD. *Journal of Education for Sustainable Development,4(1)*, 51-59.

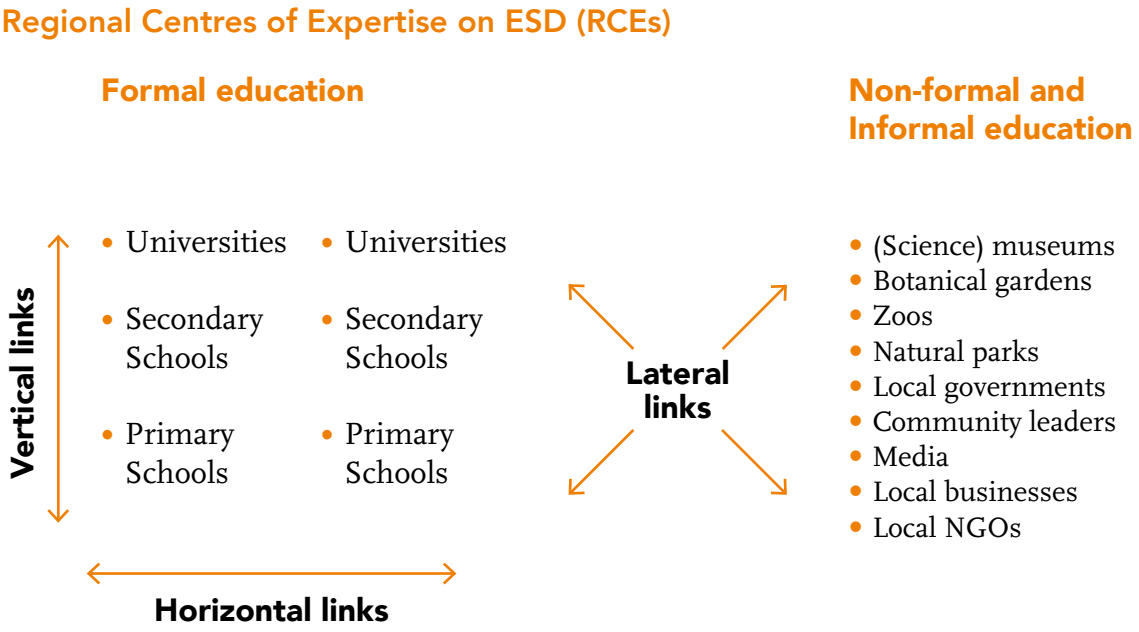

Figure 1.1 Collaborative links of an RCE

Origins of the RCE Initiative: From global vision to local actions

An RCE is not a physical centre but an institutional mechanism to facilitate shared learning for sustainable development. An RCE is a network of existing local-regional institutions mobilized to jointly promote all types of learning for a sustainable future (Figure 1.1). RCEs, both individually and collectively, aspire to achieve the goals of DESD and beyond.

At the Johannesburg World Summit on Sustainable Development (WSSD) in 2002, a multinational plea was made for partnerships that would allow a diverse array of actors to jointly take action towards the common goal of sustainable development (SD). The Summit shifted the focus of SD from normative statements about "what should be done" to the strategy of implementation. The RCE program became a direct response to this important shift from words to actions. Following the WSSD and the UN General Assembly Resolution on the DESD, the UNU Institute for the Advanced Study of Sustainability (formerly known as the UNU Institute of Advanced Studies, UNU-IAS), launched a program on education for sustainable development in 2003. UNU-IAS developed a concept paper on RCEs and presented it to the international community during the Twelfth Session of the Commission on Sustainable Development (CSD) in April 2004 (UNU, 2004).

Since 2004, UNU and UNU-IAS have worked with the RCE community on the continuous development of the concept, presenting the evolving idea and associated practices of RCEs at various international conferences and meetings. The idea has been well received by a wide range of actors in the SD and ESD communities owing, partially, to the flexibility of the interpretation and implementation. In order to better understand the evolving nature of the concept and practice of RCEs, and grasp the potential of the RCE scheme, the next section tells the story of what UNU originally intended to achieve through the RCEs.

RCE as a Strategy

The original impetus behind the RCE initiative came from the perceived need to focus on action rather than theory. The RCE initiative was proposed in order to overcome inertia created by the difficulty of reaching international consensus on the nature and scope of ESD[2]. One of the perspectives on the development of ESD as an "appropriate education for a sustainable future" is presented in Box 1.1.

For the architects of the concept, RCEs were, initially, a measure designed to help address deficiencies in the education system identified through efforts to promote environmental education in the formal education sector since the late 1980s. One of the identified deficiencies was that the latest scientific and technical knowledge was not well reflected in what was being taught in schools or that references to particular phenomena did not relate to the realities of the regions. The recognition of the need to narrow the communication gap between scientists and educators led to the signing of the Ubuntu Declaration, upon which the UNU strategy to promote ESD is partly based (Box 1.2).

The RCE concept, first and foremost, was derived from the experience of formal education, including higher education. Although this does not limit the scope of RCE activities to formal education, initially one of the most important goals of the RCE initiative was conceived as that of supplementing the formal education curriculum, pedagogies and actions for implementation. As a means of achieving this goal, the RCE concept emphasizes strengthening horizontal and vertical links within the formal education sector as well as promoting partnerships between formal and non-formal education institutions. The latter are particularly significant as the problem of engagement across the sectors, especially between higher education and other knowledge institutions, have left much to be desired. The engagement of different knowledge sectors came, among other issues, from an understanding of the complexity of sustainability issues and the lack of lasting or ready-made solutions to address them. Multiple approaches and perspectives explored through sustained collaborations were, in the eyes of the authors of the RCE concept, key to learning and innovativeness towards sustainability.

In UNU's partnership approach incarnated as the RCE initiative, the initial emphasis was not so much on the creation of equitable partnerships – which are often viewed as a necessary condition for fostering social learning and innovation – but on the creation of a local/regional knowledge base in which higher education institutions (HEIs) and other knowledge-related

Box 1.1

The Emergence and Development of ESD: One person's perspective

(By Charles Hopkins, UNESCO Chair of ESD, supporter of RCE development in many regions)

The emergence of education for sustainable development has taken many pathways in countries around the world. No one person can give the definitive history. However, as one who became involved in sustainable development during the Brundtland hearings in the mid-1980s, I am often asked to share some historical perspectives. I am pleased to share a few of the highlights in the development of ESD within formal education, which is my primary area of experience.

First of all, a few words regarding the early days and the emergence of ESD. I had the privilege of being one of a small group of individuals that was invited to work on a writing committee to develop Agenda 21 in the preparations for the Earth Summit to be held in Rio

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2 The initial interpretation of ESD largely focused on themes such as equating ESD and environmental education or highlighting that ESD must transcend different adjectival educations, such as environmental education, human rights education, peace education, gender education, etc. Some discourses focused on the principles behind ESD, e.g. the Talloires Declaration or highlighting ESD's overarching nature.

de Janeiro in1992. Our task was to work on a chapter in the section of Agenda 21 that dealt with how we could actually implement sustainable development. Our chapter, Chapter 36, was on the role of using the world's education, public awareness and training systems to assist sustainability, and was simply called "Education, Public Awareness and Training".

During one of the first meetings of the writing team, a member suggested that we just needed better environmental education and more recycling. In response, the president of a university from the developing world pointed out that he had youth who were already excellent at recycling as they lived their entire lives in the city dumps. He said that these people needed quality basic education to address the unbearable poverty that would lead to an unsustainable future due to civil unrest. This insightful response shaped the thinking of the working group from this point on. Many of us had come from an environmental education background, but as a school superintendent I realized the wisdom in his remarks. From then on we took the title of our chapter and used the three components – education, public awareness and training – to outline and define the action areas or thrusts of ESD. However, we split education into two thrusts. The first one was to provide access to a quality basic education. The second was to re-orient existing education, primarily aimed at the developed world, to address sustainability. The sad outcome of Agenda 21 in the early years of the 1990s was that sustainable development was largely seen as the purview of ministries of environment, and ministries of education were not really engaged.

The period between 1992 and 2002 saw ESD struggle to assert itself as a separate entity as several adjectival educations such as peace education, development education, global education and environmental education all claimed to be the same as ESD. All did address aspects of sustainability but none really addressed access to and retention in a quality education. They saw the second thrust of re-orienting education as the important component and aligned with their concerns and competence. No adjectival proponent saw the possibility of re-orienting formal education in its entirety, as was the vision of the Agenda 21 writing team. Rather, each saw an opportunity to add yet another concern to an already overcrowded curriculum. It was difficult for UNESCO to deal with this, as the intent was to engage these adjectival educations as allies, yet not succumb to agreeing that any one of them was identical or equivalent to ESD. Nowhere was the issue as difficult as at the 1997 UNESCO Conference celebrating the 20th anniversary of the Tbilisi Declaration on environmental education (EE) in Thessaloniki, where the issue of EE versus ESD became a major stumbling block.

The tide turned in 2002 at the 10th anniversary of Rio, at the World Summit on Sustainable Development in Johannesburg. It became clear that Japan, supported by a number of countries, wanted a UN Decade on ESD. The successful move to create the Decade from 2005 to 2014 has made a major difference. With the Decade, UNESCO had the opportunity to engage their delegations and ministries of education. Their roles and responsibilities became clearer, and by the mid-Decade Bonn Conference in 2009, many ministers saw that actually re-orienting their entire education system, preschool through to higher education, was not only possible but necessary. The Bonn Declaration brought credibility. Early adopters such as the K-12 system in Manitoba, Canada, and higher education in Sweden and Germany were inspiring.

Currently there is a movement to unite ESD further with the concept of the first thrust – access and retention in a quality education. The original idea of those of us who were writing Chapter 36 was that the first thrust was aimed at the developing countries and, in synergy with the emerging Education For All (EFA) movement, the second thrust – re-orienting existing education to address sustainability – was aimed more at the developed world. For the first 20 years, ESD has largely focused on the second

cont. ▶

institutions are expected to play a key role in ensuring scientifically-sound ESD. These higher education institutions were especially encouraged to take the lead in developing RCEs because they were expected to provide guidance and leadership in all education and take the initiative to align education from preschool through university (Hopkins, McKeown & Van Ginkel, 2005). Furthermore, HEIs, as organizations with stable human and financial resources, were also seen as parts of institutions that have a social responsibility and moral obligation (derived from their academic freedom and autonomy) to address sustainability challenges.

Precisely this combination of the normative expectations from HEIs and their perceived institutional capacity and stability makes them the backbone of the local knowledge base in the RCE concept. UNU strategically emphasized the involvement of HEIs in RCE efforts as a key to ensuring the sustainability and quality of emerging RCEs and, at the same time, as a means to enhancing the role of HEIs in contributing to SD.

Another important assumption of the original RCE concept is that there is a need to mobilize as many actors as possible – in all sectors of society, at all levels of formal education, among people of all ages – in order to promote ESD and create what UNU calls a Global Learning Space for SD. This need was identified based on lessons learned through efforts to promote ESD from Rio to Johannesburg, which are not generally considered as a spectacular success (UNESCAP, 2003)[3]. There is a consensus on the idea that ESD must be promoted at all levels – international, national and subnational – but international efforts to promote ESD have been rather fragmented and have not been very successful in producing visible outcomes and tangible benefits. UNU chose the regional/local level as its strategic focus, rather than dispersing its limited resources on initiatives aimed at different levels. An RCE is primarily meant to attain the provision of a platform for multistakeholder dialogue to share information and experience and seek ways to promote interdisciplinary and multisectoral collaboration for ESD at the regional/local level. An RCE can be interpreted as a mobilization mechanism to achieve much-coveted "locally-relevant and culturally appropriate" ESD and a

thrust while EFA was seen as the carrier of the first thrust. This was because adjectival NGOs or units within schools and universities carried out most of ESD. Now that ministries of education are entering the quest for ESD, there is renewed attention to the first thrust beyond EFA. Many students in the developed world also need, yet are not receiving, access and retention in a quality education that prepares them for the 21st century.

We realize that ministries of education do not see their primary goal as saving the future but as delivering a quality education. For too many, quality is interpreted as achieving better Program for International Student Achievement (PISA) scores in language, mathematics and science. While these are important, there are other subjects, aspects of education as addressed by the Delour's Commission such as learning to be and learning to live together, which comprise education quality. Lastly, let me comment on another aspect of ESD and that is the emergence of three components: knowledge as in curriculum content, pedagogy as in problem-based learning, and taking action. Education for sustainable development is not a discipline or pedagogy but rather a purpose that engages appropriate curricula across all disciplines and pedagogical approaches. It is an appropriate education for a sustainable future for all, where "all" is not limited to humans. ■

3 Leading to the Johannesburg Summit was a realization that a more successful pursuit of the sustainable development goals as stipulated by Agenda 21 had to be built on partnerships that go beyond intergovernmental agreements. When dealing with sustainability challenges, especially at the local level, such partnerships that also include the private sector and civil society, lead to new forms of participatory governance and engagement.

concrete manifestation of the "partnership approach" emphasized in the DESD International Implementation Scheme (UNESCO, 2005).

The RCE Initiative as a Unique Contribution to the DESD

While the RCE initiative also emphasizes the importance of formal approaches to education and training, its scope goes beyond formal education and includes all aspects of ESD. How does an RCE facilitate local stakeholders to implement ESD in a more holistic and coherent and coordinated manner that can address local sustainability challenges?

Combining formal and non-formal education

In principle, RCEs assist the enhancement of horizontal links among schools at the same level of education,vertical alignment of curriculum from primary through university education, and development of lateral linkages between formal and non-formal sectors of the education community (Figure 1.1).

Box 1.2
Ubuntu Alliance and Committee of Peers for the RCE Community

At WSSD, 11 leading educational and scientific organizations, under the leadership of UNU-IAS, signed the Ubuntu Declaration, with goals to strengthen collaboration between science and technology researchers and educators to better integrate the latest science and technology for sustainable development into educational programs (all subjects, all levels) and to strengthen cooperation between formal and non-formal education. The 11 organizations, called the Ubuntu Alliance members, are:

1. Academy of Sciences for the Developing World (TWAS)
2. African Academy of Science (AAS)
3. Association of University Leaders for a Sustainable Future (ULSF)
4. Copernicus-Campus
5. Global Higher Education for Sustainability Partnership (GHESP)
6. International Association of Universities (IAU)
7. International Council for Science (ICSU)
8. Science Council of Asia (SCA)
9. United Nations Educational, Scientific and Cultural Organization (UNESCO)

cont. ▸

UNU recognized the limitation of formal education and emphasized a need to link formal and non-formal education. With its emphasis on reforming formal education by way of enhancing collaboration among schools and mobilizing non-school actors in the service of formal education, however, the RCE initiative could potentially reinforce the dominant image of ESD as restricted mainly to formal education (UNU-IAS, 2005; Fadeeva, 2007). Fadeeva and Mochizuki (2007) addressed the potential of an RCE as an institutional mechanism to facilitate social learning and an innovation to create "equitable learning partnerships between the combined expertise of communities, professions and governments" (Keen, Brown & Dyball, 2005, p. 6).

When the RCE concept was actually implemented by different regions, the requirement for the establishment and continual reinforcement of horizontal, vertical and lateral linkages facilitated local stakeholders to address their own requirements in collaborative alliances. There are diverse efforts to promote the practice of what is called ESD, and the extent to which ESD is associated with formal or non-formal education varies widely. One of the strengths of the RCE model is that it can be used by local ESD stakeholders to direct mobilization efforts either towards the formal education sector or non-formal education sector, depending on their specific needs. For example, in a region where ESD was almost exclusively associated with NGO activities, as in the case of India, the local RCE promoters could use the RCE model to direct more engagement efforts towards collaboration with local schools and local HEIs. In fact, results of the

research conducted in 2008 among some RCEs, e.g. Pune, Lucknow and Guwahati, showed that the RCE concept succeeded in encouraging participation of HEIs that had previously been hesitant to engage in collaborative activities (RCE Coordinator communications, 2008).

While a broad consensus exists on the need to promote partnerships between formal education (school education) and non-formal education, the necessity of involving HEIs in RCE efforts has not gone unquestioned. When a municipal government or an NGO was taking the lead in developing an RCE, it was sometimes suggested that local HEIs lacked willingness and/or capacity to engage in RCE efforts. Since strengthening ESD activities of HEIs is one of the major components of the ESD Programme of UNU-IAS, involvement of HEIs is a necessary condition for establishing an RCE. Nevertheless, this does not rule out the possibility that an excellent local knowledge base can be created without involving a local HEI. It is important to understand that the key role expected of HEIs in the RCE concept was derived from the UNU strategy for HEIs. In other words, the UNU does not assume that HEIs naturally occupy a central position in developing an RCE or in regional development in general, in different parts of the world.

10 United Nations University (UNU)
11 World Federation of Engineering Organizations (WFEO)

In addition, the International Union for Conservation of Nature (IUCN) and United Nations Environment Programme (UNEP) were invited to join the Ubuntu Alliance in 2006. Copernicus Alliance, established in place of the disbanded Copernicus-Campus, joined the Ubuntu Alliance in 2013.

A group of organizations from the Ubuntu Alliance have formed the Ubuntu Committee of Peers for the RCEs to advise and guide UNU during the RCE acknowledgement process, and provide strategic advice on the development of the RCE community. ■

Combining top-down and bottom-up approaches

UNU-IAS (2005) specified four core elements that should be addressed by an RCE: governance, collaboration, research and development (R&D), and transformative education. On the one hand, fulfilling the core elements of an RCE often means implementing externally induced reforms, such as enhancing the role of local universities in ESD, identifying new partners and forming new alliances, in a top-down manner. On the other hand, an RCE cannot be created without a bottom-up approach to local concerns that begins with details on the ground.

One of the functions of an RCE is to incorporate bottom-up methods designed to identify and include the needs and interests of a wide range of social groups in the region. To reinforce the bottom-up approach, UNU has specifically stated that an RCE cannot be created from scratch and that it is not an entirely new initiative, though it could be in some regions. An RCE builds on existing alliances and actions towards ESD and SD while helping to enhance them.

What makes an RCE distinct from other local initiatives is its wider geographic scope (Box 1.3) that supposedly enables it to perform distinctive functions such as disseminating good practices on a wider scale and serving as a knowledge base[4].

4 Although an RCE cannot be limited to a small village where there is no IHE, smaller-scale community-based activities (for example, an environmental education project in a village school) can constitute RCE activities. While there may be activities that cover the entire geographic scope of an RCE (for example, development of a website dedicated to the RCE or teaching materials for school teachers in the region), it needs to be noted that the geographic scope of each RCE activity does not always coincide with that of the RCE.

Due to its broader geographic scope that allows diversity in participating institutions and in ongoing and planned activities, an RCE is required to have a body that is responsible for the overall coordination and communication strategy of the RCE. A facilitative or decisionmaking body of an RCE is usually set up as an ESD/RCE Coordination Body or Promotion Commission, consisting of the representatives of initial partner organizations. Broader participants in the RCE can be theorized as actors (both organizations and individuals) who willingly and creatively participate in and contribute to RCE activities, rather than as those who carry out uniform activities designed by the ESD/RCE Coordinators (see this chapter's section on "RCE as a Coordinator" for more information on RCE governance and coordination strategies).

Box 1.3
Understanding "Regions" in the RCE Concept

A "region" in the RCE concept is, in principle, a part of a country having definable characteristics such as Bretagne, Tohoku or Catalonia, or a cross-border area with a similar size. A region should be sufficiently large to include various institutions such as universities, museums, zoos, botanical gardens and more than a handful of primary and secondary schools, and should be small enough to make frequent face-to-face communication possible. ■

It is important to recognize that an RCE is both a UNU initiative – in the sense that UNU requires local stakeholders to follow its guidelines for RCE mobilization – and a local voluntary initiative to promote local action. An RCE can begin with a small number of core local institutions that have been introduced to the RCE concept (through various channels such as international conferences, workshops, meetings of academic associations and personal contacts) and voluntarily work together to draw a blueprint for an RCE on behalf of inhabitants of the region. Since it is practically impossible to involve all residents in the region in devising initial strategies for implementing the RCE concept and launching an RCE in a relatively short time, UNU does not require – though it does encourage – RCE candidates to secure the maximum possible degree of citizen participation at the initial stage of RCE development. While UNU explicitly requests RCE candidates to include certain types of institutions, such as HEIs and local schools or organizations representing school systems, in the initial partner group of an RCE for the formal acknowledgement process, it allows RCEs a stepwise approach with regard to resident participation in RCE efforts because an RCE is essentially a network of local institutions. It is therefore crucial for the core local promoters of an RCE to address the issue of participatory design and creation of a "local knowledge base".

Multiple Roles and Interpretations

Since the launch of the initial group in 2005, RCEs have demonstrated a variety of roles, depending on regional needs and the local stakeholders' differing interpretations of ESD and RCEs. These RCEs have evolved over time both in the issues they address and in their organization. An impressive variety of perceived RCE roles is illustrated by the metaphors that RCE stakeholders in different regions shared in the reports of their activities (Box 1.4). A network for the promotion of ESD and sustainability; a path for a more sustainable society; a space for reflection; a partnership; a community of practice and innovation; a resource pool – these highlight a variety of roles and directions that coexist in the community forming fertile and resilient ground for future development.

RCE as an Engine for Mobilization: Coming together

Mobilizing local champions for ESD

As described in the previous sections, the initial conceptualization of RCEs by UNU portrayed them as "a network that is designed to strengthen the collaboration for ESD among regional and local actors" (UNU-IAS, 2005). Portrayed as an engine for mobilization, the RCE is viewed as a strategy that will build linkages among local/regional stakeholders, both within and outside the educational community, and create alliances capable of addressing sustainability issues relevant to the region through learning and action. The RCEs as inter-organizational networking initiatives are expected to add value to the regions and their educational systems (Fadeeva & Mochizuki, 2007).

Box 1.4
Metaphors Describing RCEs
(extracted from 2009 RCE Reports)

Our RCE is:
A bridge between prospective and the retrospective sustainable activities, and the elixir of sustainable development *(RCE Kano, Nigeria).*

A community of practice responding to life threatening issues and risks in our region *(RCE KwaZulu Natal, South Africa).*

A lively pool of engaged institutions and people pushing forward the idea of sustainable development *(RCE Graz-Styria, Europe).*

A bridge between governmental and NGO initiatives, between various educational levels and between different RCE/ESD partners throughout our RCE region *(RCE Hamburg, Germany).*

Depicted in the painting "L'Angelus Du Soir" by Jean Francoise Millet (1859): evening falls and with the work of the quotidian over we reflect on its ups and downs *(RCE North East, UK).*

Like the steady pre-monsoon shower; it's yet to become the downpour of the Kodagu monsoon *(RCE Kodagu, India).*

A network of people with a common concern of ESD *(RCE Lucknow, India).*

A multistakeholder network of change agents developing mutual education in order to build sustainable life in the Ise-Mikawa River Basin *(RCE Chubu, Japan).*

cont. ▶

Because the RCE movement is based on the appealing global vision of the DESD, is promoted in the context of the DESD by a UN agency, and is based on regional partnerships, it has attracted the attention of many people who eventually became champions of the RCEs. The goal of RCEs relates to the broad and inspirational goal of ESD put forward by UNESCO: "a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation". It is noted that the articulation of a desirable state or an appealing idea often serves as a pull towards action (Sharma, 2000). Reference to the DESD agenda gave such a pull, together with a legitimate space for activities undertaken by local stakeholders, regardless of how ESD and sustainable development are interpreted in their region. RCE Saskatchewan (Canada), for example, found that recognition by UNU provided the legitimacy and credibility that senior officials and administrators from the government and academia needed to become involved.

Early RCEs carried the ideas of RCEs and ESD to new regions using their professional and social networks. RCE Rhine-Meuse, one of the initial seven RCEs and the first in Europe, has played a significant mentoring role for RCEs in Europe and Russia. RCE KwaZulu Natal (South Africa) assisted in developing RCEs in Maputo (Mozambique), Swaziland, and Zomba (Malawi). Later, RCE KwaZulu Natal received a grant from the Swedish International Development Cooperation Agency (SIDA) for providing support in the establishment of 14 RCEs in southern Africa, at least one in each of the member states of the South African Development Community (SADC) (see Box 1.5). RCE Delhi (India), having The Energy and Resources Institute (TERI) as one of the key partners, used its

links to TERI offices in Mumbai and Goa to facilitate mobilization of RCEs in these areas. Similarly, secretarial function held by the regional offices of the Centre of Environment Education (CEE) in India has provided an opportunity to introduce the RCE idea in Pune, Kodagu, Bangalore, Guwahati, Lucknow and Srinagar.

The second wave of mobilization

The second step of mobilization starts with inspired regional champions from universities, local governments or, less frequently, civil society and private sector organizations taking charge of the local/regional mobilization efforts. Particular local circumstances determine who joins the ESD/RCE community and at what stage. The RCE strategy requires engaging local institutions of higher education and primary and secondary schools as stakeholders. The rest is left up to local dynamics. As a result, RCEs feature a multiplicity of network compositions with central roles played by municipal governments, universities or NGOs. The number of key actors varies from a few to more than a dozen, and the management structure ranges from rigidly defined to very flexible. The variety is not surprising – after all, the network composition and dynamics are the functions of local requirements and agreements.

Case studies from RCEs Rhine-Meuse and North East (Rikers & Hermans, 2008; Doyle & Foy, 2010) show ESD burgeoning in regions that experienced recent economic decline. Goodwill and creativity can emerge as a response to serious challenges and the lack of easy solutions. A number of initiatives have also been developed in relative isolation. In these regions, RCEs are creating synergies among partners for the first time. Mobilization of an RCE in Kyrgyzstan, for example, has assisted in the process of bringing together representatives of educational institutions, NGOs and, notably, governmental representatives responsible for ESD work in the country.

An interesting subset of RCE roles related to mobilization of partners is that of an RCE as a space opener and facilitator of communication in the region. For example, RCE North East made a continuous effort to promote social transactions by involving its members in communication inopen publicspaces, which are seen as having "natality" – a possibility for choice, transcending the given, renewal and regeneration. Opening space and providing facilitationwere seen as critical for bringing together many previously disengaged communities.

Aiming to be the knowledge base of ESD in the region *(RCE Hyogo-Kobe, Japan)*.

The hub of various innovative learning sources on conservation of energy, environment and natural resources based upon the self-sufficiency economy in the south-western region of Thailand *(RCE Cha-am, Thailand)*.

Gaining cooperation in development from state, private, community and education sectors. [It is] creative in producing interesting learning activities, concentrating on developing a wide variety of activities and building new knowledge *(RCE Trang, Thailand)*.

In the water paddling towards our goal. It has all of its ducks in order – now they have to start swimming! There has been lots of activity to date but it takes time to get organized (structure, terms of reference, recruitment, establishing processes and protocol, and education) to the extent that is necessary to make the kind of transformational community change we are working towards *(RCE Greater Sudbury, UK)*.

Similar to an invasive garden plant, spreading widely underground, popping up in many unexpected locations to bloom brightly. While in gardening this may be considered to be undesirable, for an RCE it is the path to sustainability, in process as well as education and development *(RCE Greater Sudbury, UK)*.

A community stakeholder network engaged in balancing the area's triple bottom line through connection of citizens, companies, universities, churches, non-profits and government, all focused on creation of a sustainable lifestyle that meets the needs of the present and preserves the same for future generations *(RCE Grand Rapids, USA)*.

Box 1.5
(By T. Pesanayi)

In southern Africa, the presence of a supporting structure, namely the Southern African Development Community's Regional Environmental Education Programme (SADC REEP), assisted in cultivating the nine RCEs in this sub-region. This entailed promoting the RCE approach, helping interested networks apply for RCE status, and supporting them to start their planned ESD actions through technical support, mentoring and/or seed-funding. The SADC REEP also facilitated regular coordination meetings at the regional (southern Africa) level, which enabled sharing of experiences, collaborating on common projects, and catalyzing local ESD action.

As a result, RCEs were encouraged to work together on common projects that kept *the RCE network members and its vision together.* This included, for example, a Telling Stories of Best Practices booklet developed by RCE Lesotho, capacity development manuals prepared by African RCEs, work on establishing sustainability commons prepared by RCE Makana and RCE KwaZulu Natal, and the writing of the *UNU African Heritage Practices Book* and e-book, a collaboration of RCE Makana, RCE candidate Gauteng and RCEs in Kenya. ■

Having new emancipating choices to think about and act on, now and in the future, is particularly attractive to youth. RCE Saskatchewan (Dahms, McMartin & Petry, 2010) points to the mobilizing impact that the RCE network had on establishing common actions and dialogue between rural and urban communities as well as among rival organizations. RCE Makana has embraced a sustainability commons supported by an environmental learning centre that brings together various communities of practice focusing on learning and sustainability practices in key areas of interest (Lotz-Sisitka, O'Donoghue & Wilmot, 2010). This entails a commitment to the principle of public knowledge commons in which knowledge of sustainability is not privatized, but shared among those wanting to learn new sustainability practices.

In RCE Rhine-Meuse, Rikers & Hermans (2008) observed that opening space and providing information might be insufficient. Even with general willingness of the partners to share knowledge and engage in joint actions, working under a collaborative model is not easy. The RCEs take an active role in making partners aware of similarities and differences among partners' policies and visions, goals, decisionmaking cycles and ways of funding, thereby facilitating acceptance of compromises and synergies among their agendas.

The RCE development, like the development of many inter-organizational networks for sustainable development, is an emerging process, full of unexpected developments and unintended consequences that can hardly be seen as a straightforward act of planning and management (Box 1.6). Mobilization requires more time, analysis and experimentation than is commonly recognized, particularity when actors are diverse, and/or have little experience of prior collaboration or limited experience in the issue selected for collaboration. These challenges are faced by the RCE community globally.

With the formation of any consortium, there is always the danger that engagement of new partners can become problematic or that new partners will not fully engage in negotiating strategies and courses of action. Such developments would be unfortunate for RCEs, where the goal of continuous engagement of members is of utmost importance. Meeting the challenge of expanding boundaries and deepening the engagement of new stakeholders is crucial for continued RCE strategic development. New partners can be engaged through regional events or projects and through an explicit statement of open membership.

Reflections

Intra-RCE Communication

RCE Saskatchewan, since its acknowledgement in 2007, has tried to promote dialogue and communication within the RCE in several ways. The initial RCE ESD Recognition Event in 2008 allowed the RCE to help ESD projects throughout our region self-identify for recognition; in addition, RCE coordinators, partners and supporters assisted in this identification. Bringing these groups together annually, yet in different cities and towns each year, allowed for common educational opportunities and challenges across broad types of SD theme areas to be documented. The RCE has frequently sought to have major ESD conferences sponsored by different communities or higher education partners alongside these recognition events to meet the specific needs of these partners. As RCE-partnered events, the expectation is that these be open to diverse regional participation. In doing so, the RCE frequently has brought in ESD leadership from outside the region (e.g. other RCEs such as RCEs Tongyeong, Greater Western Sydney, Greater Portland and Grand Rapids, UNESCO, Environment Canada, and sustainability organizations such as ESD Canada, Learning for a Sustainable Futures Foundation (LSF) and the Sustainability and Education Academy.

These national, provincial, and regional members participate actively in these events and then meet intentionally one-on-one with specific partner organizations, normally in multiple communities during a single visit. The RCE has actively sought to serve its partners by seeking to build ESD structures and supports within their own organizations, providing ongoing expertise to the higher education partners in doing so and, in some cases, being formally represented on the new internal sustainability committees that are formed. We have focused on bringing unique challenges and opportunities together to help give voice to communities and advance ESD research opportunities. This includes our flagship communities advancing living laboratories for ESD, the RCE's work with First Nations and Métis communities, and the recognition and visibility provided these communities through the RCE's patron, the Lieutenant Governor of Saskatchewan.

Lyle Benko and Roger Petry
Co-coordinators, RCE Saskatchewan

Box 1.6
Critical Factors of Networking

Studies of organizational partnerships and networking indicate critical factors that can potentially contribute to the success of collaborative undertakings (e.g. Bizer & Julich, 1999; Fadeeva & Halme, 2001; Weber, 1998). Among those are: credible commitment, clarity of goals, clearly understood responsibilities, involvement of relevant stakeholders, setting of immediate targets, monitoring of progress, and establishment of incentives. These factors became some of the principles for guiding RCE candidates through an official acknowledgement process that was introduced in 2006 to provide greater transparency and accountability as well as better guidance to the candidates. The criteria for acknowledgement of RCEs reflect many of these critical factors related to the composition of the networks as well as strategies of partnership development. ■

The Global RCE Service Centre at UNU-IAS facilitates development of thematic networks for RCEs, such as climate change, biodiversity, health, traditional knowledge, sustainable consumption and production, and teacher education. The RCEs can propose new themes to be jointly addressed by the global RCE community and call upon other RCEs to join their effort. Interested RCEs then identify organizations with expertise in the thematic area (e.g. health) that are willing to take the lead in their regions. As a result, new partners enter the field of ESD and join the RCE networks through different "thematic doors".

More recent examples of such global mobilization are also demonstrated by individual RCEs. In South Korea, RCE Tongyeong offered leadership for thematic engagement under the umbrella of the Sejahtra project, supported by the Asia-Pacific Continental Platform. Sejahtra, which signifies sustainability in the Asia-Pacific region, invites the RCEs to focus on nine priority areas with the goal of strengthening partnership and promoting ESD towards and beyond 2014. RCE Tongyeong has established the Sejahtra Centre to serve as the facilitating entity of the project.

Bridging historical and institutional divides

The RCEs have demonstrated their potential to bring together partners that are historically or institutionally divided or that might benefit from the additional synergies among partners and sustainable development-related processes. RCE Rhine-Meuse served as a bridge between formal and informal education practitioners as well as, initially, among three countries that overlap its region. Through facilitating understanding of the role of education and learning vis-à-vis regional and global sustainability actions, RCE Makana and Rural Eastern Cape paved the way for stronger engagement between ESD and sustainable development communities. In RCE Saskatchewan, development of new ESD models built around different forms of knowledge helped bring together urban and rural partners that had not closely collaborated in the past. An example of such engagement is the work of university students with holders of traditional practices in a course in which learning from indigenous traditions was scientifically reflected and deliberated by both communities, resulting in understanding and deeper appreciation of such practices as well as exploring the ways of sustaining them. RCE Bogota is consistently working on the organization of educational fora and workshops that engage sectors of the population that are generally not covered by formal education. According to Olga Guerrero, coordinator of the RCE, "the RCE is ... able to establish a productive dialogue of knowledge between academia and the experience of common people to jointly create new knowledge about environment". RCE Lima Callao has created an innovative engagement between learning in indigenous communities and contemporary education in schools and universities. The RCE has established a diploma course in which representatives of the indigenous communities participate as educators in university programs for higher education students and the communities at large.

Linking theory and practice

A broad consensus exists on the notion that HEIs bear an important responsibility for generating the knowledge base for finding solutions to society's pressing problems. In addition to contributing, directly and indirectly, to technological advancement and policy development through basic and applied researches, HEI partners in RCEs can undertake action-oriented research that emphasizes research and learning as a means of modifying or encouraging new action (including pedagogical practice in HEIs), rather than as a way of generating knowledge per se. In addition to providing and enhancing outreach services to communities, HEIs can employ a scholarly approach to teaching and learning for SD. To achieve this, HEIs can use action-oriented research to develop their own capacity to engage in transformative ESD. While HEI partners in RCE efforts are employing action research to facilitate the unfolding of change towards sustainable development, there is a growing realization of a real need for rigour in the scholarly engagement with practice in these instititutions (see, for example, an analysis of competences in relation to change and learning in the complex sociocultural and materials contexts presented in Chapter 5.)

Learning for a sustainable future is best organized around a shared regional challenge. Action research can be understood as a way to locate learning within ongoing programs and projects in the region, and an RCE scheme gives HEIs an ideal setting and necessary linkages to carry out action research effectively. Action research on issues of immediate concern to local communities allows RCEs to explore locally appropriate innovative solutions while enhancing local stakeholders' understanding of the local sustainability challenges and building their capacities to address them.

The RCE initiative allows local stakeholders to identify and include the needs and interests of a wide range of social groups in the region and combine a repertoire of resources that aid the promotion of ESD at the local level. A global network of RCEs will combine these repertoires of resources and form a Global Learning Space. In emerging thematic networks of RCEs, HEI partners are taking the lead in designing collaborative R&D projects across RCEs located on different continents. With the very nature of its work being one that transcends geographic boundaries and is embedded in their regions as large-scale employers and purchasers of goods and services, HEIs are in a unique position to link global and local on the one hand, and theory and action on the other. Institutions of higher learning can play a critical role in turning RCEs into dynamic learning networks based on practical application of theoretical knowledge and the dialectics of the global and the local.

RCE as Coordinator

Whatever challenges a region faces, and however its RCE addresses these challenges, the success of RCEs, individually and collectively, depends on the appropriate facilitation and support of the network. According to Human & Provan (1997), two dynamic aspects of a network structure, administrative and interactive, serve the network in different ways. The two structures exist simultaneously but may develop to different degrees in different networks. The administrative structure, which includes lines of communication, guidelines for decisionmaking, and action, de-

livers specific objectives quickly and efficiently. The interactive structure – more subtle and difficult to define – assists in delivering understanding and consensus, particularly in the face of ambiguity.

The benefits of strong administrative coordination might be realized in a situation in which members compete for influence. In the case of RCEs, competition might occur over a particular activity or for overall influence in the network. Efficient coordination is also helpful if the network partners represent organizations from different sectors (e.g. education, business or civil society) or have not had much experience of prior collaboration. Stronger coordination may be needed in an area with historically weak collaboration among institutions, but one must not forget that the roles of the RCEs are far broader than management of activities in a strict controlling sense.

The RCEs support activity through communication and coordination, as well as through assistance in conceptual development of the intra- and inter-RCE collaboration. With this in mind, the Global RCE Service Centre requires RCE candidates to collectively define elements of the coordination structure at the initial stage of RCE mobilization. Of course, the initial structures may become modified and roles redefined as RCEs develop. In their coordinating structures, RCEs demonstrate creative combinations of general rules and flexibility.

Early results showed that RCEs have indicated a potentiality of shifting power from traditional regional governance models. For example, RCE Saskatchewan noted that the decentralized working-group-oriented model of operation leads to leadership development among RCE members, in that they initiate and carry out activities and participate in strategic decisions. This model is in contrast to traditional administrative top-down models of public and private organizations of the region.

RCE Makana has viewed RCE practice as "experiments in social learning" after Glasser (2007), to allow a critical engagement with globalizing narratives while giving prominence to local small-scale experiments in change-oriented sustainability practices (Lotz-Sisitka et al., 2010). The experiments the RCE has implemented in small-scale change practices have provided a positive sense of creative agency and change towards a more sustainable future.

RCEs as Facilitators of Social Learning and Transformation

Recent decades have been characterized by uncertainties and a high reliance on information, knowledge and innovation. Alongside the popularization of the language of the knowledge economy, a discourse of "knowledge management" has emerged, first, in the corporate sector and, more recently, in the work of development cooperation agencies (King and McGrath, 2004). While some localities are experiencing rapid economic growth, others are struggling with underdevelopment or stagnation. In both developed and developing countries, changes are difficult to anticipate and even more challenging to control. This situation calls for knowledge creation through active collective learning rather than prescriptive transfer of codified

Box 1.7
Examples of RCE Governance and Coordination Strategies

RCE Saskatchewan developed a management and governance structure that takes

cont. ▶

advantage of both administrative and interactive elements. There are overarching rules for man-agement of communication, agreed general goals and objectives, strategies for funding support and reporting. Decisionmaking, however, is not centralized. The RCE, from its inception, has employed a lightweight structure of facilitative theme-based working groups built on volunteerism with an intentional strategy of modularity. Through this modular and decentralized approach, the RCE's partner organizations commit to and take ownership of specific ESD projects while inviting other RCE partner organizations and members to participate. In this way resource costs required of the RCE are minimized. RCE partner organizations, in turn, see themselves as the RCE, as opposed to the RCE being viewed as a separate organizational structure. As such, they see themselves as part of a regional movement for ESD in Saskatchewan. (R. Petry)

The work of planning and carrying out the different educational forums and workshops by RCE Bogota is collaborative, cooperative and accomplished through an interdisciplinary team of RCE members. Until now there have been 40 such forums and workshops, with an average attendance of 200 participants per event. This is the strategy that holds together sustainability and ESD actions in the region, especially as such events engage a percentage of the population that is generally not taken into account as part of formal education. The RCE is able to establish a productive dialogue of knowledge between academia and the experience of common people to jointly create new knowledge about the environment. (O-M Bermúdez Guerrero)

In the case of RCE Greater Western Sydney, a delegate of each partner forms the Steering Committee with a revolving system in which each of the key collaborators takes a two-year turn holding governance and administrative responsibilities. Continuous quality tracking and documentation of improvements became a key strategy for RCE coordination. It helps the stakeholders see how the RCE and the impact of its work look like in practice. It also helps them make sense of what they are doing and see the bigger picture of RCE operations and where their work fits in. (G. Scott)

The Okayama ESD Promotion Commission was formed as a governing body of RCE Okayama. It consists of the Commission Council, the Steering Committee and the Secretariat (City of Okayama), and undertakes significant roles in formulating the basic direction of the Okayama ESD Project – designing and supporting ESD activities in the region, promoting cooperation and interaction among organizations involved in ESD, as well as performing liaison and coordination duties. The Commission identifies and designates priority organizations as core members of RCE Okayama, which include local schools (elementary, middle and high schools), universities, *Kominkan* (community learning centres), NGOs, civil society organizations, local media, and the private sector. The number of priority organizations, starting with 48 when RCE Okayama was established in 2005, steadily grew to 166 by the end of 2013. The priority organizations, while carrying out ESD projects, are mentored and supported by the core organizations, and intermediately support organizations that have expertise and competencies in ESD. Setting a formal mechanism in place, RCE Okayama forms an inclusive and flexible network that allows participation of a diverse group of new actors. (S. Yasuda)

RCE Penang has a council of RCE stakeholder representatives, with an Eminent Persons Group and a Specific Taskforce for identified issues alongside the Council. An Operational Taskforce provides for implementation of the sustainability and education dimensions of programs. (M. Ghazali)

At RCE Waikato the engagement with potential collaborators proceeded through face-to-face meetings backed up with information. Discussion with Māori partners was a priority, both in tribal communities and in the university. Partnership and collaboration may be expressed through different governance options an example of recognizing the indigenous.

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knowledge. Ultimately, it requires relations based on partnerships for collectively sharing, generating and testing rather than the traditional principles of efficiency and control attributed to a hierarchical community. The concept that best characterizes such partnerships is "community of practice" (Lave and Wenger, 1991; Wenger, 1998).

As outlined earlier and through interactions with local stakeholders' responses to the RCE strategy, the UNU conceptualization of RCEs has changed over time. Some local promoters of RCEs came to characterize RCEs in ways that were not originally intended. At one end of the spectrum of RCE interpretations is the image of an RCE as a hub to promote ESD, a meeting point, a link point, a clearinghouse, a knowledge broker, and a platform for information exchange and sharing. This is close to the initial UNU conceptualization of an RCE, which serves the purposes of knowledge management, knowledge transfer, and delivery of ESD to the community. Such conceptualization tends to focus on the technological aspects of knowledge sharing such as database development and website construction, along with face-to-face communication.

At the other end of the spectrum is the interpretation of an RCE as a community of practice, an institutional mechanism for social learning and a learning network. In contrast with the knowledge transfer model, which emphasizes the role of knowledge-related institutions, the social learning model views RCEs as sites for learning, presupposing the existence of conflicts of interests and views among different stakeholders and seeing the potential of a network in the very fact that each partner contributes differing perspectives to the network.

If the emphasis of the knowledge transfer model is the dissemination of existing knowledge, the emphasis of the social learning model is the creation of new knowledge through active, contextually grounded learning. At this stage of development, many RCEs are still in the process of taking an inventory of ESD-related activities in their respective regions and mapping expertise and resources to be shared among the partners. RCE evaluations unfolding around the globe are the testament to this process (see Chapter 7 for more details). While improving technological aspects of knowledge sharing remains a major challenge for many RCEs as well as for the Global RCE Service Centre, RCEs are encouraged to look also at social aspects of knowledge sharing. Both the partners of individual RCEs and the network of RCEs can be understood as forming not only knowledge management systems but also communities of practice, which share a commitment to ESD, interact and learn together, and develop a shared repertoire of resources that facilitate action for a sustainable future.

status of Māori in the RCE governance structure, along with representatives of other collaborator organizations.

In the context of Aotearoa, New Zealand, for example, a principle for partnership is to involve Māori in governance or in a way that accords with indigenous partner interests and priorities. Possibilities include establishing a Māori Advisory Council to sit alongside a governance Board representing collaborators. This model may be implemented through a Memorandum of Understanding, so that the Māori Advisory Council is involved for agreed-upon matters such as decisions about access to the Waikato River (a major feature of Māori territorial interests), and specialist initiatives, such as in law for sustainability and engagement in policy development.

A further model is to structure Māori representation on the governing board. A board with 50 per cent representation of Māori is sometimes proposed as a counterweight to the dominance of introduced democratic systems. All of these are aspirations of RCEs; however there are systems underway to address these challenges that need to be respected. No doubt there will be convergences as RCE programs take shape. *(B. Martin)*

There is no denying that development of the theory and practice of knowledge management has served as one cornerstone of situated and local capability-centred sociocultural practices deliberations in some RCEs. Based on the jointly identified challenges of the region, as well as an understanding of ongoing efforts and an agreement on joint actions, the RCE partners engage in change-oriented practices. Established RCEs demonstrate evolution of actions and governance in the course of a collective search for the RCE role in their regions. The RCEs become an interface between local and global actions and strategies struggling to make sense of dominant and evolving discourses and probing power structures, economic models and development frameworks (Lotz-Sisitka et al., 2010). Knowledge exchange and generation evolve around actions designed to address an RCE's goals, while peer reviews and research-based reflexivity are embedded in its actions and experimentation.

Coexistence of Different Models and Understandings

Evolution of the RCE concept does not mean that a single understanding of the concept or associated practices prevails in different regions. Rather, different notions are preferred and govern praxes of the stakeholders. Mobilization might be taken as the key RCE function where collaborative alliances around a sustainability agenda or questions of education are not well developed. Coordination could be more appreciated where partners of several blooming initiatives search greater synergies. Collective learning and transformation might come or emerge as an evolving appreciation of diversity and learning as a strategy of change.

Coexistence of different perspectives is clearly acknowledged by the RCE community as a strength, securing not only potential for cross-fertilization but also resilience of the sustainability solutions coming from the RCE network as a whole.

Development of a Global Network of RCEs

In April 2006 UNU-IAS organized an International RCE Conference in Yokohama, Japan. More than 100 participants, mainly representatives of acknowledged RCEs and RCE candidates and experts, gathered at the conference, exchanged their experiences and held thematic discussions on issues related to RCE development, such as networking and collaboration among RCEs. To make the process of acknowledging RCEs transparent and accountable, the Ubuntu Alliance, in its meeting held in conjunction with this conference, established a Committee of Peers for the RCEs to discuss ways to promote RCEs, to review applications and provide recommendations to UNU on acknowledgement of new RCEs. Today there is a formal process to apply to become an RCE and the process is open to all interested parties. Furthermore, UNU-IAS has established a Global RCE Service Centre to provide assistance to individual RCEs and facilitate communication and networking with and among them. With the expansion of RCEs across the world, both geographic and thematic networks of RCEs have been established. From 2008, as the result of an RCE-driven process, several thematic areas have been complemented by collaborative strategic and operational discussions (Box 1.8).

As the formal process to become an RCE is established and the number of RCEs increases, there are more and more calls for the Global RCE Service Centre to assist in strengthening the intra- and inter-RCE linkages and clarify the benefits of being part of the RCE community. UNU-IAS, in its capacity as the Global RCE Service

Box 1.8
Thematic, Strategic and Operational Areas of Collaborative Work of RCEs

- Climate Change and ESD
- Health and ESD
- Teacher Education and Better Schools
- Sustainable Consumption and Production (SCP) and Sustainable Livelihoods and Well-being
- Youth and ESD
- Higher Education
- Traditional Knowledge and ESD
- Biodiversity and ESD
- Disaster Risk Reduction and ESD
- Inclusive Development and Learning
- Capacity Development
- Appraisal of RCEs
- Research and Development
- Governance and Coordination
- Engagement with Policymakers
- Fundraising and Marketing
- Communications and Outreach
- Engagement with International Sustainability Processes

Centre, has increasingly encouraged RCEs to set up geographic sub-networks of RCEs as well as engage them in carrying out R&D collaboratively to create a Global Learning Space, understood as co-engaged learning among RCEs and between RCEs and other communities of learning and practice. The Global RCE Service Centre, however, does not play a strong coordination role in promoting networking among RCEs at the national, subregional, regional and international levels or around particular themes. Rather, it attempts to provide guidance and encourages some RCEs to take the lead in facilitating collaboration among RCEs both geographically and around specific thematic issues, such as teacher training, sustainable use of energy, sustainable production and consumption, and sustainable health.

RCEs recognize their unique position as grassroots multistakeholder networks, with distinctive capacities for research and innovation that can revitalize education at all levels through flagship projects. As regionally based yet globally connected networks, RCEs form a global learning space on ESD, working to ensure that all individuals have the opportunity to learn the values, behaviours and lifestyles required for a

Reflections

The concept of communities of practice was rapidly popularized and its populist appropriations abound today, but it does not negate the value of this concept in ESD/RCE efforts. Wenger (1998, pp. 51-71) emphasizes the duality of a community of practice – it has both a designed and emergent nature, a local and global character, identification and negotiability of issues, and participation and reification within it – which resonates with the RCE community.

Reflections

Why do I stay with the RCE network even though I have already been retired for five years?

- *Because the RCE network is the only global network that I know of in the field of ESD working so decisively at the grassroots level, avoiding an overflow of bureaucratic procedures and traditions.*

- *Because RCEs and the RCE network rely on individuals and their personal drive and enthusiasm instead of being only an institutional network. Continuity in the sense of institutional sustainability will always be given attention in the RCE network. I want to contribute to this.*

- *Because the RCE community has a talent for attracting wonderful and dedicated people!*

- *Because I am aware of the continuous changes in visions and strategies that exist at many RCEs, due to the changing needs of regions. This may need the continuous participation of people like me, who keep organizational memories of the past.*

- *Because I see a huge potential for this network in the future, and I want to contribute to it. I hope that we will continue to understand the opportunities and the needs in the field of ESD in every individual home region. I want to contribute to the work at the grassroots level. I consider this our unique selling point, which will distinguish us from all other initiatives.*

Jos Hermans, RCE Europe advisor

sustainable future and for positive social transformation. Its gradual maturing encouraged the RCE movement and its facilitating agencies to further engage with communities representing sustainability and ESD policies and practices, forming various clusters of engagement. Such work, however challenging, together with the capacity development of the RCE community, presents the key strategic direction for the future (see Part II for more in-depth reflections on the vision of the RCE community).

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Part II
RCEs: The Present

RCEs work continuously on a system that offers an opportunity for inclusion and collective reflection, and processes enabling the redesigning of goals, roles and actions for development – a system that can potentially address the fragmentation of the sustainable development agenda. Part II raises the following questions: What happened since the RCE concept began capturing the attention of regional champions 10 years ago, resulting in the acknowledgment of 129 initiatives? What results, learning and aspirations does the RCE concept bring? How can it capture the complexity of this global initiative, going beyond predefined and external expectations?

Building on the characteristics of RCEs described in Part I, Chapter 2 explores these further as well as the processes associated with RCE collaborations. It also explores the characteristics and processes in relation to the development focus. Going beyond normative postulates of the RCE concept, the chapter also brings to the fore the challenges of sustaining and increasing actions of RCEs, while expanding partner engagement. Once the initial hurdles of network consolidation and acknowledgement have been addressed, the chapter explores the effort to shift from collective projects to processes and to assessing the RCE's own efforts.

Chapters 2, 3, and 4 explore interconnections between multistakeholder learning initiatives and global sustainability processes, taking as examples issues of

biodiversity and traditional knowledge (Chapter 3) and sustainable consumption and production (Chapter 4). RCE contributions to policy development through engagement with policymakers, and influencing development and implementation of sustainability and ESD programs and projects are further elaborated upon, with reference to many examples in Chapter 6.

Stepping out of the popular discourse of competences, Chapter 5 takes a critical look at transformative learning against the backdrop of the competences framework popular within the ESD community. It examines more open-ended, situated and reflexive learning unfolding within the RCEs – learning that is as effective for addressing complexity of sustainability as it is for mobilizing communities.

Evaluation of sustainability is a complex challenge, overlaid with ideological discussions on the consideration of goals, players and results of such a process. It is particularly complex when one deals with the effects of learning. The efficacy of RCE actions and their impacts are contingent upon the RCE, and the global RCE community at large, being strong, resilient and having the wherewithal for engagement, thus enabling evaluation. This topic is discussed in Chapter 7; the chapter narrates the foundations of the RCE evaluation approach as a process of collective learning through self-assessment, a process that, being imperative and facilitative, leads to empowerment of the RCEs and the regions.

Chapter 2

Capacities and Learning for Multistakeholder Partnerships and Sustainable Development

Zinaida Fadeeva and Unnikrishnan Payyappallimana

This chapter demonstrates how sustainability aspirations and ESD principles of the RCE community, as well as some of their strategies and projects, contribute to the development of capacities of the regions to address the complex risks of sustainability while contracting some of the challenges of development. RCEs, being cross-sectoral and multidisciplinary networks, develop learning interventions informed not only by a variety of perspectives but also principles that preclude pre-designed answers and short-term solutions. Through their local, national and international linkages, they open spaces and draw inspirations from various and often unexpected fields. They deal with competences and capabilities in the context of regional learning including those that are necessary for developing and sustaining multistakeholder partnerships of sustainable development (SD) and ESD. Though the ideas explored in the chapter are based on field level experiences and case studies and not a theoretical narration of capacity development, they have been refined through an inter- and intra-RCE sharing and learning process. Such experiences have been codified, experts have been identified and capacity development tools have been developed systematically on strategic and thematic areas. Let us explore these experiences and ideas in greater depth.

Addressing Fragmentation of the Development Agenda

The sustainable development agenda in local contexts remains fragmented owing to the complexity of development challenges and, often, the specialized sectoral or disciplinary interventions. Some criticisms of development efforts shed light on the lack of coordination that results in development challenges being treated separately and, as a result, disregard critical synergies that exist among them. The problem was well identified early on in SD discussions, both at the level of global policymaking as well as in the context of local practices. In *Our Common Future* (WECD, 1987, para 75), the chapter titled "Towards Sustainable Development" states:

> ... inter sectoral connections create patterns of economic and ecological interdependence rarely reflected in the ways in which policy is made. Sectoral organizations tend to pursue sectoral objectives and to treat their impacts on other sectors as side effects, taken into account only if compelled to do so. Hence impacts on forests rarely worry those involved in guiding public policy or business activities in the fields of energy, industrial development, crop husbandry, or foreign trade. Many of the environment and development problems that confront us have their roots in this sectoral fragmentation of responsibility. Sustainable development requires that such fragmentation be overcome.

The document goes on to say that the problems in a complex system of cause and effect cannot be handled in compartments by fragmented policies or institutions working in silos.

Many years later, the challenge remains. For example, a compelling cross-sectoral analysis of the Millennium Development Goals (MDGs) by the Lancet Commission pointed out that with narrowly defined and fragmented goals of the MDGs "the potential linkages and synergies that exist between sectors proved difficult to exploit" (Lancet Commission, 2010, p. 7). The authors of the report further pointed out that "convergence is made less likely by the reality that goals are compartmentalised into responsibilities of different line ministries nationally, subnationally and locally" (ibid, p. 9).

In such a milieu, the cross-sectoral, multistakeholder and multidisciplinary educational interventions, through local and regional networking and their vertical linkages with both national and international perspectives and goals, become imperative. This not only creates opportunities for more coherent work on SD issues but also opens spaces for collective reflections and consolidation of local action. Opening of such spaces creates additional opportunities for inclusion where agenda and roles of partners can be renegotiated, avoiding conventional institutional constraints. Though challenging, such integration is an evolving and dynamic process, the progression of which is highly linked to collective learning, both social as well as problem-based, through a systematic process grounded in ESD principles. This not only warrants specific capacities of shared governance but also negotiating through multiple and diverse value positions of partners.

Innovation embedded in the RCE idea relates to the establishment of a cross-sectoral partnership and coordinating structure to pursue a range of issues rather than leaving individual challenges to the partners who, traditionally, take responsibility for these issues.

RCEs have demonstrated how, through their work, a broader developmental focus springs to life. Having productive livelihoods addressing individual as well as societal needs and overall well-being, while assuring conservation and the sustainable and equitable use of resources, is the foundational premise of development understood and collectively agreed to by the RCE community. Understanding of the interconnections between the knowledge history and resources to advance more sustainable production and consumption systems is seen, for example, in RCE Lucknow, and in RCE Makana and Rural Eastern Cape (Chapter 4). In the activities facilitated by these RCEs, people are given opportunities to enhance their livelihood beyond market options that are immediately available to them while negotiating regulations that govern current livelihood activities. Actions of RCEs Vienna, Greater Western Sydney, Delhi and Hamburg seek development of entrepreneurial skills that facilitate sustainable businesses, promote more sustainable products, or address running a business in environmentally sensitive locations. Such capacity development empowers future entrepreneurs by exposing them simultaneously to the fields of business, development and sustainability, as well as to the respective knowledge communities – something that is not often combined in the conventional practices of entrepreneurial development. Similarly, encouragement of sustainable lifestyles also benefits from bringing together areas of action and from finding synergies among the various fields, which often fail to be explored. These areas, for example, relate, on one hand, to one's ability to consume and to earn market income and, on the other hand, to critically influence, as a consumer, management of the product or selection of the service. Ability to address broader areas of relevance for livelihood, ecosystems and development of human potential were demonstrated, among others, by RCEs Saskatchewan, Greater Phnom Penh and KwaZulu Natal (Chapters 3 and 4).

Box 2.1
Information and Activities required for Recognition of the RCEs
(Adapted from the instructive document, UNU-IAS[1])

- Analysis of the major characteristics of a region – environmental, sociocultural, demographical, economic, educational – and its main sustainable development challenges.
- Clear and specific RCE vision, long-term and short-term objectives, strategies, and scenarios to achieve the vision and objectives.
- Governance and management, including evidence of a mobilization process to develop the RCE, commitment of key stakeholders, identification of the RCE's governance principles and management structure, resource arrangements, and assessment strategies.
- Identified collaboration among regional and local stakeholders, including involvement of higher education institutions, local schools, non-formal and informal education stakeholders, and those from other sectors, as well as identified joint activities among the partners.

Multiple projects form RCE portfolios across the globe, of which we mention just a few, showing how cross-sectoral consortia in the localities create opportunities for more coherent work with SD issues, including with complex constellations of risks, are illustrated in greater depth in the following chapters (Chapters 3, 4 and 5).

We argue that preconditions for bridging an intrinsically fragmented development agenda comes from several factors that govern the work of RCEs. To begin with, an RCE's goals and ambitions emerge as a result of multistakeholder consultation

1 http://archive.ias.unu.edu/resource_centre/Guidelines%20for%20RCE%20applications_1.pdf

at the stage of mobilization (Box 2.1), where partners are required to collectively define the goals and link them to development priorities of the region and/or country. The process of RCE mobilization is seen, in itself, as an empowering and enabling process where partners receive an opportunity, supported by legitimacy of the larger global RCE network and by the presence of UN supporters, to respond to the regional challenges in different and potentially more innovative ways. As shared by RCEs Waikato and Portland (Box 2.2), mobilizations highlighted, *inter alia*, importance of shared values and vision, accepted governance principles and careful strategizing and planning – principles that become key insights into continuous operations of the RCEs. Mobilization helps partners understand the challenges of ongoing approaches to sustainability in terms of their importance ("the vision of sustainability has been devalued particularly by some sectors" RCE Waikato) or approach (prioritization of sectoral actions), finding appropriate strategies ("finding a compromise between stakeholders focusing on (initial) clarification of concepts and missions and those wishing to move more quickly into implementation" RCE Portland) and identifying modalities of collaboration.

While mobilization under the RCE guiding principles itself appears to be offering opportunities for collective learning and experimentation, the mentorship model of support from the established candidates provides additional ideas and insights to the leaders of emerging RCEs. For example, the shared experience of RCE Greater Western Sydney has helped to resolve, in the case of RCE Waikato, some initial challenges with respect to shared resources, ambitions and strategies – elements that have to be considered afresh when applied to the goals and agendas going beyond individual organizational boundaries.

A quick insight into the stage of mobilization for more integrated collaborative sustainability actions provides an understanding that emergence of a joint sustainability agenda still may not be sufficient unless deeper collaborative processes, a different collective focus, or a set of joint principles come into play. Some RCEs have demonstrated how overarching goals assure that engagement across partners' agendas is done with a genuine understanding of regional issues. In these cases, themes such as those presented by the examples of RCE Gothenburg or Pune emerge, with the partners focusing on qualitatively new goals – change of regional culture towards a more sustainable one (RCE Gothenburg) or pursuit of new forms of collaborative governance across the board (RCE Pune). As a result, partners aspire to step out of pre-formulated agendas into more integrated actions, which is, ultimately, a critical innovation. Chapter 1 highlighted some of the strategies the individual RCEs as well as their international partners such as UNU-IAS employ to sustain ongoing engagement beyond the initial mobilization processes.

Box 2.2
Challenges and Lessons of Mobilization

RCE Greater Portland

RCE Greater Portland is a new and growing cross-sectoral network of 80 colleges, school districts, non-profits, governments and industry partners committed to education for sustainable development in the greater Portland region. From environmental education alliances and the Oregon Zoo, to social sustainability groups and green architecture associations, Portland has a plethora of active sustainability groups. This offers both opportunities and challenges in our development and mobilization process.

While we have the advantage of not having to create a lot of new programs from scratch, we face a challenge to develop a container big enough to convene and support the many groups in the region. Given that there are many existing sustainability coalitions and leaders, we have to be careful to honour and

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respect the good work already in place. We offer a nexus for collaboration and cross-pollination, and strive to not violate any group's sense of ownership of mission, identity or geography.

We have, therefore, tried to offer a variety of stakeholder events and have done a great deal of outreach to diverse groups to identify shared goals and projects, which align with regional research and sustainability plans. We have found success in conversations that support win-win models that build on regional objectives and help implement organizational and institutional sustainability education goals. Collaboratively, we have developed a vision to "create a healthy, just, and thriving region where sustainability education is prioritized and integrated across sectors; and where everyone has opportunities to shape a more sustainable future". We are committed to innovative education, transformative research and hands-on learning for all. We plan to help do an asset analysis of the region, create a comprehensive resource inventory and offer engaging projects based on the needs of the community.

During RCE Greater Portland's development and mobilization process, we have learned many lessons. The urgency and enthusiasm we felt to establish partnerships, complete our application and begin addressing regional challenges, capitalized on existing expertise and opened doors to immediate collaboration. We also discovered varying group dynamics due to different preferences for organizational styles, with distinctions between process and action. There were some who recommended taking more time to talk about concepts and think through our mission and strategies before taking actions, while others wanted to move more quickly into implementation. Finding a balance between the different styles took time, as both are important. We chose to establish a baseline of goals and ethics and began to take some actions while working on clarifying our strategic plan. Having the opportunity to engage in some concrete projects facilitated participation, allowed us to pilot some models, and demonstrated our contributions to the community, while integrating reflection on how efforts can be improved. *(K. Smith)*

RCE Waikato

The Waikato experience of mobilization offers a number of key insights. They include the importance of an ethical foundation, the primacy of partnering with Māori, and of the importance of building *kaupapa* (Māori principles) into governance and programs. For effective collaboration, face-to-face engagement is a priority, and shared leadership (in our case RESPONSE, which is an independent organization, and Waikato Management School) brings greater capacity for negotiation for ensuring a shared vision and for ensuring that partner interests are represented. Collaboration offers a means of responding to the opportunities that are calling for action, to challenges to be overcome and to the practicalities of delivering on the vision.

Collaboration: Value-added benefit and negotiated goals

Collaborative work is a lodestar of sustainability. Collaboration is more easily achieved for a single issue, such as freshwater, than the rich vision of working together across a constellation of sectors and disciplines as matters of practice. The leadership team from the University of Waikato and RESPONSE met face-to-face with Māori groups and with each of the organizations we approached for collaboration. Twenty-five organizations were represented at the round-table event to discuss the value-added dimensions of the potential RCE, and some of the main aspects were as follows:

- The approach of sustainability is supported but there is recognition that the vision of sustainability has been devalued particularly by some sectors that are predominately accountable to their stakeholders for short-term outputs.
- Working with an ethics of responsibility brings a clarifying framework to education for sustainable development and support to the paradigm of transformation in education. Responsibility refers to accountability, in the

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sense of giving an account of the human and environmental effects and impacts of economic activity. It also means responsiveness, with the relational dimensions of interdependence, the sense of shared destiny, and of human contribution to the well-being of the planet.

- Professional development for transformative education across sectors and disciplines is seen as beneficial and necessary as this is not an area regularly included in the general educational curriculum, nor resourced by the State.
- The statutory framework of regional and local government is oriented to environmental data sets, and RCE Waikato is seen as bringing additional capability to the data fields, especially the social and economic areas.
- The global network of RCEs is seen as beneficial for the university, which places high value on international academic linkages.

Two members of the leadership team visited RCE Greater Western Sydney as part of the preparatory process. This visit was a great opportunity to see the value-added dimensions that are evident in the farm restoration project at the Hawkesbury River, which involves building skills, technology, agriculture, indigenous involvement and river restoration. We noted that funding opportunities are enhanced by the RCE platform.

The value-added quality of collaboration comes from shared goals that help to transcend organizational self interest, a clear articulation of specific activities which are difficult to achieve alone, access to a wider constituency of expertise, and the benefit of greater impact.

Addressing Challenges

The RCE Waikato round-table meeting showed both possibilities and tensions in collaboration; tensions came from different perspectives and organizational interests. These are themselves the seeds for learning and productive engagement. Collaboration is time-intensive, needs commitment to long-term engagement, and requires leadership.

Round-table participants posed the question of resourcing, including funds, leadership and institutional resourcing such as an office and information technology (IT) support. The interest of organizations in an RCE is tempered by questions of funding. It was helpful to refer to RCE Greater Western Sydney's experience of the effectiveness of the RCE platform for raising funds for projects. RESPONSE and the Management School of the university contributed funds for preparation of the proposal. A good deal of voluntary time and expertise was also given.

Learning

Careful planning with a strategy for collaborator engagement is important. Collaboration requires significant skills of interpersonal respect and the ability to manage differences of views constructively. When bringing a larger group together, as in our round-table, skilled facilitation is important – with an emphasis on appreciation for all contributions, respect for different views and priorities, and ability to steer creatively forward.

Value of the Mobilization Process

Presenting a proposal to collaborate to the university, local government and community organizations, schools and businesses is a demanding process. We tapped into a profound interest in transformations to sustainability that few organizations are resourced to mobilize. The mobilizing process establishes a base to anticipate collaborative endeavours and alter competitive processes. The preparatory process lays the ground for activating collaborative programs.

While the importance of collaborative governance is widely acknowledged, there are few examples of effective practice. We are starting research on collaborations. With the advantage of drawing on the experience of other RCEs, we look forward to implementing collaborative governance and providing a case study to be shared with other organizations. *(B. Martin and the leadership team of RCE Waikato)* ■

Fostering Shared Goals and Value System

While the volunteerism approach of RCEs (Chapter 10) makes them flexible in addressing the issues of shared goals, value divergence among partners is a key challenge in building multistakeholder partnerships. The challenge emerges from the fact that the ideologies and motives may vary among diverse actors such as academics, civil society organizations, state departments and businesses. At the same time, creation of a collective identity and co-creation of knowledge through inter-organizational networking (duties, rights, entitlements etc.) also present a demanding undertaking. Internalizing the need for collective action as a networked community engaged in diverse social learning and change initiatives and identifying shared frames of reference on local issues are the first steps towards this.

Formulation of the overarching goals, as has been pointed out in the previous section, could be a step towards finding synergies. At the same time, this also demands a more practical engagement; sharing resources such as information, human, finance, and produced resources from a shared value position is clearly a dynamic and evolving process. The challenge is not to lose partners and to expand networking based on the contextual needs. For the alliance to be productive it is also necessary to have shared principles of learning and transformation. A pluralistically grounded ideology is the core of sustaining the partnerships apart from working towards mutual social, environmental and economic incentives for collective efforts. Continuous dialogue and intra-RCE communication, core elements in sustaining partnerships, need to be nurtured. In the RCE network context, though the network came into existence as part of the DESD, RCEs and partners to a great extent have moved beyond the idea of a project mode. In such a move, relations among the partners and eventually emerging trust and respect enable continuation of RCE activities (Box 2.3).

Box 2.3
Working Together at RCE Tongyeong
(By Won Byun)

Regular monthly meetings of the citizen education committee and school education committee create the core of the communication platform for RCE members in Tongyeong.

The citizen education committee is a network of governmental and non-governmental institutions working on informal education. The committee, which was formed in 2006 with 17 organizations, by April 2014 had 38 diverse education institutes that are dedicated to re-orienting existing programs and building a creative network for ESD. Through monthly meetings and seasonal workshops, network organizations share information, study together and organize joint initiatives such as the annual "SaengSaeng Civil Education Cooperative Project" and "Refresh! Sum, Shim, Sam Capacity Building Project" for educators. Through the ESD Model School project, RCE Tongyeong developed an ESD curriculum from kindergarten to university level between 2006 and 2011. Since 2011, in partnership with the Tongyeong Office of Education, at least two teachers are designated as ESD focal point teachers in every school in Tongyeong, from kindergarten to high school, at the beginning of every school year. The School Education Network, which consists of these ESD focal point teachers and retired teachers, promotes ESD programs, develops teaching materials and organizes teacher-training courses during every summer and winter holidays.

Although these organizational frames provide a stable platform for networking, the

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Development of the SD and ESD Competences and Capabilities

Developing ESD as well as thematic competences that deal with the ability of learners to think, do, act and live together, all while focusing on the education of educators who are to facilitate such competences, is critical (Box 2.4). The RCEs are not only cross-sectoral consortia focused on resilient and equitable sustainable development but also address challenges of their regions through learning unfolding around compe-

core elements in sustaining intra-RCE partnership are mutual trust and committed leadership of the core members. Since 2005 when RCE Tongyeong began, there have been times when the freshness of networking seemed to have waned, or differences seemed greater than our shared vision. However, proven by the growing number of participants and despite imminent challenges, the strength of commitment still lives on over a glass of *soju*. ■

tences of sustainability and ESD. That becomes the main argument for the potentiality of RCEs to secure convergence of sustainability and a learning agenda. Discussion of competences would not be complete without a discussion of capabilities grounded on the idea of choice (Sen, 1999) that, in the context of ESD, lead not only by the narrowly understood notion of personal well-being but the idea of change for the benefit of society as a whole – the idea of societal justice. In the context of RCEs, change is seen as a learning process, an act of political engagement and mobilization (Box 2.4). It is through co-engaged learning of RCEs addressing a host of problems of particular regions, that competences become capabilities. In other words, the RCEs give competences an opportunity to be re-enacted towards transformation while addressing the regional challenges in a holistic manner (see Chapter 5 for more detailed thinking behind relations of competences, learning and transformation towards more sustainable development).

Box 2.4
Capabilities as freedom
(By Jim Taylor, RCE KwaZulu Natal)

Supporting the whole person is very relevant to the enabling support we try to provide. This leads to thoughts and questions around competencies and capabilities. Competencies are compelling outcomes of learning. Although one may be competent at something, one may not be able to exercise one's competence at the home or at the workplace. Often people are declared competent at university but then cannot engage that competence (or cannot do it competently) in the workplace.

Amartya Sen (1999) develops the notion of capabilities that are a bit broader and through which one can develop and respond to the challenges one might face, but these are often unpredictable. One also needs to be reflexive and respond in different ways in different circumstances. "Responsibility" here is from the "ability to respond". Capabilities seek to acknowledge the entirety of what a person is capable of being and doing and their resulting current state due to the nature of the options available to them. Consequently, the capability is not merely concerned with achievements; rather, freedom of choice, in and of

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Focus on these competences, if taken in the context of learning and with a clarified philosophy of change behind it, might help to avoid compartmentalization resulting from a focus on narrowly defined topics and bring forward synergies in the areas of SD. That is applicable not only in relation to individual educational processes but also in relation to the design of the educational systems or the frameworks guiding them. For example, Wiek, Withycombe & Redman (2011) classify the core competences into five categories that are particularly relevant for the RCE community as they are interlinked with the learning, research and problem-solving framework. System competence helps to understand complexity of a problem at hand and its genesis. Strategic competence enables linking theory and practice towards desired change with desirability of direction and principles of actions informed by normative competence, which points at the concepts and norms of sustainability. Anticipatory competence relates to the long-term future-oriented thinking and intergenerational justice and interpersonal competence facilitates successful collaboration, partnership and leadership across sectors and disciplines. In combination, and taken in the context of regional learning among partners, they can mobilize appropriate actions in a specific context. In other words, the attention of the RCE community on ESD competences helps systematic, long-term partnership engagement with complex regional risks.

RCEs have used their knowledge of competences and capabilities thinking in contributing not only actions

itself, is of direct importance to a person's quality of life. The idea of developing and emerging freedoms, from within, is central to capabilities.

Key projects of our RCE KwaZulu Natal are seeking to orient their work around the building of freedoms. The principle of RCE work being "close and local" also enables the development of freedoms where local engagements with issues and risks become a key. The work thus seeks to address and build from local practice and experience rather than hypothetical theory.

Our Sustain-Ed project, for example, which offers accredited training, aims towards "training that achieves a sense of pride and purpose" while much of the training emphasizes practices or practical activities and solutions within the range of risks our region of South Africa is facing. Risks include water and sanitation, abject poverty, informal settlements, to mention a few.

Eco-Schools provide warm bodies or enthusiastic supporters across South Africa who seek to support meaningful learning at schools and in neighbouring communities. An assessment framework that emphasizes how the school has changed to become more environmentally effective, rather than focusing on absolute criteria, strengthens the social change dimensions of transformation within "school in community" contexts.

Share-Net is another partner of our RCE. Through Share-Net a range of inexpensive resource materials are developed and disseminated across southern Africa. In just the last six months, more than 20,000 resources were purchased from Share-Net. Such materials are available copyright-free and can readily be adapted and re-developed to suit individual and local contexts.

in their respective regions but also in shaping discussions on the relevant policy frameworks. For example, the recent consultations on re-orientation of technical and vocational education and training (TVET) held by the United Nations Economic Commission for Europe (UNECE) received significant input from the RCE representatives who, among other issues, brought to the fore the importance of sustainability competences.

It appears that the RCEs are actively pursuing competences-led learning, especially in areas where they engage in learning processes with educators (Box 2.5). That is significant when applied to education and learning, as a competences-informed approach facilitates re-orientation of focus from a teacher to a student-centred approach, and a shift of policies towards outcome orientation (Tiana, 2004). RCEs also, as mentioned earlier, look for the approaches that "transcend competences and emergent system thinking frameworks for co-engaged human endeavour to reflexively produce freedoms that enhance sustainability and reduce risk" (O'Donoghue, Chapter 5).

Learning through Assessment

As discussed in the earlier section "Fostering Shared Goals and Value System", there could be differing views on setting shared frames of reference on regional development challenges, indicators of progress of the network and perspectives on outcomes. In spite of a diversity of perspectives, and largely because of it, the assessment of the RCEs is designed as a learning and capacity development process in itself, with three overarching goals (UNU-IAS, 2013):

1. To collectively learn about the work of RCEs and thereby improve its quality;
2. To improve the quality of RCE contributions to transformative learning and sustainability change; and
3. To facilitate collective work of RCEs as a networked community engaged in diverse social learning and change initiatives.

The *first* goal reflects the potential for RCE assessment as a capacity for its members to generate monitoring and evaluation assessments that are helpful for reporting, and to improve their RCE as a social learning for

change initiative. Such learning could be focused not only on the sustainability goals that the RCE members collectively pursue in context or region, but also on the ways the RCE members and stakeholders work and learn together (i.e. through establishing governance and coordination).

The *second* goal relates to the capability of generating appreciative contextual evidence on change-oriented activities of the RCEs as regional stakeholders working in the context of social learning to foster change that reduces risk. Such work has the potential to stimulate not only change-orientated work in local RCE contexts but also coordinated work across the RCE community and with its global stakeholders.

The *third* goal relates to the capacities for coordinated dialogue and collective action across RCEs on issues of monitoring and evaluation.

Strategies of evaluation can take several forms with several of them, such as constitutive evaluation, appreciative enquiry and strategic evaluation, being articulated by the working groups of the RCEs in 2013 and used by a pioneering group of RCEs in Asia-Pacific. More details on the evaluation development history and approaches are presented in Chapter 7. The next step in evaluation has been developed by a group of southern African RCEs where an evaluation toolkit, based on earlier tested approaches, has been addressing the quality of evaluative data and the depth of collaborative learning in the RCEs. The combined and integrated evaluative approaches include documentation of how an RCE had developed up to this point (constitutive evaluation), inquiry into the RCE's successes, coordination and collaborative learning (appreciative and developmental evaluation), and value creation assessment of the RCE's overall work.

The process of assessment is not without challenges. This has been testified to by the RCEs that have undertaken self-assessment as it requires not only additional time and resources but also the capacity to undertake evaluation in a manner that contributes to the development of an RCE while strengthening its impact in the region. The RCEs, however, realize that evaluation itself can and does serve as a process of collective learning as well as documentation of such learning within the individual RCEs and, as the experience of RCEs in southern Africa shows, across the RCE com-

Box 2.5
Competences and Capabilities for Learners and Educators

RCE Delhi

RCE Delhi's work is centred on building competences and capabilities of learners and educators. Some of the initiatives, such as "Leadership Training Programme for Educators on School Management" and "Leadership Training Modules for Students" directly incorporate this concept. For example:

Competences play a vital role in the successful implementation of ESD and related projects and programs. In this respect RCE Delhi has been able to positively incorporate varied competences and capabilities of partner organizations. These are also some of the factors that have helped the RCE to leverage expertise and collaborate towards the development agenda.

The Energy and Resources Institute (TERI) implemented a project, "Rhythms from River Banks", in partnership with Delhi Government Environment Department, TERI University and Miranda House College, all a part of RCE Delhi. This project focused on environmental and sociocultural aspects with activities for youth related to knowledge, awareness and action. It integrated diverse competences such as knowledge, field research etc. and implemented it in colleges in Delhi. "Miles on Yamuna", a research initiative by Miranda House, has contributed to this program by tapping the research competences of students. An effective approach towards life-long learning has been possible with the development of various tools and methods by partners within RCE Delhi, namely TERI, National Science Centre, WWF Delhi and the National Bal Bhavan.

Use of communication strategies has been a strength of the group of partners, mainly schools, colleges and universities. The annual YUVA meet is an example wherein communi-

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cation within and outside has been effectively used to reach out to a very large number of youth across the world.

All this has been possible due to the foresight, motivation and regular interaction within RCE Delhi. *(R. Saikia and R. Buti)*

RCE Tongyeong

We feel the concept of competences and capabilities for sustainable life is important in making actual changes in everyday choices. Through our regular workshops and training courses for teachers and educators at the school education committee and citizen education committee, we try to emphasize and experiment with this concept in mind. Participants admit the importance of enhancing competences for a sustainable lifestyle, when they understand that it is the essence of what we are here to do. Such efforts led to projects such as "Clean Plate Movement" and "Bridge to the World", which require learners to build their competences and capabilities for a sustainable way of thinking, which of course need changes in the way educators guide learners. People often find it quite challenging to put this thinking into practice, but we feel it is something we train ourselves as trainers to learn, together with the learners. *(W. Byun)*

munity. These two insights prompt a strategy where facilitative assistance and support will be offered to the RCEs planning to undergo a process of evaluation. Such support has already started through engaging experts within the RCE community to develop the evaluation concept and strategies, and through a collective effort between coordinators of the RCEs pioneering evaluative approaches and UNU-IAS in preparing and facilitating first rounds of evaluations.

Mediating Local and Global

One of the core capacities required within the RCE community is the mediation of global and local contexts. In an increasingly integrated world, this is an inevitable skill for translation of policy perspectives to local actions, and their appropriate collective implementation. From the time of the Earth Summit, for diverse reasons the stress on building multistakeholder processes for sustainability has increased. Whereas linking global with local is a relatively easy proposition, translating and influencing policy-setting contexts based on local learning is much more challenging. Mediating the local and global is not only in terms of learning and policy linkages but also for resource mobilization required for activities beyond customary actions – for actions larger in thematic or geographic scale, and mobilization and exchange of technical and human capacity. A major outcome in this area has been in terms of building thematic competences in areas such as higher education, sustainable consumption and production, traditional knowledge, biodiversity, health and climate change (see Chapters 3, 4 and 6 for further elaboration).

The global/local engagement of the RCEs has been made possible, among other factors, because of their association with UNU, which mediated the ways of engagement between local and global partners. As a result, individual RCEs have, at various times, contributed to discussions on biodiversity and traditional knowledge in the context of the Convention on Biological Diversity (CBD 10th Conference of Parties (COP10) in 2010, CBD COP11 in 2012; see Chapter 6 for more insights), framing of the ideas for transformation of TVET (UNECE consultations, March 2014), exploration of the role of youth in addressing climate change (consultations of the UN Interagency Committee for the DESD, 2013), and facilitation of ideas for transformation of the higher education area (Fadeeva et al., 2014). Notably, the RCEs have contributed to the key events related to the formulation of the global sustainable development agenda including a number of meetings of the UN Commission on Sustainable Development (CSD) in New York as well as the Rio+20 meeting, in an attempt to strengthen understanding and acceptance of ESD as a key strategy for development (Chapter 6).

Reflections

Locality has been listed as one of the essential characteristics of ESD (UNESCO, 2005). RCE is the local platform of ESD for community-based awareness of sustainability to build civil capacity to reach the level of sustainable society. How to transform global issues and priorities of sustainability into local needs and priorities? It should be purely guided by the hands of local expertise to make the local community sustainable. Without local civil engagement of people, the global agenda of sustainability will never be implemented into the level of actual living.

Korean RCEs value the specific cultural, historic and natural background of their communities – people are proud of being born there. Thus, self-esteem and community-love became the backbone of Korean RCEs. RCEs should be promoted to implement the co-existing value of the human as well as ecological worlds. Individuals of each community find a way to reach peace along with fellow members of society and nature. Thus, ESD is what Everybody Should Do (ESD).

Eun-Kyung Park
Vice Chairperson

Korean National Commission for UNESCO

An important cross-cutting, yet specific, area relating to the global/local mediation is the work on specific projects, publications, policy materials, capacity-building tools etc. Such work is assisted by the development of the thematic clusters that have emerged as one of the ways of inter-RCE collaboration from 2007 (see also Chapter 1 for insights into this development). While project activities in some of the areas are initiated and conducted by the RCEs themselves, the Global RCE Service Centre hosted by UNU-IAS has begun providing conceptual and strategic advice on the projects with broader cross-cutting topics that are not customary for the RCE communities to address or that have very different interpretations in various regions.

Regional and thematic networking have been other areas of special capacities within the RCE network. Such empowerment has happened mainly through the institutional and thematic capacities in terms of technical skills as well as links with other intra-RCE and inter-RCE networks, and with other SD and ESD networks.

Some examples of such networking are the development of capacities of RCEs in Africa, Asia and Europe for ESD re-orientation of TVET, facilitated by the European Regional Advisor Jos Hermans; Sejahtera project led by RCE Tongyeong with the Asia-Pacific RCEs; thematic work on issues of water led by RCE Rhine-Meuse with partners in Grand Rapids, Delhi and Greater Nairobi; facilitation and handholding of North American RCEs by RCE Saskatchewan; traditional knowledge activities among South American RCEs led by RCE Lima-Callao; and national networking of RCEs in Kenya led by the National Environmental Management Authority of the Government of Kenya. Several other thematic clusters and technical leadership, too, are evolving within the network.

Intra and Inter-Educational Sector Mediation

The educational sector mediation provides guidance and leadership across educational fields as well as across the informal and formal educational column, from preschool through university. Where HEIs educate future teachers and develop capacities of the in-service educators, long-term engagements with the school system and organizations of non-formal learning make such practices more effective. In this regard, and as education is also about quality education and knowledge, attitudes, values, lifestyle practices and skills, the presence of partners promoting partnerships among formal education institutions and the informal and non-formal sectors is a core capacity that is required of RCEs.

Specifically, at least 70 per cent of the RCEs have an HEI as a core partner in the network. The HEIs could support the RCEs as informed mediators of the network, as well as providing an evidence base for the propositions and outcomes of the RCE work (Chapter 1). Since the work in RCEs is interdisciplinary and problem-based, it is important to build horizontal and vertical links within the formal education sector, including interdisciplinary and multisectoral collaboration. HEIs, with stable human and financial resources, have a social responsibility and a moral obligation (derived from their autonomy and academic freedom) to address sustainability challenges. At the same time, the presence of the partners representing various sectors of society enable transformation of HEIs by providing them with ample opportunities to fulfil the "third mission" of higher education (service to the society). RCEs such as Yogyakarta have demonstrated well that HEIs with their vast youth resource can use action-oriented research to develop their own capacity to engage in transformative ESD through their community internship programs.

To fulfil expectations in relation to sustainable development, HEIs have to face the challenge of transforming themselves (Ref. Rio+20 Treaty on Higher

Box 2.6
Working across Sectors

The Institute of Interethnic Studies, the leader of RCE Guatemala, carried out a campaign that influenced the creation of a training program on inter-culturality for professors at the San Carlos University of Guatemala, approved by the University Council. RCE Guatemala, with the intention to influence policy and put the program into immediate action, steered a seminar on "Mayan Cities: A Teaching Treasure" as a pilot project. Educational visits were conducted to Mayan cities and museums to learn about Mayan civilization and its relationship with nature and the cosmos, its technological assets and its modes of economic, social and political organization. Cultural content as history, the collective memory of peoples, their heroes, their customs, traditions and all the experiences from their cultural heritage should be necessary parts of the educational system to reinforce the sense of individual and collective identity.

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The living laboratory on education for sustainability in Greater Western Sydney, Australia, supported by RCE Greater Western Sydney, namely, the University of Western Sydney (UWS) Hawkesbury Riverfarm, addresses major sustainability challenges that relate directly to public health, developing more active lifestyles, living and working productively with diversity and economic vitality. These activities have influenced organizational policymaking and planning, and the execution of sustainability projects. These include renovation and reformation of the site, green skills development for students, riverbank restoration, and biodiversity studies. In addition, buy-ins and support of senior leaders of school and vocational education in NSW, have enabled the site to become a demonstration park for renewable energy, among others.

Education). However, convincing these institutions' policymakers is not necessarily an easy task. Much persuasion and convincing may be needed before the policy for transformation can be adopted and take effect in the organization. In this respect, a campaign strategy of influencing policy could be made. Clear examples of how an RCE could influence institutional policymaking at the level of an organization are available from RCEs Guatemala and Greater Western Sydney, Australia (see Box 2.6).

With transformation of higher education becoming an increasingly articulated call of today, RCEs demonstrate a capacity to offer a powerful platform for innovation, supporting design of the forward-looking sustainability strategies of HEIs and redefining qualities of their core activities. The flagship project of RCE Severn (hosted at the University of Gloucestershire) brought together partners who worked as a team in designing and implementing strategic approaches to bring ESD into central curriculum development processes. Engaging universities, relevant key government departments, Quality Assurance Agency, experts representing key stakeholders, university educators and professional staff, the project demonstrated new ways of mainstreaming ESD nationally while serving as an inspirational example for the international community.

The presence of HEIs in an RCE's local networks often makes it easier for innovative ideas to travel to other regions through higher education communities and networks, nationally and internationally. RCE Dhaka's experiment to enable students from economically poor and vulnerable communities to engage in higher education has become, through the actions of International University of Business Agriculture and Technology (IUBAT), the first non-government university of Bangladesh and a key member of the RCE, known to other universities in Bangladesh. Such practice pioneers a higher education strategy of giving, in each locality, "marketable knowledge and skills with sustainability practices".

The communication gap between scientists and educators, including those outside the higher educationsystem, has been identified as a major gap in ESD implementation. This can be overcome by the creation of more spaces for dialogue, such as the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net; see Box 2.7) projects. Engagement within such spaces, or the clustering approach, is where institutions make alliances and address ESD issues for contributing to sustainability transformation of their respective organizations.

Innovation and Development from Within

In the face of a multitude of challenges and accelerated changes in today's world, diversity of communities with their values, worldviews, reasoning methods, knowledge practices and technologies should, in principle, be an asset to create a more resilient and just world. Yet, many of these communities miss out on dignified development as often, especially for communities in a subsistence state, their knowledge is not connected to productive livelihood practices. To address the problem, such communities have to overcome a lack of access to resources, legitimacy of local knowledges and their mismatch with mainstream practices, challenges of knowledge transfer in informal settings, and legitimacy of informally acquired skills.

Regional change towards sustainability as learning and experimentation, that underlie the strategies of many RCEs, help regional partners to contribute to flourishing local innovations. They give control for development direction and processes to the regional stakeholders while supporting local innovations through harnessing local knowledge and resources, developing required skills, and creating a collaborative multistakeholder environment. The example of RCE Makana and Rural Eastern Cape shows a variety of change-practice approaches that leads to cultivation of productive activities, such as local markets, and small and bicycle-based cleaning and composting businesses, based on the local resources. RCE Skåne, in redefining local food systems through changing school meals towards more organic foods, while drawing on support of universities, municipalities and families through research and education, is a case in point (Chapter 4).

Box 2.7
ProSPER.Net

The aim of ProSPER.Net, which works under the auspices of UNU-IAS, is to transform higher education institutions. It is an alliance of leading universities in the Asia-Pacific region that are committed to integrating sustainable development into postgraduate courses and curricula. Its thrusts are integration of sustainability in curricula, capacity development, and influence on the policies of HEIs, through the activities of the network and its members and in cooperation with similar ESD networks. A number of ProSPER.Net member institutions are either assuming leading roles or participating in the UNU multistakeholder RCE initiative. Among the projects of ProSPER.Net is the "Education Programme for SD of Regional Society with a Focus on Biodiversity" led by Yokohama National University (lead partner of RCE Yokohama), which aims at ensuring practicability of training and problem-solving skills by producing educational material to teach science. Another project is ProSPER.Net's Young Researchers' School (YRS) where scientists and educators come together for an intensive discussion on sustainability in their research agenda. ■

Innovation and Entrepreneurship: Learning for livelihoods

One of the key challenges of the current time is finding ways for people and communities to work and live in a decent and aspirational way, without destruction of the natural environment or over-exploiting resources. Strategies that support the alignment of livelihood practices with (sustainable) development strategies often rely on innovations, including re-orientation in educational practices, in the area of sustainable consumption and production (SCP).

Entrepreneurship and creativity of entrepreneurs have long been seen as a way for producing valuable alternatives for conventional ways of doing business at the expense of society and nature. In this light, the power of entrepreneurial education as learning that creates capacities enabling exploration of new sustainability opportunities through re-orienting existing companies or creating new ones is broadly acknowledged. Practices of the RCEs have demonstrated how learning leads to identification of market and non-market opportunities for identification

of more sustainable products and services, creating conditions for developing production and consumption practices supporting livelihoods including through creating synergies between various, and at times competing, sectors.

Entrepreneurship practices of RCE Delhi, for example, have focused on the development of livelihood opportunities for women in resource-poor urban communities. Considerable effort of the RCE partners and the communities they represent was spent on identification of for-profit market opportunities built on a strategy of initially identifying resources (from waste materials) and potential markets for products made from these (handicrafts, bags, etc). In addition, skills needed for their production and distribution were also identified. The success of the project is a result of the collective efforts of organizations enabling strategic analysis of the entrepreneurial opportunities (by higher education institutions), learning of new skills and capabilities (by NGOs) and creation of appropriate institutional conditions (by governmental departments). Efforts of RCE Vienna in empowering sustainability entrepreneurs is grounded in the collective learning process leading, among other outcomes, to discoveries of additional entrepreneurial opportunities. The critical element of the project is enabling innovations that are conceived within the walls of academia to enter markets while influencing sustainable development of this cross-border region.

Entrepreneurship contribution to sustainable development is not limited to the livelihood of individuals and communities. Often, and spontaneously, it addresses questions of climate change, resilience, health, nutrition, etc. Practices of RCEs Cebu, Lucknow, Makana, and Kakamega-Western Kenya empower development of local livelihood practices (and entrepreneurs who often come from vulnerable communities) to simultaneously address well-being of the communities and environmental sustainability.

TVET is one of the key learning institutions that supports entrepreneurial development as well as life-long learning in general. As it prepares people that deliver products and services to communities, their re-orientation towards more sustainable practices – in terms of redefining competences and capabilities of graduates, alignments with policies of national development, and introduction of sustainability through the whole institution approach – becomes a key. So do collective learning and innovation with stakeholders in the society, and the partnerships that could emerge through the RCE communities (see example of RCE Hamburg, Chapter 4).

Reflections

The question this chapter seeks to answer relates to the role of multistakeholder, cross-sectoral regional initiatives such as RCEs in building capacity of regions for pursuing more sustainable development, including development of SCP and sustainable livelihoods, locally and globally. Why are such consortia important today, and what do partners with attention to sustainability and learning do in conditions of rapidly accelerating changes underlying financial, economic and ecosystem crises?

We suggest that that at the centre of development based on principles of equity, well-being, ecosystem sustainability, resource efficiency, economic sufficiency

and societal resilience lie local actions and learning. At the same time, actions and learning are connected to other regional practices and to policy development. Such initiatives become *nodes of innovation* and, most critically, *supporters of new regimes* promoting more sustainable consumption and production and livelihood systems.

Initiatives that support development from within are balancing the dominant development trends where production and consumption systems and quality of life are impacted by the global markets and relations across global supply chains. Lifestyles are defined by tendencies to over-consume and by lifestyle ideals promoted by the mass media. As demonstrated by the RCEs in Asia-Pacific, Africa, Europe, Australia, and North and South America (Chapters 3 and 4), the RCE global community is gradually becoming a significant player in developing and promoting expertise for a transition towards SCP and sustainable livelihood. At the level of communities, the initiatives provide a business case for the key themes of SCP: working with innovative practices for a green economy (e.g. RCE Makana, RCE Delhi); development of high quality TVET education (e.g. RCE Greater Western Sydney, RCE Hamburg); identifying livelihood improvement opportunities (e.g. RCEs London, KwaZulu Natal, Cairo, Rhine-Meuse, Greater Phnom Penh, Lucknow, Graz-Styria); creating locally relevant consumer education processes (e.g. RCE Kitakyushu); and pursuing opportunities for sustainable entrepreneurship (e.g. RCE Delhi, RCE Vienna).

Such emerging success is underscored by the key characteristics of the RCEs – their multistakeholder composition and attempts to sustain relations with the regional stakeholders, including with the HEIs; their attention to common values, development of capabilities in the local contexts; their experience with collaborative projects within and across regions, and their focus on innovation and transformative learning. Evidence shows that RCEs, individually and collectively, can offer opportunities for business and non-business organizations to develop modes of production that sustain natural and social capital over long periods of time (as demonstrated by the work of Bumi Farm working with other partners of RCE Kakamega-Western Kenya). By engaging the knowledge and innovative potential of the regions, including non-business partners, and by minimizing and distributing risks, RCEs create new, strategically-oriented opportunities not only in competitive modern markets but also through productive activities outside markets.

RCE practices are expected to hold potential for growing regional innovation as they are facilitated by the ways RCEs develop, document and communicate knowledge and experiences using media (both traditional and social media) as well as academic and non-academic publications. Inter-RCE projects that address local SCP challenges and engage multiple partners also enable the development and sharing of tacit knowledge. Knowledge required for new SCP projects might be supported by new scholarly practices that rely on multisectoral consortia facilitated by RCEs – consortia where research questions, learning and innovations are undertaken by partners beyond academia.

At the same time, connections developed among RCEs within and across different continents provide a critical global dimension necessary for addressing the challenges of SCP and sustainable livelihood in the future, by providing deeper understanding of ongoing practices, systematic conceptualization of possible paths towards sustainable practices, fostering local and global policies conducive for developing sustainable societies, and forging deeper synergies among processes and programs that are focused on the issue. To further the discussion, the following chapters, 3 and 4, attempt to illustrate connections among SCP, livelihood, biodiversity practices of the RCEs, and broader regional and global policy processes, research and actions.

With all its potential, the major challenge for the whole RCE community is to further build and deliver capacity important for sustainability and learning locally and, through collaborative actions with RCEs in other regions as well as with other critical partners, to build the global knowledge base for combating the consequences of current dominant ways of consuming and producing and providing care to all members of the society.

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Reflections

The Grand Rapids RCE, located in Grand Rapids, Michigan, USA, is a bit of an anomaly within the RCE family. The RCE designation was given in 2007, not to a single entity such as a university, but to the City of Grand Rapids and the Community Sustainability Partnership (CSP), a collaborative of 240 organizations and enterprises across the public, private, and academic sectors. The three major goals of RCE Grand Rapids are:

Goal #1: *Encourage ESD and help CSP members implement sustainability. Results: Five local colleges offer degree programs in sustainability; many of the CSP members have developed sustainability plans and reports; CSP organizations have been established in three geographical regions of Michigan and several outside Michigan.*

Goal #2: *Introduce youth to the principals of sustainability. Results: We have hosted two Youth Virtual Conferences on water resource issues and food security; RCEs from three continents (six countries) have participated.*

Goal #3: *Develop grassroots sustainable neighbourhood initiatives in low-income communities. Results: Seeds of Promise (www.seedsofpromise.net) empowers local residents to improve decisionmaking in leadership, employment, health, education, and housing opportunities.*

Further development of each goal area is being planned for the future.

By Mayor George K. Heartwell, City of Grand Rapids, USA

Chapter 3

Traditional Knowledge and Biodiversity within Regional Centres of Expertise on Education for Sustainable Development[1]

Unnikrishnan Payyappallimana and Zinaida Fadeeva

RCEs were developed as sites for participatory learning and action within the DESD, opening up more collaborative and inclusive learning spaces towards more just and sustainable ways of life, now and in the future. This chapter reviews some of the contours of these emergent education processes of collaborative learning-to-change as they relate to traditional knowledge (TK) and biodiversity in many RCE contexts today. It takes particular note of how RCE processes that include traditional knowledge practices are emerging to address biodiversity loss within a social-ecological perspective across heritage, local issues and the current state of environmental knowledge. It also discusses how multistakeholder, cross-sectoral initiatives such as RCEs open new opportunities for various knowledges, especially traditional knowledge, to interact on a new and equal footing, for the benefit of (sustainable) development. The RCE cases examined here are characterized by local expertise being brought together in open-ended, practical and co-engaged approaches to social and transformative learning. The RCE approaches reposition the available expertise in collective learning-to-change endeavours where a grasp of what is changing and producing risk is practically deliberated across what is known and what might be done about the problems that are confronting a society.

1 This chapter was developed from the earlier published editorial in Payyappallimana, U. and Fadeeva, Z., (Eds.) (2013). *Innovation in Local and Global Learning Systems for Sustainability: Traditional Knowledge and Biodiversity*. Learning Contributions of the Regional Centres of Expertise on Education for Sustainable Development, UNU-IAS.

The local heritage of traditional knowledge practices and patterns of valuing in relation to biodiversity have not always been read within an open-ended bio-cultural diversity perspective such as this. The development and learning within the RCEs that recognizes the often plural and yet integrated nature of the inhabitants of modern social-ecological systems is often possible as the RCEs are governed by the ESD principles that recognize a need for multiple perspectives in learning while acknowledging the complexity of working across sectoral and disciplinary boundaries – challenges that are addressed in this chapter.

Bio-cultural Diversity and Sustainable Development

In its broad sense the term bio-cultural diversity denotes an inseparable link between the diversity of life forms, their ecosystems and environments on the one hand and the array of human-made expressions in relation to these. In totality, this view has come to encompass genes, species, ecosystems, landscapes and seascapes to worldviews, belief systems, knowledge, morals, values, norms, languages, rules, artistic expressions, artifacts and institutions of a region that have generally been passed on through an intergenerational transmission process and are shared by a group (Haverkort, 2006; Ibisch, Vega & Herrmann, 2010).

A social-ecological approach here reiterates the inherent, dynamic relationship between nature and humankind and hence a biological and cultural diversity perspective for development towards a sustainable future. From a utilitarian point of view, bio-cultural diversity impacts human well-being through ecosystem services as well as cultural resources in sectors such as agriculture, health, food security, environmental protection, purification of air and water, climate regulation, natural resource management, land use, livelihoods, disaster management, arts and culture, among many others. Consider, for example, the case of traditional knowledge in the realm of medicine: the World Health Organization (WHO) estimates that traditional medical practices, in some regions, account for up to 70-80 per cent of the world population's health requirements, especially in developing countries (WHO, 2003). The inherent link of community-specific knowledge with local ecosystems is obvious in the usage of plants, and animal and mineral/metal derivatives that are primarily locally available and easily accessible in traditional health cultures. Upholding and revitalizing such knowledge is seen as an important mechanism for affirming identity and social cohesion and has a vital role in local livelihoods and socioeconomic and cultural systems. In mega-diverse countries that are experiencing rapid economic and social transition, bio-cultural diversity holds major untapped potential for poverty alleviation and local development in multiple sectors (Ibisch, Vega & Hermann, 2010).

Despite the strong reliance of human existence on biodiversity, its rapid decline due to human inter-

Box 3.1
Development Context: Changes in perspectives

Policy, as a policed course of action in the governing of civil society for the common good, has seldom taken account of TK in environmental management practices for biodiversity conservation. Traditional ecological practices were most often seen as destructive, notably the use of fire to manage range lands or shifting agriculture where slash and burn methods were used. Traditional uses of plants by indigenous communities were noted and documented for commercial exploitation, most often without reference to the communities that were custodians of that knowledge.

Prior to recent global conventions, policing regulations often encouraged the exploitative mining of cultural capital with the appropriation of local natural resources and naturalre-

cont. ▶

ventions is alarming. The Millennium Assessment Report indicates that developed and fast-developing regions with higher gross domestic product (GDP) have critical loss of biodiversity (Millennium Ecosystem Assessment, 2005). Corresponding to the loss of diversity in traditional languages the world over, traditional knowledge practices are also eroding at a rapid pace. The loss of biota and associated traditional knowledge practices can have a significant negative impact on the livelihoods, production systems (bioresource-based markets) and the health of local communities (TEEB, 2010; Suneetha & Balakrishna, 2010).

The erosive trajectories here are compounded by the concern that there are no comprehensive approaches to valuing these ecosystem services as policymakers often have less conviction, compared to other sectors, regarding the need for national and subnational level efforts for conservation and development in the sector. While such dominant practices are rooted in the history of governance of biodiversity (Box 3.1), assuring conservation and sustainable use of biological resources is increasingly becoming a high priority area in the sustainable development agenda. Whereas regulated, sensitive use is important for sustenance of biological diversity, augmented, active use as social traditions is vital for revitalizing, as well as protecting, traditional knowledge practices. Increasing social and economic disparity and inequitable access to resources and benefits is an area that has been actively discussed in international as well as national policy processes. Recognizing the potential of local livelihoods through appropriate access and benefit sharing (ABS) mechanisms is an area that is still in a nascent stage. These challenges are often dealt with individually and not in an integrated manner at the level of implementation. For instance, in the case of improving nutritional or health security, conservation programs of local cultivars or varieties may not necessarily be based on the contextual nutritional needs, or the knowledge or technical resources available within a region. The ecosystem services framework, to a great extent, addresses the issue by broadening the perspective of biological and cultural diversity. To be effective, local development approaches need integrated frameworks and strategies related to various resources such as biological, knowledge, human, social, economic, produced, and cultural.

source areas. The early approach was thus to protect natural resource areas, taking little account of local knowledge and practices in relation to their natural history. Indigenous peoples were often seen as noble but primitive communities that needed to be rescued from their ignorance and destructive practices. These colonial and, later, some of the post-colonial policies consequently reflected a double separation – people from nature and institutions of governance from people. These separations opened up specialist outsider and institutional imperatives to educate by communicating the conservation message so as to change this perception. The last 50 years have produced a slow shift in policy across the globe and the beginnings of social-ecological perspectives being brought into community-engaged policy development are emerging within new multilateral perspectives on cultural diversity and traditional knowledge.

The attendant concern for traditional knowledge practice and the democratic inclusion of indigenous peoples in co-engaged land-use management decisions is being found to have a natural affinity with an integrative perspective that has long been central to TK practices. Here cultural knowledge and practices were the balancing facets between natural or ecological resources and human intervention and any development (Berkes & Folke, 1994; Cochrane, 2006). According to Breidlid (2009) the modern hegemonic discourse of economic development has fallen short of exploring the potential of diverse knowledge systems, considering these as an impediment to development. A key challenge for stakeholders who are striving to promote the concept of SD is to find appropriate tools to convey the spearheading roles that cultural knowledge, norms and values play in achieving SD. ■

Contemporary Policy Context

The Convention on Biological Diversity (CBD) calls for the need to respect, preserve and maintain traditional cultures; encourage customary custodial use of biological resources in line with principles of sustainable use and conservation; and ensure equitable sharing of benefits among holders while accessing biological resources and related knowledge in line with national legislation. By drawing attention to preserving local innovations and practices of "indigenous and local communities following traditional lifestyles" it alerts the need for promoting awareness of the importance of biodiversity through various educational interventions, designing suitable educational curricula, and strengthening multilateral cooperation for education for conservation and sustainable use. Recent developments like the Aichi targets[2] have completely recognized the importance of education awareness (particularly through Strategic Goal E, Box 3.2), which highlights the import of strengthening capacities and learning interventions of various stakeholders.

Box 3.2
Aichi Biodiversity Strategic Goals

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystem, species and genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.

Source: http://www.cbd.int/sp/elements/default.shtml#IV

The World Heritage Convention of UNESCO is an important instrument for the protection of cultural and natural heritage. The Convention on Cultural Diversity, yet another multilateral policy instrument of UNESCO, recognizes the significance of cultural knowledge "as a source of intangible and material wealth" especially in indigenous communities. By pointing to their constructive role in SD, it emphasizes that

> *... cultural diversity widens the range of options open to everyone; it is one of the roots of development, understood not simply in terms of economic growth, but also as a means to achieve a more satisfactory intellectual, emotional, moral and spiritual existence (UNESCO, 2001, p.13).*

Avowing the need for appropriate policies to strengthen the developmental role of traditional communities, UNESCO calls for cultural pluralism and free circulation of ideas. The importance of culture and development is fittingly underlined in the Convention by calling for national and international action that recognizes the link in all countries, specifically in developing regions that still have rich repositories of this diversity. It says that there is a need to create a favourable atmosphere for production and propagation of varied cultural goods and services that have the strength to influence local as well as global levels (UNESCO, 2005). By emphasizing the central role of culture and the complementary nature of economic and cultural dimensions of development, the Convention highlights individuals' and communities' "fundamental right to participate and enjoy".

2 The Aichi Biodiversity Targets are 20 ambitious goals that make up part of the CBD's Strategic Plan for Biodiversity 2011–2020, adopted in Aichi, Nagoya, Japan, in 2010. The targets provide a framework for action by all stakeholders – including cities – to save biodiversity and enhance its benefits for people.

As a core principle, protection, maintenance and promotion of bio-cultural diversity are vital requirements of SD for present and future generations, while equitable access to varied expressions and a principle of openness and balance towards other cultures are equally important.

Conversely, there are different views and perspectives on the integration of cultural knowledge into development programs. These range from romantic (e.g. all practitioners are knowledgeable, logical and everything in tradition is sound) to utilitarian (e.g. aspects have to be selectively studied to strengthen modern needs) to pluralistic (e.g. should be allowed to co-exist and play a complementary role) views (Haverkort, 2006).

While this complicates the need for many countries to have a clear national vision on how to integrate cultural knowledge in development, at the level of individuals and civil society groups several efforts are in progress in areas like health and nutrition, agriculture, rural livelihoods and education, to name a few. Among programs of multilateral organizations responding to this policy context, the RCE network is unique as a local-global collective learning space for ESD. Being sensitive to the need for diversity in development options, the community of RCEs has initiated a variety of projects of co-engaged learning in integrating TK in addressing sustainability challenges.

Learning Together in Development Context and Challenges

The UNU-IAS ESD Programme aims, among other objectives, to foster and mainstream intercultural approaches within a social learning process through multisectoral, collaborative and interdisciplinary methods. Bio-cultural diversity has been central to the DESD since the Earth Summit, yet it necessitates increased attention today in the wake of mounting challenges in the nexus of conservation and development. Learning institutions have a critical role in examining strengths and weaknesses of pedagogical approaches to initiate culturally and ecologically sensitive, transdisciplinary, transformative practices at all levels; approaches that will eventually lead to transformation of developmental models. Some of the considerations for such change are presented in the following text.

The complex character of the relations between human and natural encompassed by the social-ecological approach need to be addressed within the knowledge and learning system that appreciates dynamic complexity and inseparability of such relations. Furthermore, in order to produce change, the learning practices should go beyond change of values and attitude.

Changing practices is a complex process of behavioural shifts that are to be facilitated, in addition to cultivating new biodiversity-attuned values, by the change of practices and culture of the society. Ultimately, the educational systems that seek transformation might need to engage multiple stakeholders that, through joint learning, simultaneously facilitate favourable conditions for the attitude-behaviour shift in individuals, as well as gradual institutional shifts in the communities. With accelerated speed of changes dramatically impacting the state of the ecosystems as well as global climate, fiscal, market, development, cultural and social conditions, one must look for learning that links understanding of the society – biodiversity relations with the ability to collectively and continuously develop and test new mo-

dels of production and consumption more fitting for maintaining ecosystems and improving lifestyles. Impact of climate change, pollution, and overuse of ecosystems that feed into livelihood practices of small and large communities are the most evident points of current and future innovations for sustainable ecosystems use. In a way, the point is demonstrated by the attempts of farmers in the coastal areas of Bangladesh – formerly biodiversity rich but currently dramatically degraded from population and production pressures – to develop more environmentally benign and biodiversity-friendly practices of organic agriculture; practices that are called upon by the impossibility to continue unlimited resource exploitation.

In various world regions, a major untapped potential exists for poverty alleviation and local development as a major percentage of global community continues to have livelihoods in the nexus of biological and cultural diversity. Enhancing capacities of local communities for capitalizing on this strength is another area that needs attention in ESD programs.

The profound impact of biodiversity and TK on the various aspects of human existence – from culture and health to opportunities to sustain community livelihoods – calls for education that portrays the topic of biodiversity from multiple standpoints. Serving as entry points into the subject, angles that discuss gender, engaging the disenfranchised, and ecosystem services, to name a few, highlight the foundational value of biodiversity for many aspects of life but also the ways of dealing with it from different perspectives.

For example, the gender perspective highlights the fact that while both men and women depend on ecosystems (and have to be kept in mind in development efforts), their practices in using ecosystem services differ. Women in poor communities often provide most of the food but are seldom engaged in the decision-making. Their knowledge potential is rarely acknowledged and their skills are seldom harnessed in the developmental processes. The ecosystems services perspective, on the other hand, brings to the fore the need to question whether the customary measurement of the biomaterials in tonnes or cubic metres is justifiable, and calls for learning to focus on opportunities for different forms of valuation.

In different corners of the world, there have now been many local initiatives that link TK and biodiversity. It is important for learning institutions to critically examine the strengths and weaknesses of these approaches and to explore ways to upscale them and mediate their interplay with global policies and processes. In doing so, higher education institutions play a particularly significant role. They are widely regarded as capable of establishing mechanisms that adequately bring forward TK and integrate it with other knowledges through teaching and research programs based on appropriate collaborative and interdisciplinary methods. Yet, to fulfill this role, the institutions of higher education themselves would need to undergo critical transformation leading to appreciation and ability to engage with different forms of knowledge.

There are several socio-political as well as methodological challenges to integrating TK in sustainability-oriented learning processes. In many regions, research and education systems are externally mediated by universal standards paying little

attention to the local knowledge and practices. In the cases where TK is used, predominantly by academia or private research entities, it is regarded as a subject, or deliverer of "utilitarian" functions. Long-term, coherent and critical engagement between various knowledges – engagement motivated by a sound development vision – remains rare.

Appropriate learning methods with sensitivity to both the development aspirations of communities as well as epistemic integrity and coherence of local "knowing" systems are essential. This may be achieved through culturally inclusive pedagogies and their integration into formal and informal learning processes.

Collective learning and inclusive co-engagement as requirements of knowledge development are critically important to address all aspects of sustainability. Work with such communities of practice is not an easy matter. Going against often dominant notions of consensus, which ultimately rely on similar principles and approaches, means learning to work with different perspectives within a particular practice, often accompanied by many conflicts and contradictions. Trans-sectoral, transdisciplinary co-engagement means developing new competencies of partnership, in acting and learning. This particular issue of collaborative learning and a perspective that, in the view of the authors, needs to be adopted by the multidisciplinary local consortia, is addressed in the next section.

Regional Collectives of Learning Action at the Community Level

Since its emergence, the RCE network for ESD had an immediate affinity to a more collaborative approach to learning. Within the community, the idea of regional centres that bring together local expertise appears to offer a better prospect of inclusivity, and better alignment for understanding and responding to social-ecological risks. Learning is more situated and reflects co-engaged, value-driven approaches and reflexivity.

Central to an understanding of this shift is the idea that learning is both internally and externally mediated within processes of co-engaged practice. Elias (1987; 1991) in his works on a long-term social process reading of knowledge production, notes a continuous interplay of involvement and detachment. An emergent interplay of processes such as these can provide reflective distance, often allowing one to get around problems to a more congruent grasp of things. Similarly, Archer (2010) notes the role of internal conversation in emergent social processes that reproduce or change the understandings that inform the valued doings, beings and ways of knowing that people share.

Here learning is approached as reflexive social processes that are at once place-based, individual, yet shared cultural-social practices within prevailing cultural capital (Bourdieu, 1990) and within surprisingly robust practice architectures that Kemmis and Mutton (2012) map in their recent study of education for sustainability (EfS). Working with an open-ended perspective on learning is producing a realization that cultures cannot simply be treated as differing worldviews; they are diverse perspectives within practice architectures that refer to a real world of objects and lend themselves to diverse effects that all have consequences.

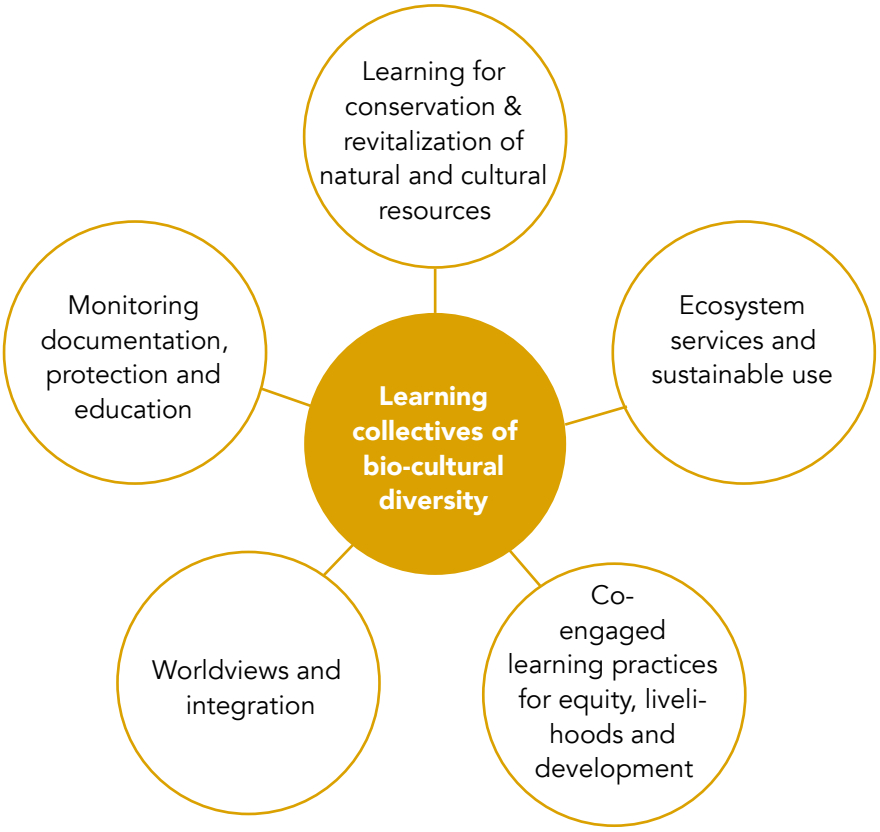

Figure 1.1 Collaborative links of an RCE

Once again, the RCE offers promise as a site for co-engaged participants to be engaged in learning and action at the community level in a real world that is responding to and producing risk. Here worlds apart might be re-read as worlds co-engaged in deliberative change practices towards the production of more just and equitable worlds of practice with less risk and rectifying some of the degradation produced over a period of widening modernist exploitation and marginalization.

The case studies referred to in this chapter highlight how local and regional consortiums that consist of educational institutions, government agencies and civil society organizations can harness local resources and address challenges relating to sustainable development in the area of bio-cultural diversity. Keeping in mind the practice as well as policy context, they are classified under five sections: 1) Conservation and revitalization of natural and cultural resources; 2) Ecosystem services and sustainable use; 3) Equity, livelihoods and development; 4) Monitoring, documentation, protection and education; and 5) Worldviews and integration.

Regional Capacity-building Workshop 2013 in Kakamega, Kenya

Learning for Conservation and Revitalization of Natural and Cultural Resources

The world is currently experiencing catastrophic species extinction (e.g. according to IUCN Red List, between 12 and 52 per cent of species within well-studied higher taxa are threatened with extinction), which calls for local and global stakeholders of biodiversity to take urgent measures for their conservation. Benefits, such as provisioning, regulating, supporting and cultural services of ecosystems, were already mentioned earlier in this chapter. Preservation of biodiversity is reasonably possible only keeping in mind the ecosystem approach (EA). The EA to management is defined by the CBD as a "strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way" (http://www.cbd.int/ecosystem/). Twelve interlinked principles of EA emphasize, among other factors critical for management of biodiversity, the importance of involving all relevant sectors of society and scientific community, the need to balance local and wider public interests and the rights of the stakeholders, including indigenous peoples, to make their choices.

Looking at biodiversity through the prism of EA management one realizes that the state of biodiversity and the dynamics of its use are defined by the multiplicity of policies, institutions, actions initiated by individual organizations and civil society. These make projects of the RCEs ever more important as they not only could pilot ambitious biodiversity projects but, being long-term functioning networks, might also lead to engagement with alliances, strategies and projects leading, in time, to institutional arrangements for preservation of bio-cultural diversity in a particular region.

Although the examples of RCE practices have been classified under specific categories based on the dominant focus of work, these projects have implications in other areas as well. For instance, RCE Penang's activities are mentioned under the equity and livelihood category, but the project also focuses on strengthening healers' networks and promoting sustainable use of medicinal plants. Similarly, RCE Cebu, though categorized under ecosystem services and sustainable use, is actively involved in conservation of protected areas. Apart from revitalizing cultural practices of the region, RCE Kodagu also engages in conservation of sacred groves and promotion of livelihood activities through forest products.

Suffering from the past forestry, mining and smelting activities that led to barren and contaminated land in the region, more than 30 years ago the City of Greater Sudbury (the key partner of RCE Greater Sudbury) had initiated the Re-greening Program. The new biodiversity action plan "Living Landscape", adopted in 2009, called for new efforts in developing self-sustained ecosystems. Through its multiple stakeholders, RCE Greater Sudbury aspired to realize a comprehensive program that included research, education and community engagement in regional re-greening. Transplant of the forest floor from the healthy ecosystems has become the main technique of re-growth. Other activities include creation of a seed bank by the local college, tracking and monitoring animals by members of the public, online surveys of amphibians, research by higher education institutions, a variety of trainings and other capacity development activities. Partnerships based on learning by doing resulted in a holistic model for community development and led to lasting ecological recovery of the area.

RCE Porto, whose overall goal is development of human capital and preservation of natural capital, has initiated "FUTURE – The 100,000 Trees" project in the Porto Metropolitan Area. Increase of urban biodiversity and care about ecosystem services are recognized by the partners as critical for delivering their multiple functions to human habitats. Through social learning and action networks, the RCE aspires to develop 100 hectares of native woodlands by the year 2015. Complex work ranging from reforestation areas identification to making landowner agreements, to needs identification and to volunteer training, engages 30 organizations. Among the partners are the Porto Metropolitan Area Coordination (16 municipalities), non-governmental organizations, the Portuguese Catholic University, several government offices, private companies, and private forest landowners associations. Collaboration of the partners, which is centred on mutual acknowledgement of responsibilities, an understanding of strengths and opportunities and focused on developing local capacity for future sustainable development of the forests, have resulted in increased public engagement, generation of new innovative ideas, zero-budget for project development and, ultimately, successful growth of urban forests. The practice of RCE Porto serves as an inspiration for similar projects in other parts of Portugal.

Priority work for RCE Srinagar and RCE Guwahati is reducing anthropogenic pressure on Himalayan ecosystems. In three cases reported by these RCEs, local communities took a lead in conserving flagship species of Hoolock Gibbon in Assam (where agro-forestry practices are synergized with Gibbon conservation), Blyth's Tragopan in Nagaland (where youth were engaged in wildlife management and villagers in hospitality services for sanctuary visitors) and development of community-owned wildlife sanctuary in Meghalaya. RCE educational interventions range from awareness programs on conservation for schools, communities, NGOs, youth, teachers and faith organizations to training on management of biodiversity projects.

Apart from these, RCE Greater Dhaka's coastal area and mangrove ecosystem program and RCE Cebu's project on protected areas also have a strong conservation focus.

Ecosystem Services and Sustainable Use

Ecosystem services on which humanity relies have become the benchmark for the success of local and global environmental governance. Studies provided by the RCEs demonstrate how ecosystem services contribute (or could potentially contribute) to the well-being of the communities. Interestingly, among the RCE partners, it is traditional knowledge and the holders of such knowledge that demonstrate the direct link between ecosystem services and food, health or other human needs. By being able to show, even in the absence of efforts for valuation of ecosystem services, the critical role of ecosystem services on local resilience, the TK perspective affirms its own value. The contribution of TK becomes especially evident in cases where ongoing economic and financial struggle is combined with socio-political circumstances that eliminated or severely diminished knowledge of traditional practices (by either emphasizing other forms of knowledge or eliminating TK as an inferior form of knowing).

Rekindling TK related to food security, health and livelihood production dependent on ecosystem services becomes not only an opportunity but an urgent need. Management of ecosystems and their services in the context of multistakeholder initiatives, such as RCEs, and through co-engaged learning, provides an important opportunity for developing new, more flexible and adaptive approaches. Such approaches appear to be most suitable for engagement with complex systems in situations of quick change, uncertainty and limited resources. RCE Cebu works in Campo Siete (Camp 7), Minglanilla, an area included in the Central Cebu Protected Landscape (CC PL). Spanning an area of 29,062 hectares of adjoining forestlands and watersheds located in the middle of the island province, this area is home to several endemic species, and ecological resources including springs, rivers, caves and a watershed. Communities in the nearby area are dependent on this forest for livelihood including timber and non-timber produce, agricultural land, or activities such as ecotourism. RCE Cebu has done extensive biological resource and traditional knowledge mapping in this area through interactions with local healers. They have documented patterns of use of resources for food and medicine. Livelihood initiatives are being supported through cultivation of medicinal plants and promotion of their sustainable use. Once biodiversity-rich and today mostly densely populated floodplains and deltas, Bangladesh suffered massive loss of biodiversity especially during the time of the Green Revolution.

RCE Greater Dhaka is involved in helping restore the biodiversity and manages the Ganges-Brahmaputra-Meghna floodplains with appropriate crop diversification strategies. It has started a study on crop diversification, traditional multiple and multi-storey cropping culture, and has also engaged graduate students to study the local, indigenous rice varieties which are grown in different parts of Bangladesh. The RCE creates awareness through programs for youth and women that highlight the importance of biodiversity and the genetic resources for food and nutrient security, as well as the need to protect the region from environmental degradation. The RCE also works on coastal area and mangrove conservation.

Co-engaged Learning Practices for Equity, Livelihoods and Development

A well recognized fact is that mega-diverse regions are faced with a complex dilemma of resource richness on the one hand and poverty on the other. Recognizing the critical developmental role of bio-cultural diversity studies suggest that organized advancement of bio-enterprise has potential not only in enhancing the livelihoods and well-being of both individuals and communities, but also improving conservation and sustainable resource use, as well as participation of different stakeholders in such measures. Creating appropriate policy frameworks, promoting community-based livelihoods and related capacities, enhancing their access to national and international markets with ethical and equitable trade, and implementing ABS frameworks are important goals in the direction (Jaramillo, 2010). Better awareness on the potential of bio-enterprises for eradication of poverty, assuring equity and ethical practices is essential, in addition to developing capacities and appropriate technologies for successful bio-enterprises.

Fair and just ABS evolved as an international mechanism for facilitating equitable partnerships of local communities (mainly with multinational industries or researchers) while sharing bio-resources or traditional knowledge for commercial

purposes. Even after two decades of policy developments in this direction, its implementation largely remains in the form of pilot models, lacking up-scaling strategies. Whereas several communities have been actively pursuing such an approach, support for such initiatives within the policy processes has lagged behind. Studies show that ABS as a mechanism within local communities has significant potential for improving livelihoods (Suneetha & Balakrishna, 2009).

Access and benefit sharing as a model to promote local equity through a contractual agreement between multinational companies and communities, also needs to support local initiativessuch as bio-resource cooperatives, producer companies, local protocols and customary practices, which are a critical element in developing new livelihood practices. Such livelihood models based on the principles of growing from within have shown that a healthy ecosystem and revitalized traditional knowledge can contribute to better livelihoods as well as well-being (Suneetha, Hiemstra & Verschuuren, 2010). This is in line with the Nagoya protocol preamble which notes "... the interrelationship between genetic resources and traditional knowledge, their inseparable nature for indigenous and local communities, the importance of the traditional knowledge for the conservation of biological diversity and the sustainable use." As many issues that become critical elements of ABS and are important for new livelihood models are still not adequately considered under the national legislations on ABS, RCEs have an important educational role in putting the ABS strategy into practice.

RCE Greater Phnom Penh works with two major stakeholders in the region – elementary schools and farmers. Promoting food, agriculture and environmental education has been a major thrust area of its work. In order to reduce the threat to local biodiversity as well as to maintain a healthy population, the partners have been involved in sustainable farming practices such as producing and promoting application of compost, pellet compost, liquid bio-fertilizer and bio-pesticide promoted at elementary schools as well as in the local communities. For elementary schools, school gardens have been a key activity. Awareness creation and capacity-building in organic farming are conducted regularly for local farmers.

Being a domain of aging healers, surrounded by neglect and misunderstanding, traditional knowledge of household health and nutritional care has been disappearing in many parts of the world in spite of its critical importance to local communities. To address the challenge in its own region, RCE Penang has engaged representatives of research institutions, industry, the agricultural sector and local communities in exploratory and action research of TK by documenting, learning and developing regional livelihood practices. Learning that resulted from engagement of multiple partners has been participatory, informal and has led to rich results. The awareness program developed for the schools and local communities by the researchers and students of the university helped them appreciate the conservation and sustainable use of medicinal plants. Understanding the values of TK and biodiversity supported the development of livelihood activities around development of more than 30 commercial products from torch ginger, which led not only to financial gains but to an enhanced sense of self esteem and to further entrepreneurial innovations. The project has also become a catalyst for innovative experiments such as using abandoned agricultural lands for cultivation through partnership with local communities. RCE Penang plays a critical role in liaising

between industry and agricultural clusters. Ongoing engagement in the inter-RCE TK and biodiversity group assists RCEs in engagement with research and development partners across other RCEs and beyond.

A key activity of RCE Yogyakarta is the preservation of the Pandanus species in the region and revitalization of traditional knowledge in the local communities. The region is rich in natural fibres, resulting in rich traditional knowledge related to weaving. However, this tradition has been slowly eroding. As an economic incentive for local participation in conservation of natural resources and TK preservation, the RCE has developed an enterprise activity with products made of Pandanus fibre. The activity is carried out in a unique model of university-local community collaboration called Student Community Service - Community Empowerment Learning (SCS-CEL). The benefits of this social learning program are that it sensitizes the students to the need to look at issues in the immediate neighbourhood and address them through a multistakeholder, participatory approach.

Monitoring, Documentation, Protection and Education

Inadequate monitoring and documentation of bio-cultural resources has been a major challenge in most countries. In certain regions of the world only a fraction of biological resources have been identified. The case of traditional knowledge is no different, with insufficient systematic documentation of cultural practices in various bio-geographic regions or sectors. In most local communities, knowledge is transferred in oral form and there is a rapid erosion of these knowledge practices. This raises two major concerns – the challenge of preventing loss of biodiversity or erosion of traditional knowledge, and protection from misappropriation of resources and associated TK. There are several other related issues such as assuring safety and quality of resources or knowledge, valuing resources and related knowledge, creating awareness and so on. Development of community biodiversity registers is considered a sui generis mechanism under the national biodiversity legislations to protect traditional knowledge. Since the last decade, several initiatives have been undertaken to document biodiversity and sensitize the communities on their right to resources and knowledge, with developed registers or databases being used for education and piracy protection purposes. The Nagoya Protocol (Article 21) indicates the critical need to raise awareness on the importance of genetic resources and traditional and related rights of communities. Stressing the role of education, it calls for the need to build capacities of various stakeholders in equitable and sustainable practices related to biodiversity. Several RCEs have taken up activities related to resource monitoring, documentation, education and protection using different strategies.

RCE Cha-am is involved in a biodiversity study titled “Education for Sustainable Development Center” (ESDC) in the Sirindhorn International Environmental Park. The focal areas of the study are environmental and natural resources conservation (e.g. restoration of mangrove ecosystem, soil erosion and coastal erosion protection, deforestation, soil and water management, green energy); ecotourism; fisheries and agriculture; community uniqueness and indigenous knowledge; and a general understanding of sustainability by following a sufficiency economy philosophy. The methods used are Environmental Education curricula for students, nature and environmental camps, volunteer development camp and other camps. To encourage partnership between business and communities for biodiversity

and to showcase best practices, RCE Cha-am has also participated in activities related to the multistakeholder forum on biodiversity.

RCE Chandigarh is focused on understanding wetland ecosystems and the importance of wetlands, as well as providing opportunity for learning by doing, field experiences and hands-on training by exploring wetlands. One of their projects aims to reach out to local communities from a grassroots level by inspiring students, educators and district level officers of the state government to protect and conserve wetlands. It works on preserving wetland ecosystems so as to preserve the important repository of biodiversity and ensure sustainable exploitation of resources for environmental protection. The RCE partners hope that this project will help improve public recognition of wetlands, encourage exploration into associated livelihood benefits and create sustainable development.

For its involvement in the Biodiversity Cyber Dialogue Project, RCE Chubu is using a Social Networking Service (SNS). This is to develop a deeper common understanding of stakeholders in different regions of the world on the importance of biodiversity, and the need for changing lifestyle choices and socio-economic institutions. The major impact of this initiative was cross-boundary, national and international mutual-learning among the members of civil society (especially among members of the Japanese NGOs who have an interest in biodiversity ranging from a particular ecological issue to different social and economic aspects).

The cyber dialogue project and related collaborative projects with Japanese NGOs gave the RCE an opportunity to expand its network to promote ESD with the concept of biodiversity as an entry point. Topics such as "Indigenous Peoples and Biodiversity", "Gender and Biodiversity", "Local Community Life and Biodiversity" and "Traditional Wisdom and Biodiversity" have been crucial in the cyber discussions.

Knowledge of edible plants kept communities of Finland supplied with food during difficult times of war and in postwar periods. Such knowledge, while remaining relevant for the resilience of the society, has recently become important due to arrival of immigrants who are not familiar with various species of plants in Finland and, as a result, suffer from consumption of poisonous varieties. In one of its projects, RCE Espoo aspires to educate the population about ways of using herbs, fruits and mushrooms in a manner that enhances their well-being and, at the same time, protects biodiversity. Expertise of different partners in biodiversity, techniques of species identification, ability to present them visually as well as an understanding of the impact of various plants on health and ecosystems are reflected in the teaching materials. These materials deal with questions of integration of ecologically, economically and socially sustainable development. These materials will be further used for creating new applications for NatureGate, an online learning platform used by schools and other partners in Finland.

RCE Kyrgyzstan is engaged in a program that aims at documenting and sustaining traditional knowledge related to local ecosystems. Such practices are particularly critical for maintaining the health of communities as well as of biodiversity, which suffers from exploitation by local and foreign users. As the first step of the program, the RCE partners have undertaken research to map the extent and type

Conference on Traditional Medicine 2009 in Bangalore, India

of TK holders in the area, the methods they use, the extent of success of their practices and awareness of the local population of these traditional activities. The knowledge obtained through the research, as well as contacts established in a process, will be used for creating awareness about TK practices and for developing enabling conditions for the TK practitioners.

Worldviews and Integration

An important question in the integration of TK and institutional knowledge systems is the hegemonic relationship between these knowledge systems and the socio-political and methodological challenges in integrating and mainstreaming TK. Institutions commonly assume that TK can and must be validated with the logical positivist epistemology of scientific institutions (Haverkort et al., 2003; Shankar & Unnikrishnan, 2004; Haverkort & Reijntjes, 2010). Jenkins (2000) notes how modernization has dramatically devalued traditions by universalizing abstract norms of action, valuing along with individualized patterns of socialization.

In these processes, tradition has often been seen as an impediment to progress or an ideal to return to so as to resolve the problems that modernity has brought. The modernist attitude towards TK has been either modernize or disappear, with what reads as being the strongest and thus most coherent rationale (Couze & Featherstone, 2006). On the question of optimizing the tensions between present and traditional, note that "older knowledge may be readmitted but subject to the critical and skeptical judgment of a rational method, uncluttered by faith and dogmas" (Couze & Featherstone, 2006: 459).

In the efforts to achieve development, emphasis has been placed on economic growth and related practices. In the same vein, the role of culture in contemporary societies has been examined through the lens of direct relevance to commercial activity. Social analysis has been largely documented by rational behaviour models that abstract economic action from the complex dynamics of its historical contexts (Jenkins, 2000) and without cognizance of the practice architectures, within which these dynamics are inscribed and function (Kemmis & Mutton, 2012). For example, cultural artifacts or art forms are seen as vehicles for economic empowerment with less focus on their contextual functions in and for the communities in question. Another example is the increasing focus on traditional medical drugs in bio-prospecting while neglecting the holistic dimension of traditional medicine. There is also often an emphasis on aggregate growth rather than distributional effects or equity.

A view of TK as unchanging inscription of antiquity, relegating it to the status of a commodity that should be documented and preserved is a matter of concern. The discourse has been centred on the protection of intellectual property rights, often overlooking and neglecting a need to consider and strengthen the social and cultural processes of continuity and contemporary utility around such knowledge. Whereas the documentation and preservation of TK (which are on the verge of extinction with the receding of language diversity) are the need of the hour, the promotion of contemporarily relevant TK and encouraging continued creativity and dynamism are vital.

Traditional knowledge is often considered exotic and confined to indigenous communities. Whereas the presence of TK might be obvious in such communities, sociological analysis amply reveals that such knowledge and related practices are embedded in all sections of society. However there may be a dominant influence of social classes, caste or ethnic groups on such knowledge within the communities. There is also a contested idea that promotion of TK in certain sections of society where modern science and technology benefits are not available or accessible, create double standards within a society and further deepen inequity in less-developed countries.

RCE Espoo has initiated an innovative project called "Encounters", led by Keinumaki´s school project with 40 other partners in the region. Encounters seeks to find ways in which sustainable development and methods become rooted in the school's daily activities by developing methods that involve networking with local stakeholders, authorities, researchers and experts, and by choosing those pedagogical methods that support social interaction and participation and enrich the working methods within the school's learning environment. Various dimensions of sustainability such as local, social, technical and didactic-pedagogical aspects are explored for bettering learning in schools. Learning packages focus on ecological, economic, social and cultural dimensions, and include aspects such as historical mapping, cultural heritage, mapping of present environment, interactions with informal learning centres such as national parks, and transforming schools into learning domains for sustainable lifestyles

In Guatemala, 42 per cent of the population is indigenous. There are several challenges in the current education system. The government spends meagre resources for education in the region, and the existing education system is a predominantly Western model that ignores the traditional cultural wisdom. A transformative education model which can ingrain values of cultural diversity and national identity within communities while fulfilling ambitions of scientific and technological capacities of a developing country is a vital need. The Mayan cultural worldview based on principles of sustainability fits well into this model. RCE Guatemala has taken the lead in integrating this Mayan worldview in various levels and forms of education. Wisdom dialogues and curriculum reforms are important strategies for this program, with active networks of university faculty, school teacher and students, and community members.

Some of the practices of RCE Lima-Callao are based on the belief that contemporary educational systems do not consider knowledge and, as a result, are not contextualized to the life of the indigenous communities in the area, thus contributing to a social imbalance and disenfranchisement. To integrate knowledge and learning systems to support capacity development and livelihood practices of the traditional communities while taking care about biodiversity, the RCE has developed a pilot course on biodiversity and intercultural knowledge with the indigenous Quechua Lamas community. The course development has been based on transdisciplinary dialogue with indigenous communities, college teachers, technicians and other stakeholders in the community. Building on the first success and experiences of other RCEs in Bogota, Guatemala, and Western Jalisco, the RCE is exploring further innovative models of learning and development that bring together areas of traditional knowledge, health and livelihoods in the Andean-Amazonian communities.

A major focus of RCE Kodagu's biodiversity and TK-related activities is conservation of sacred groves through research and outreach programs. Their field programs involve livelihood initiatives through the promotion of bamboo cultivation, organic farming, creation of a forest protection battalion, ecosystem services valuation, and educational initiatives in schools and colleges. Through Eco-clubs, several schools and colleges have undergone training in the area of sacred grove conservation. Identification, documentation and conservation of medicinal plants and associated knowledge in the region is another thrust area. A heritage interpretation centre depicting the local cultural and biological diversity has also been created.

RCE Makana has become a hub for local organizations to collaborate in support of environment and sustainability initiatives. What has been most notable is that issues that range from water to biodiversity have each been found to have a local knowledge practice that had been previously overlooked. An emphasis on biodiversity conservation has thus become a matter of local importance to people and the environment. The RCE does not have funded projects but is a community-based initiative where funding can be pooled and change practices can be initiated at a level that local family resources allow, such as compost gardening and the planting of indigenous food trees of cultural significance that serve to restore biodiversity-based food production and health in a small but significant process of indigenous knowledge and practices recovery.

Learning in RCEs

The examples above demonstrate how, in the context of RCEs in Asia, Africa, Europe and the Americas, different RCE stakeholders are able to express their concerns and address them through co-engaged practice and learning in developing regionally appropriate solutions to the challenges of bio-cultural diversity. Such individual articulation and collective contextualization demonstrate the biodiversity problematic (ranging from protection of species and ecosystems to poverty eradication, health and livelihood security), its relevance for the variety of stakeholders and an opportunity that the RCE learning spaces could offer for mainstreaming issues of biodiversity into the development agenda.

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Chapter 4

Learning and Innovation for Greener and Socially Just Societies[1]

Zinaida Fadeeva and Unnikrishnan Payyappallimana

Shifting to a greener and more socially just economy to achieve a sustainable society requires serious changes in production and consumption systems at the local and global levels. Such changes call for development of new competences and capabilities in all sectors of society, including the market, government and voluntary sectors. These competences and capabilities, while including employment, are also concerned more generally with livelihood and lifestyle and the comprehensive learning most adequately characterized as ESD. ESD requires long-term and systems thinking, dealing with complexities, and working in partnerships. It also entails specific knowledge related to areas of one's personal and professional life that impact local and global communities and ecosystems.

1 This chapter was developed on the basis of the editorial published in Payyappallimana, U. & Fadeeva, Z. (Eds). (2013). *Innovation in local and global learning systems for sustainability: Towards more sustainable consumption and production systems and sustainable livelihoods.* Learning Contributions of the Regional Centres of Expertise on Education for Sustainable Development. Yokohama: UNU-IAS.

While it is important to develop new knowledge, learning, and innovation within each economic sector and other organizational sectors, the challenge of working across sectors and disciplines has to be addressed. More sustainable consumption and production (SCP) systems require redefining the boundaries of traditional responsibilities between producers and consumers, regulators and those being regulated, and innovators and innovation users within the marketplace. At the same time, each of these market-based solutions can be significantly bolstered and some may, in fact, depend on autonomous or collaborative innovation by other sectors (including higher education, government, and non-profit organizations). This type of innovation would rely on the traditional strengths found in each of the corresponding models of production of the respective sector (in this case, scholarship within higher education, citizenship within one's country, and volunteerism within the not-for-profit sector). Such inter-organizational innovation is concretely expressed in the global development of the RCEs that are enabling new forms of regional learning opportunities through the formation of grassroots, multisectoral regional partnerships.

In a drive towards more sustainable development, it is critically important to revisit the meaning and ultimate goals of productive relations in modern society from the perspective of quality of life and ecosystem health. These goals are, in turn, embodied in the idea of sustainable livelihoods and well-being for all – both now and in the future.

While ESD principles and outcomes have to be instilled in all educational, training and action initiatives to inform how green growth is understood and implemented, several areas require particular attention. The authors of this chapter explore these areas, paying specific regard to the examples of multistakeholder actions by RCEs in different parts of the world.

Critical Areas of Change: Towards a green, resilient and just society

Twenty years after the Earth Summit of 1992, governments, international organizations and other major groups came together in Rio de Janeiro, Brazil, to discuss measures to address issues of sustainable resource use, decent and meaningful work, and eradication of poverty. One of the key themes that has dominated the official discussions is how to develop a green economy that enables a dignified life for millions of poor people while charting possible development paths that are not environmentally destructive.

The discourse of green growth covers a variety of complex areas related to the topics of sustainable production and consumption. These include lifestyle choices, green skills acquired through technical and vocational education and training (TVET), green industries, governance for a greener economy, and sustainable livelihoods, to name just a few. The complexity of the issues, also reflected by multiple definitions of green economy and green growth, has produced different interpretations of the intended scope and ability of a green economy to address the current challenges of development. Often, the discourse of green growth remains too narrow as it assumes that solutions to sustainability are focused on innovations led by the marketplace, particularly by existing large players. As a result, many critical actors remain unchanged and processes under-utilized. For example, discussions of the green economy tend to underemphasize the need for the generation of

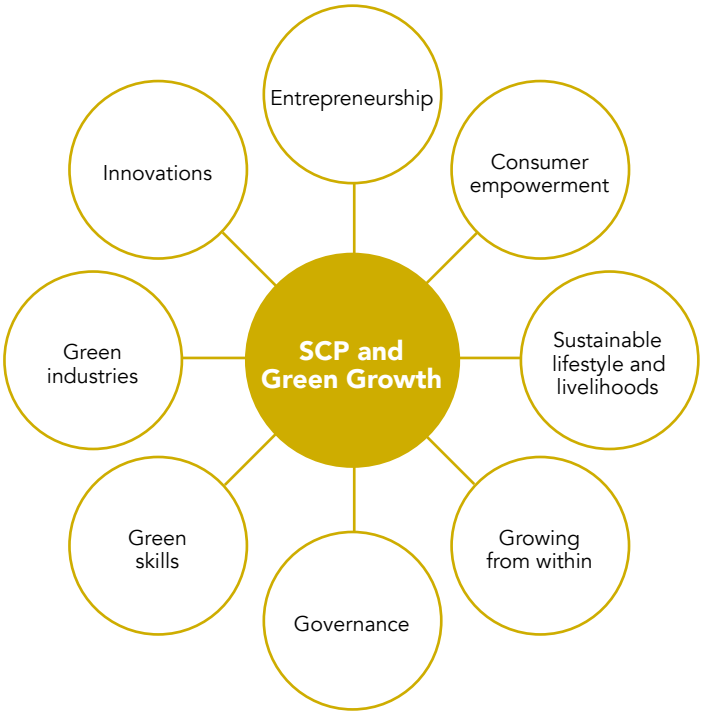

Figure 4.1 Elements of SCP and Green Growth Agenda

new enterprises, innovation by existing small and medium-sized companies, and development by alternative market organizations (such as cooperatives and credit unions). They tend to overlook consideration of market strategies that favour the competitiveness of the poor and the most vulnerable and those without access to resources. Most importantly, a dominant focus on market processes leaves aside the need for non-market strategies – critical especially in cases of market failure – including those led by various levels of government and other non-market players. As a result, many alternative development approaches, such as endogenous development, remain on the fringes, even when holding critical potential for greener, more just and resilient societies.

The authors consider the concept of green growth more critically. Rather than seeing it as a general view that all market growth is good when it meets minimal environmental standards (with social aspirations assumed to be addressed merely through such growth), this chapter examines and evaluates green growth in the broader context of sustainable development, focusing on the forms of economic growth that are most conducive to sustainable development's overarching goals. Generally, a green economy cannot be seen as simply a market with greener products replacing less environmentally-friendly alternatives; rather it is an emergent challenge to advance diverse local development that leads to improved resilience of markets and equitable societies as a whole, with ongoing improvements in quality of life in times of substantial global change.

Figure 4.2 Critical Areas for Stimulating Innovations for the Green Economy

This chapter demonstrates the role of learning for sustainable development, based on the principles of ESD, in transitioning towards a greener and sustainable society. While focusing on ideas and actions within the traditional market discourse, the authors also consider the need to engage solutions involving those traditionally excluded from productive activities, those who could, if provided with necessary assets and capabilities, develop more sustainable livelihood practices for themselves and their broader community.

The chapter begins by bringing to the fore various challenges of transitioning towards a green economy and by discussing how ESD is able to support working with these challenges. It will assist development of an appreciation of the potential of learning for sustainability enhanced by reference to practical examples developed by RCEs in various regions of the world, and the positive outcomes of regional and global networking of these RCEs through a multilateral platform.

Box 4.1
Innovative Practices for a Greener Economy

RCE Makana and Rural Eastern Cape (South Africa)
Through encouraging collaborative initiatives among its partners, RCE Makana and Rural

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Innovations for the Green Economy: Including local and global

Market prices of goods and services, in the majority of cases, do not reflect environmental and social externalities that occur along their life cycle. While information on the negative and positive effects given to various stakeholders is important, for example, to individual consumers and those engaged in organiza-

tional purchasing, more fundamental changes in societal norms and behaviours as well as developing new relations along production value chains are required. Understanding challenges of modern production-consumption systems needs to be combined with the ability to recognize opportunities for innovation, often spanning traditional sectoral and geographic boundaries dividing economic and social players (including consumers and producers). Finally, and fundamentally, the ability to create and sustain an institutional framework that is conducive for transition to a sustainably developed society requires continuous learning and innovation.

What consumption and production systems would look like within a green economy is not yet clearly understood. Nor can they be conceptualized universally for different regions. Understanding the need for particular and customized patterns of development and growth (involving market and non-market forms of production and investments in each type) will require enormous collective innovation and learning. Production and consumption systems need to emerge from the multiplicity of change practices initiated by communities on the basis of immediately available resources within communities. This is reflected in actions taken by RCEs.

RCE Makana and Rural Eastern Cape in South Africa (Box 4.1) supports a Saturday market to strengthen local production and consumption while RCE Lucknow in India assists in the development of productive forest resource-based livelihood activities by the Tharu indi-genous community. Both initiatives contribute to small-scale, low or no-cost innovations that have triggered new production-consumption relations leading to local sustainable development. Education has a special role to play in sustaining such processes. By involving situated learning drawing on the knowledge, history and resources of the communities involved, peopleand organizations have been empowered to look beyond those possibilities immediately given by existing market systems of consumption and production. Governance of such innovative market processes, akin to governance innovations provided by RCEs themselves, secures continuity of learning processes and synergies with other developments, including existing forms, in each region.

Eastern Cape contribute to the development of a range of change-practice approaches that set out to explore what could be done to improve quality of life with resources available in the region's communities. The projects, ranging from initiation of a bicycle-based small business for cleaning and composting to support for local Saturday markets, are being developed on the assumption that change for more SCP practices has to come from direct engagement of people in change practices (changing to learn) rather than from a simple reliance on awareness and knowledge transfer expected to trigger actions (learning to change).

Small scale projects of the RCE, oriented to a "no or low cost" way of doing things, have led to a variety of innovations, in turn triggering new activities. These have led not only to livelihood improvements for the poor but also have demonstrated their ability to contribute to low carbon and low pollution practices, along with rejuvenation of traditional knowledge and improvement of quality of life.

RCE Lucknow (India)

Collaboration of governmental departments, academic institutions, NGOs and schools through RCE Lucknow enabled critical engagement with the Tharu tribe of the Dudhwa region in relation to the natural resource management (NRM) plan for the area. The lands traditionally used by the Tharu indigenous community were designated as a national park in 1977. This led to the change in resource use patterns of the community and, eventually, to conflicts with the authorities. The main objective of the NRM project was to establish a balance in development through introducing livelihood activities for the Tharu people that, at the same time, lead to preservation of biodiversity. Multiple planning meetings engaging the community and professionals (in agricultural and livestock practices, conservation, market and handicraft development, energy efficiency, and education) led to mapping of local resource flows as well as identification of activities for socioeconomic

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uplift of the community. Learning about interdependencies of the natural and human systems, understanding entrepreneurship opportunities, and developing skills for food, energy and craft production were the foci of the project. Capacity development has been designed with consideration of appropriate learning pedagogies centred on realities of the indigenous community and aiming at improving their quality of life. Participation of the local community, especially of women and children, has contributed to a quicker uptake of these practices and a greater sense of community ownership. ■

Entrepreneurship for Sustainable Development

Entrepreneurship has been acknowledged as a major contributor to production of sustainable products and services as well as innovative processes. It is also a strategy for providing livelihood opportunities for many regions, in both developing and developed countries, which experience economic and social hardship.

The critical role of entrepreneurship in a green economy and socially just society is attributed to entrepreneurs, often through small and medium-sized companies, demonstrating significant flexibility in addressing emerging issues with a high degree of innovation. Education of entrepreneurs that work with sustainability problems (for example, vulnerability and poverty, social inequality and environmental degradation) could itself become a launching pad for new business development. Such education is required to enable individuals, communities and organizations to produce viable alternatives to existing production-consumption systems that fail to adequately address issues of improving the quality of life for all over the long-term and/or cause environmental deterioration along the supply chain. They also need to facilitate development of competencies that lead to exploiting such identified business opportunities by creating new enterprises or altering existing ones. Entrepreneurial education and support is needed to help identify business opportunities for producing improved or new products, processes and services as well as securing conditions for new systems of production and consumption supplemented by or through synergies with other sectors (such as government, faith organizations, the non-profit sector, and policy and programmatic change in these respective organizations).

For example, entrepreneurship practices of RCE Delhi (Box 4.2) have focused on the development of livelihood opportunities for women in resource-poor urban communities. Considerable effort of the RCE partners and the communities it represents were spent on identification of for-profit market opportunities built on a strategy of initially identifying resources (from waste materials) and potential markets for products made from these (e.g. handicrafts, bags, etc.). In addition, skills needed for their production and distribution were also identified. The success of the project is a result of collective efforts of organizations enabling strategic analysis of the entrepreneurial opportunities (by higher education institutions), learning of new capabilities (by NGOs) and creation of

Box 4.2
Development of Sustainable Entrepreneurship

RCE Delhi (India)
RCE Delhi operates in an urban area faced with a number of problems related to poverty, inadequate infrastructure, pollution and waste, to name just a few. Partners of the RCE see empowerment of women in poor communities by increasing their livelihood choices as a necessity and an opportunity. Project CARE (Creating Awareness, Skills and Responsibilities towards the Environment) seeks to engage college students and young professionals from Accenture in skills development for low-income urban communities in environmentally vulnerable locations. Through participatory actions, the project identified waste materials that could be immediately made available for conversion into potential products such as handicrafts and paper bags. Engagement of various partners (including researchers assisting in understanding profiles of these communities, NGOs facilitating iden-

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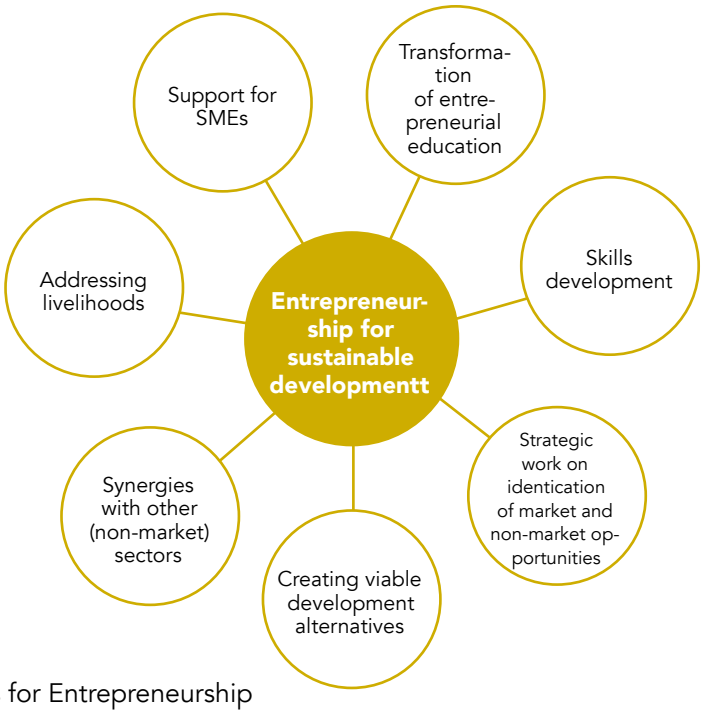

Figure 4.3 Critical Areas for Entrepreneurship for Sustainable Development

appropriate institutional conditions (by governmental departments). Efforts of RCE Vienna (Box 4.2) in empowering sustainability entrepreneurs is grounded in the collective learning process leading, among other outcomes, to discoveries of additional entrepreneurial opportunities. The critical element of the project is enabling innovations that are conceived within the walls of academia to enter markets while influencing sustainable development of this cross-border region.

Greener Skills and more Sustainable Technical and Vocational Education and Training

The formal education system (including elementary, secondary and post-secondary education) and TVET systems have to reflect the needs of restructuring the economy towards greener and more socially just societies. Transitions would lead to structural changes in the industrial sectors through trained professionals. This would include diminishing the number of so-called "brown" industries characterized by their high degree of pollution. This requires greening of existing industrial processes to enable the emergence of new, sustainable industrial systems. Greening of TVET is also seen as a strategy to bring more dignity to the jobs available in a variety of productive sectors due to the socially laudable goals associated with sustification of the necessary skills and lead-ing processes for their development, and youth working on continuation of the process) leads to opportunities for low-income women to become innovative entrepreneurs.

RCE Vienna

RCE Vienna works in the densely populated region located between two European capitals – Vienna and Bratislava. The flagship project of the RCE aims at development of regional entrepreneurs who perform sustainable business activities through creation, renewal or improvement of products, services, technologies or organizational processes. Such business actions are expected to accentuate long-lasting positive impacts on social, ecological, communal and cultural aspects for regional sustainability. The first phase of the project strives to identify sustainability entrepreneurs, understand critical factors that impact their actions, and design processes that lead to support and up-scaling of sustainable entrepreneurship in the region. The partners who represent academia, private sector and civil society organizations are particularly focused on translating knowledge of academia into innovative sustainable production processes. ■

Figure 4.4 Critical Areas for Green Skills Development

tainability and a greater acknowledgement and legitimacy for TVET. At the same time, a focus on the social and ecological goals of sustainability often affirms the underlying ethical or normative goals of technical and vocational training and other forms of professional training. These ethical goals linked to particular occupations, for example, are reflected in the nursing profession and its goal of healthcare or the engineering profession and its goal of efficiently and effectively using materials in achieving useful outputs. These projected changes require development of each educational sector in collaboration with other educators with the aim of the emergence of TVET and tertiary programs that are aligned with sustainability outcomes.

In order to develop TVET that provides education for millions of workers able to bring sustainability skills into existing and emerging work places, there is a need to integrate local, regional, national and global sustainability issues related to specific occupational specializations. Such issues would need to be discussed by major stakeholders, including communities and potential employers. The educational processes of TVET have to consider developing local, place-based learning opportunities exposing technical and vocational trainees to local ecosystems and community needs. Such place-based education as well as future employment success, to a large extent, depends on the development of skills that go beyond technical competencies and includes an understanding of complexities, problem-solving and ability to work with various sectors and stakeholders across the supply chain. Among critical issues that TVET faces today is a question of challenges that graduates of the TVET system might face if employed in various world regions. Professional out-migration, strong in such professions as nursing, engineering or construction, requires understanding of not only a broad range of development challenges but impacts of the international movement of such professionals.

While agreement on the right competencies and approaches for development are important, the critical issue becomes developing competencies for educators and trainers of TVET. In addition to the specific programs oriented to capacity development of TVET educators, learning could also be facilitated by closer collaboration between TVET and technology development sectors (including other higher education organizations and community innovators), governments (providing coordination of educational and development strategies), and industries (providing opportunities for employment and investment in new sectors). Transition to the green economy would also benefit from the TVET sector enabling development of sustainability competencies and access to the market for traditionally disadvantaged groups and those needing assistance. As sustainability challenges are of an evolving nature, such education would need to be seen as a continuous process.

An example of the development of sustainable TVET practices in conjunction with other educational and local partners is found in the Riverfarm project of RCE Greater Western Sydney in Australia (Box 4.3). This multistakeholder project developed around the idea of revitalizing the Hawkesbury Riverfarm, which, in turn, led to the development of new types of learning for a variety of learners (ranging from the primary and secondary level to post-secondary education and other higher education partners). Among them were the students of the Western Sydney Institute of Technical and Further Education (TAFE WSI). These pre-apprentice carpentry, electrical and plumbing students, under the supervision of their teachers, engaged in community-based learning to gain key development skills leading to the rejuvenation and renovation of the historic Riverfarm site. The action education and research takes place in synergy with other projects undertaken by the New South Wales Department of Education and Communities, the Brewongle Environmental Education Centre, the Hawkesbury Nepean Catchment Management Authority, the Darug Custodian Aboriginal Corporation and the Hawkesbury Alumni Charter. These activities aim at understanding and supporting historical, cultural and natural characteristics of the farm site and development of new learning strategies for regional sustainable development. Ultimately, they address new ways of professional education fitting into an agenda of green growth and sustainable market and non-market practices. The project has notably been recognized by The Skills for Sustainability – Educational Institution Award.

The three-year *BauNachhaltig* project of RCE Hamburg (Box 4.3) also focuses on a transformation of TVET.

Box 4.3
Work of RCEs in the Area of Sustainable TVET

RCE Greater Western Sydney (Australia)
The Hawkesbury Riverfarm in Australia is a flagship project of RCE Greater Western Sydney and a living laboratory for learning and action-research being developed on Sydney's Hawkesbury River. The University of Western Sydney Hawkesbury Riverfarm Education Centre is transforming this culturally historic site into a unique real-world learning and research resource, linking land, food, culture and water. Partners of RCE Greater Western Sydney focus on the development of student skills for ecosystem appraisal as well as advancing capabilities and green skills identified in their respective national vocational education and training packages. The project is an innovative example of how institutions of primary and secondary, post-secondary and higher education can work in a coordinated way to support the implementation of the new national curriculum in the area and foster learning pathways towards greener economy and sustainable learning.

RCE Hamburg (Germany)
Among the challenges addressed by the partners of RCE Hamburg is a need for education and training that leads to the adoption of low-carbon technologies. While this is a challenge for many sectors, energy efficiency in construction and building, both for newly developed buildings as well as those going

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through retrofitting, is critical. Recognizing technical and vocational training as a key for addressing this challenge, nine competence centres for professional training in building and energy within the nationwide KOMZET network have joined together as part of the three-year BauNachhaltig (BuildSustainable) project.

The project is based on the premise that high quality construction is a prerequisite for sustainability and vice versa. It focuses on the development of learning materials and pedagogies that contribute to various professions and other sectors involved in sustainable construction. The project is supported by the faculty of Applied Building Technology at the Hamburg University of Technology, the Federal Institute for Vocational Training (Bundesinstitut für Berufsbildung) and the Federal Ministry for Education and Research (Bundesministeriums für Bildung und Forschung). It is closely informed by the experiences of small and medium enterprises (SMEs) in the construction sector, which remain critical project partners. ■

In particular it addresses the need to simultaneously develop skills and systems for the more sustainable low-carbon construction sector in Germany. At the core of the project is an initiative of the nine KOMZET competence centres for professional training in building and energy. A key goal is to develop TVET learning materials based on sustainability principles in relation to housing. The project demonstrated the critical importance of partnerships in learning and innovation toward more sustainable building practices. With a focus on particular construction elements within a complex unified project, along with individual craftspeople coming together, awareness-raising concerning the overall system effects of individual decisions took place. In this way, quality becomes defined from a sustainability perspective and embedded in practice. Interestingly, learning is required not only among the professionals developing the buildings but, in the case of complex projects such as "passive houses", the users who eventually own the homes. With the ambitious goal of substantially contributing to low-carbon development, the project has identified a need to go beyond the field of technical and vocational education to engage other businesses within the building sector, along with planners, investors and private individuals.

Green Industries

The previous discussion can help lead to a re-envisioning of what green industries might need to look like in the 21st century and how learning and education can promote transitioning to more sustainable modes of SCP. For example, from a structural perspective, it highlights elements of how green industries that support SCP – and, more generally, the concept and identity of sustainable lifestyles and livelihoods – will need to be structured or re-structured. This is especially the case if, as it has been argued, these are important elements or preconditions for viable and successful green industries. Educationally, it points out how new forms of learning and scholarship for sustainability associated with intersectoral, collaborative partnerships at regional levels (exemplified by RCEs), new technical sustainability education for TVET, and broad consumer and public education for sustainable development, can affect internal education and training systems of industries.

From an institutional perspective, considerable production innovations along with innovations in administrative norms and practices may need to take place. An evolutionary or gradual approach can focus on internal measures that optimize existing systems. These might include cleaner forms of production and more sustainable product and service design reflecting, in turn, underlying principles of systems thinking that enable the long-term functionality of products. It may also be that additional dynamic institutional changes within industries need to take place that allow industries to fully take advantage of new social capacities and expectations emerging in societies committed to sustainable development.

Figure 4.5 Critical Areas for Development of Green Industries

Such transformative market features could be analogous to the institutional transformations (and benefits) associated with the historic democratization of governments and the broad citizen education that accompanied these changes. These institutional innovations seem to be already occurring to some extent, for example, in the area of corporate social responsibility (CSR) that envisions a broader stakeholder and citizen accountability beyond traditional investor profit maximization and shareholder supremacy. The emergence of alternative market forms takes advantage of changes in market preferences tied to sustainable development outcomes (creating new opportunities for the self-employed along with the formation of SMEs and cooperatives).

Regardless of the magnitude and scope of industrial change needed for green industries, the following components are likely to be necessary. At one level is a basic contextual knowledge and understanding of environmental and social trends and their drivers and impacts. In addition is a need for knowledge and experience with new technologies broadly understood. This can include new types of tools and equipment along with new instruments for evaluation, such as Life Cycle Assessment. There is, furthermore, a need to be able to integrate capacities, across disciplines and other dimensions, to be able to respond to opportunities that arise that might not have been predicted but are market opportunities nonetheless. This requires the ability to have some spare capacity and flexibility along with positive relationships internally and externally with other organizations to be responsive while reducing adverse risks. If there is a concern with every individual having a sustainable livelihood (part of which is fulfilled through market participation) one needs to also develop market conditions that encourage market entry by new players, particularly those typically left out of the market, along with the pos-

Figure 4.6 Critical Areas for Consumer Empowerment

sibilities for their competitive success and viability over the long-term. In terms of addressing poverty and vulnerability, there is a need to encourage SMEs and different forms of community enterprise (such as cooperatives) given the current role and extent of markets in meeting people's needs and aspirations.

This is especially important given the increasingly constrained levels of social support provided by governments in many countries. One needs to systematically explore the competitive advantages of these enterprises in the context of specific social and ecosystem settings and the possible educational and community investments needed to advance such enterprises. At one level, there is a need to optimize current SME practices making them greener, safer and more rewarding places to work. Given the limited resources of SMEs and the importance of human and social capital in small firms, there is an important role for partnerships and strategic engagement with SMEs by other organizational partners using inclusive forms of participation. These forms of participation may, in turn, not only allow for improvements in the quality of products and services provided by SMEs but also a way of developing various forms of social capital and shared physical capital and technologies that improve new and existing SME competitiveness.

Box 4.4
Engagement of RCEs in Consumer Education

RCE Skåne (Sweden)
Sustainable food systems is a flagship project of RCE Skåne. The region is famous, among other qualities, for its agricultural production. Having in mind these characteristics, the schools of Malmö (the largest city of the region) decided to help re-shape the regional food systems giving priority to organic local producers. Targeted at communities in the Malmö municipality, the project focuses on increasing organic food in school meals. Malmö, being a certified municipality as a fair-trade city, facilitates multilevel actions and programs. In this program, building links between organic farmers and schools creates a new supply chain. Community learning is initiated in the process through workshops, teacher training on ood, and SCP perspec-

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tives linked to local, regional as well as global dimensions. Regional ESD initiatives offered a suitable strategy for re-orienting consumption-production systems that are contextually situated. The ambitious goal of eventually reaching 100 per cent organic school meals, required collaboration of schools, universities, the municipality and families of schoolchildren. A combination of research, publications, education and network building supports this ongoing transition.

RCE Kitakyushu (Japan)
Activities of RCE Kitakyushu, located in western Japan, are characterized by a broad outreach to the community based on a history of citizen activism. The project aims at enabling young consumers (in particular young children and children with disabilities) to understand food and potentially make responsible purchasing decisions in the future. This project came from the experience of a housewife who found that food at a grocery store came from countries she had never visited. The group of RCE partners representing universities, schools and citizen groups began to work on food with special attention to the promotion of local consumption of local products and the concept of food mileage to reduce CO_2 emissions. In the course of two years of innovating, workshops at schools, university classes, community centres and nursery schools, as well as testing suggested approaches, the RCE has developed a package of materials and strategies consisting of a simulation game centred on a hamburger shop, along with a puppet show and excursions to food-growing farms. While the work aimed at including children with disabilities to be able to live their own lives as members of society by sharing their experiences and creating empathy, it has also influenced developers from various sectors, as well as the children's families and schools. ■

Consumer Education

To consume sustainably, citizens and organizations have to be empowered to act upon information on the environmental and social impacts of products and services they consume. These impacts include the distribution of economic and other benefits from those supplying the product or service. Actions would range from giving preference to more sustainable product and service options in meeting a particular need or preference, to engaging in and developing alternative means of addressing these needs (whether market or non-market) if these are optimal, not only in avoiding social and environmental damage but also promoting well-being and human and ecosystem resilience. It is also evident that a clear division of the role of consumers to consume and producers to produce would have to be questioned as consumers themselves become increasingly recognized as part of the performance of products and services. Smart housing or transportation systems depend on the actions of the users who, quite naturally, need to be engaged at the earliest possible stages of product conceptualization. Such increased integration of production and consumption requires not only new understandings of the principles of system operations but increasingly fostering relationships (accompanied by shared commitments) between consumers and producers in product innovation, testing, and use. Learning will also be required in other sectors, for example, to encourage consumers as citizens to join political processes that champion their rights as consumers, to help eliminate corruption and anti-competitive practices, and to promote regulation and purchasing policies that ensure a higher ecological and production standard while not creating barriers to SMEs and marginalized groups.

To become an active, sustainability-conscious consumer, one has to know not only the impact of products and services along their respective supply chain, but also have an ability to engage in actions and practices that lead to minimization of environmental impacts and maximization of sustainable livelihood opportunities locally and globally. As an example, RCE Tongyeong in South Korea and its partners aimed at minimization of food waste thereby challenging the level of waste traditionally accepted by Korean people. They approached the issue at a system level working with schools as well as other partners, providing both conceptual and practical support. A further example comes from Sweden. Recognizing the power of the public sector to create a pull towards sustainable consumption, RCE Skåne (Box 4.4) facilitated

a project that aims at development of a new regional organic food supply chain. Their ambitious goal to provide 100 per cent organic meals in schools led to the development of knowledge transfer and actions by multiple RCE partners. This included schoolchildren, their parents, teachers, universities and municipalities. Learning materials, research, awareness campaigns and supply chain innovations led to a significant increase in organic food consumption at the regional schools.

Mainstreaming sustainable consumption requires engagement with those that traditionally may not have been learning about opportunities and challenges associated with the topic of sustainable consumption. A further example of engaging on this topic involves disabled youth and very young children. RCE Kitakyushu in Japan is working in a region designated in 2011 by the OECD as a green growth model city. The partners have developed educational materials based around the topic of sustainable food and include excursions to farms, simulation games and theatre by focusing on the production of hamburgers. The pedagogy enables participants to think of food-related issues such as health, transportation, economic impact and well-being based on real-life local experiences as compared to a more conventional educational model.

Promotion and Development of Sustainable Lifestyles and Livelihoods

Connected but not limited to the issue of consumer education are sustainable lifestyles and livelihoods. The idea of a livelihood goes beyond specific market choices by individuals and households for particular products and services. Livelihood also includes participating in productive and other social activities outside of the market. It also requires understanding that well-being can be undermined by overconsumption by those who are economically wealthy while addressing underconsumption by those lacking the financial means to purchase or lacking local market options for valued goods and services. Related to one's ability to purchase is one's ability to earn market income (whether through employment, self-employment, or strategic investments) that builds one's asset base, broadly understood. This can include various forms of capital: physical/human-made capital, financial, social, human and natural capital. A livelihood also includes knowledge of how one can strategically use one's individual and collective assets in non-market ways to achieve livelihood goals valued by the individual. The ability to manage risk by reducing one's own vulnerability (the exposure of one's assets to various hazards) is central to sustaining one's livelihood and should be pursued in a way that does minimal or no harm and preferably strengthens the livelihoods of others. Products and services can also be purchased that help reduce vulnerability. Education is critical, especially education that encourages livelihood strategies and use of materials advancing sustainable lifestyles and livelihoods over the long-term as well as larger scale project and process interventions (such as market engagement of producers and consumers) that simultaneously advance related livelihoods within a community.

In developing learning and innovation systems conducive for this issue, awareness by individuals of diverse market and non-market livelihood strategies along with identification of one's personal and community asset base that can be mobilized to advance these strategies is key. Normally, a critical skill-set is needed for the periodic mapping of regional/communal assets and productive possibilities

Figure 4.7 Critical Areas for Sustainable Lifestyle and Livelihoods

in relation to existing and emerging livelihood opportunities in one's community (and in relation to other communities and markets). Such learning is reflected in a strategy of RCE Lucknow in India. This RCE is in the process of developing livelihood opportunities for indigenous communities in the Dudhwa region. Identification of community assets enabling the production of food, energy and crafts has been done in collaboration with organizations knowledgeable in the areas of conservation, lifestyle practices, energy, and markets. A further RCE strategy has been to systematically identify sustainability issues impacting livelihoods in a region and collaboratively develop supporting educational materials with other RCEs. RCE Cairo, for example, has worked with several RCEs in Europe to develop school kits focusing on themes impacting livelihoods in Egypt including sustainable and unsustainable behaviours, agriculture, biodiversity, energy, and water (Box 4.5). RCE Graz-Styria (Box 4.5) demonstrated another advantage of the RCEs to tap into the knowledge resources of the region. Utilizing presence of several universities in the area, it brought together capacity of researchers and the students in developing more sustainable services in the area.

Education is also needed regarding institutional barriers to sustainable livelihood practices (such as corruption, or policies, regulations, and programs preventing or undermining the implementation of new sustainability technologies or livelihood strategies favoured by the poor and vulnerable). One also has to educate on how to strategically eliminate these barriers. In addition, individuals and communities need education about unsustainable livelihood practices that create adverse risks and harm to others. More positively, education for sustainable livelihoods includes the following:

- Education regarding specific transformative technologies whose implementation can create market and non-market livelihood opportunities – especially for those who are worst off.

- Education that promotes critical thinking so individuals can identify and assess the relative merits of various livelihood strategies in achieving their livelihood goals.

- Values education to enable individuals to understand various livelihood goals in the context of individual and community well-being, broadly understood.

- Values education regarding ethical parameters that shape one's choice of livelihood strategies (for example, strategies promoting the dignity of others – both now and in the future), valuing overall equity between livelihoods, and ethical values encouraging respect for habitats and ecosystems.

One RCE strategy aiming to advance the range of livelihood options open to individuals by sharing and revaluing equipment within communities in its region is demonstrated by RCE Saskatchewan in Canada (Box 4.5). The Sharing Productive Capital Project is an applied research project led by the RCE with the support of Luther College at the University of Regina, the University's Department of Computer Science, and the Craik Sustainable Learning Project. People and organizations in the region are seeking to volunteer productive capital, such as machines, tools and buildings, while software is being proposed to keep track of the available assets. Participants in the project learn about their place in systems of consumption and production by advancing local production opportunities while treating equipment shared in the community with higher standards of care, where equipment is treated as having its own dignity and being worthy of respect (akin to a citizen). While RCE Saskatchewan is focusing on educational strategies centred on specific types of equipment, RCE Rhine-Meuse is developing critical learning processes around key themes identified in the region (such as food, water and building) that allow real world, open collaboration among a diverse set of organizations (Box 4. 5). RCE Cebu in the Philippines is also developing new productive activities for the community tied to ecosystem services provided by the only remaining forest on the island.

The forest, which faced extinction owing to slash and burn practices, was studied by researchers at the University of Cebu and members of the local community, who identified ecosystem services capable of providing alternative employment related to tourism and

Box 4.5
Promoting and Developing Sustainable Livelihoods

RCE Cairo (Egypt)
RCE Cairo has demonstrated how to mobilize the strengths of the global RCE consortium to address local needs in developing education in SCP. The partners of RCE Cairo analyzed national needs and capabilities to meet ESD and SD challenges as well as applying innovative pedagogical solutions developed by and with other RCEs to Egyptian livelihood realities. The outcomes of the project, which include a range of innovations from developing materials and pedagogies to designing programs for the education of teachers in countries where other partner RCEs operate, demonstrate the opportunities for mobilization of global and local expertise and effective capacity development practices for SCP.

RCE Graz-Styria (Austria)
RCE Graz-Styria works in a region characterized by old industrial areas, mining and rural areas affected by migration and unemployment, alongside regions prospering from the automotive industry, tourism and the effects of central urban areas like the city of Graz. Four universities (major employers in the area) were concerned with the relative lack of sustainability actions in the region. In response,

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initiatives were developed among their own staff and students under the "Sustainability4U" process. Through various activities, the University of Graz, the University of Technology Graz, the Medical University Graz, and the University of Music and Performing Arts Graz (together, a 40,000-strong student population), hope to engage students and the community in actions leading to better livelihood opportunities in the region and beyond. Several projects have been developed, including "UniMobil_4U" aiming to improve bicycle routes and paths between the four universities, as well as a project integrating theoretical learning for sustainability (delivered through, for example, a lecture series open to all universities) that has yielded practical actions contributing to sustainability.

RCE Saskatchewan (Canada)
Partners of RCE Saskatchewan are developing two initiatives that will help address sustainable development in Saskatchewan through innovative uses of equipment that support sustainable livelihoods. The first project, under the direction of the University of Regina, has involved intra and inter-organizational planning to install a vertical-axis wind turbine (VAWT) on the University of Regina Campus for both energy generation and educational purposes. The VAWT has now been installed and the university is almost ready with a web-based dashboard to share data from the VAWT for use in diverse educational settings. The second initiative is a collaboration of higher education partners of RCE Saskatchewan (including Luther College, the University of Regina, and the University of Saskatchewan) with the town of Craik to enable sharing of productive capital (such as machines, vehicles and buildings) within the Craik community. To date, this project has involved identification of specific types of equipment to be shared, Free/Open Source Software programs potentially available for enabling this sharing, and specification of software features to enable equipment to "volunteer" for projects. Underlying this concept of volunteerism is a reconceptualization of "equipment as citizen" with this new ethical valuation to be supported by the software. In both the wind turbine project and the sharing productive capital project, educational strategies are being developed centred on the pieces of equipment themselves while presupposing diverse educational audiences.

RCE Greater Phnom Penh (Cambodia)
Partners of RCE Greater Phnom Penh are engaged in ESD projects to enhance education on food and agriculture for local schools and to facilitate improvement of agricultural practices leading to a reduction of chemical use by farmers. Agriculture and food production are the foundation of livelihoods for the majority of the Cambodian people. The RCE aspires to create models of practice-linked education that promote appreciation of organic agriculture and create opportunities for productive activities within schools and on farms.

RCE London (United Kingdom)
RCE London presents a compelling story of facilitating the formation of a network to assist and shape the legacy of the Olympic Park in East London. The development aspires to connect the park and the communities around it. Being a network of networks, RCE London provides access to the resources – skills, expertise and power – that would assist in identification and realization of projects that would mitigate community disconnect from the development and would contribute to regeneration of the area. Working within a dynamic area of formal and informal education, the RCE enables people's participation in shaping their urban environment in response to London hosting the Summer Olympics.

RCE KwaZulu Natal (South Africa)
The uMngeni river, the main source of water in KwaZulu Natal, is heavily polluted by storm water, toxins from industries, sewage and excess nutrients from agriculture. Despite negative quality tests and complaints from the public, little had been achieved over the years. RCE KwaZulu Natal initiated a project where a different strategy for water monitoring was established based on community participation and learning. Local communities have become engaged in regular water sample collection, analysis

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education. All of these livelihood activities required learning about and within the local ecological context. Whereas economic incentives are significant in communities for shifting from unsustainable practices, such interventions have to be conscious of the local needs and appropriateness of development options.

RCE Greater Phnom Penh (Box 4.5) has adopted sericulture (silk farming) as one of the economic incentive options to shift from unsustainable, high input farming to organic farming, while maintaining the same pattern of land use and being aware of food security issues. Additional examples of RCEs supporting sustainable livelihoods are found in RCE London and RCE KwaZulu Natal (Box 4.5).

Governance for a Green and Sustainably Developed Economy

Redefining boundaries and perspectives

SCP systems as an engine of the green economy emphasize the need to deal simultaneously with both production and consumption in relation to overarching sustainability outcomes tied to human well-being and ecosystem health. The challenge remains as to how to develop sustainability habits – a culture of sustainability – across the value chains of products and services and, ultimately, across society. Currently, many SCP actions are assigned predominantly to individual sectors or groups along a particular supply chain of producers, distributors and consumers. As a result, measures for successful development of the production system in question often remain with the producers while consumers are simply to be informed about better consumption options. Such an approach might not only be ineffective for uptake of innovations but may also miss opportunities for stimulating innovations and developments that cut across sectors and act at a systems level, for example, product service systems such as leasing, sharing, or renting of products. This approach also tends to assume static boundaries of markets and the predominant application of market activity in achieving particular livelihood goals (as opposed to potentially incorporating other non-market livelihood approaches). Often there is only a short-term future orientation related to traditional business cycles and forecasting as opposed to visioning and measurement tied to the long-term time horizons associated with sustainable development.

A long-term focus assists in charting new trajectories for alternative (and complementary) development paths, opening up spaces for creative technological innovation and, equally importantly, the potential for collaboration and risk sharing that long-term visioning affords.

and documentation of water quality leading not only to a greater understanding of the issues but building relations with the Howick Waste Water Treatment Works (WWTW) – a primary organization dealing with waste water in the region. While the problem is far from being solved, public activism generated by the project has led to creating a foundation for further progress and learning.

RCE Rhine-Meuse (northern continental Europe)

The OPEDUCA (Open Educational Regions) concept of RCE Rhine-Meuse offers encouragement and opportunities for all people – from preschool to higher education and other organizational settings – to work in close contact with each other. Instead of relying on fixed curricula and textbooks, pupils, teachers, scientists and representatives of other organizations shape learning processes around themes relevant for the present and the future. The critical learning processes that focus on the issues of food, water, building, transport and energy prompt development of regional networks of schools, knowledge institutes, companies and local governments, training of teachers, empowering schools as focal knowledge points in their own open educational region and guiding and informing experts, managers and politicians in taking part in OPEDUCA. ■

To support more SCP, a system of education of actors along supply chains would need to have a strong sustainability dimension related not only to its content but also to the capabilities needed to engage, partner, innovate, and where possible (or necessary) redefine the entire system. Challenges and innovations for SCP concern all who are engaged in the direct and indirect support of market and non-market relationships in the areas of policy, design, management, distribution, sales and the end-of-life of products. For example, change to a longer-term visioning horizon would require learning that presupposes a redefining of resources that emphasize the importance of investments in human and social capital (i.e. individual and public education) and enables a diversity of SCP and other developmental pathways to be explored in relation to sustainable development outcomes. This allows a questioning and exploration of existing path dependencies against the holistic framework of sustainable development that should, in turn, define what is meant by success in a green economy. RCEs in different regions offer examples of innovations that could inspire new and diverse models of production and consumption that are more inclusive, resilient, and built on the strengths of their communities. RCEs have facilitated access of local farmers to a market of local individual consumers (in RCE Makana) and organizations (in RCE Skåne), an opportunity for the local unemployed to engage in production of sanitation services (in RCE Makana), opportunities for communities to establish a system for sharing productive capital that, previously, remained underutilized (in RCE Saskatchewan), and engagement in productive environmentally sustainable practices for those who were previously in conflict with conservation efforts (in RCE Cebu and RCE Lucknow). To address the challenges of SCP further, it might be important to recommend provisions where consumers become more closely engaged in the design of SCP systems through discussions with producers, policymakers and civil society organizations.

Ultimately a focus on each individual having a sustainable livelihood encourages individuals to see themselves simultaneously as producers, distributors and consumers within their own livelihood. This requires the institutional and policy frameworks that enable this integration within one's own livelihood to take place. It also requires the material conditions, education and training needed for individuals and autonomous communities to advance their production possibilities in ways that promote the viability of existing social institutions and the ecosystems on which they depend.

ESD communities have demonstrated an ability to open up neutral spaces through innovative governance structures that enable positions to be taken that might otherwise be perceived as too politically sensitive and, therefore, ordinarily not possible. For example, in response to a call by government authorities for public feedback on a proposed plan for developing a nuclear power plant in the province of Saskatchewan, Canada, individual faculty members of higher education partners of RCE Saskatchewan were able to offer their scholarly and technical expertise from a long-term sustainability perspective. Such input would otherwise have been too sensitive for any one particular higher education partner organization to put forward, especially given a very short timeline for public input. In this significant case, the RCE provided a responsive platform for scholars with a commitment to sustainable development to collectively explore and propose alternative and appropriate courses of energy development.

Paving the ways for new learning systems

In terms of governance, RCEs provide a new way of structuring scholarly work through participation in multisectoral partnerships dedicated to ESD. These networks transcend (yet involve) traditional academic organizations while preserving and enhancing academic freedom of individual scholars. This kind of institutional innovation in knowledge production and scholarship for sustainable development may be an essential part of transitioning to sustainable production systems. One can look historically at other multisectoral scholarly partnerships that have formed outside the traditional academy and emerged at critical moments when existing production systems have been in crisis. These partnerships have generated new ways of knowing that have underpinned subsequent transitions to new production systems. For example, the Royal Society of London formed in 1662 played a central role in the rise of scientific inquiry, with this scientific knowledge being central to the industrial revolution that began in the mid-18th century. Similarly, an even earlier innovation in scholarship was the creation of Trilingual Colleges in the early 16th century. These colleges taught students proficiency in classical Latin, Greek and Hebrew, enabling access to (and a better understanding of) ancient texts (including biblical texts) written in these languages. The Trilingual Colleges (such as the Trilingual College of Leuven in Belgium founded in 1518) played a central role in the rise of humanism that, in turn, led to broad social improvements and organizational innovations. Understanding the parallels between these early institutional innovations in scholarship (later formally incorporated into universities with the creation of departments in the humanities and sciences) points to the kinds of structural innovations needed in scholarship at the present moment. Interestingly, the global RCE movement shares important parallels with the earlier development of the Trilingual College of Leuven and the Royal Society of London (see Chapter 10). These structural parallels coupled with the rapid rise of RCEs since the start of the DESD in 2005 (which, in itself, is institutionally remarkable given their relatively modest levels of financial support) point to the RCE network potentially playing an indispensable role in negotiating a transition to sustainable production systems globally (including the creation of a green economy and socially just society).

Growing from within

Diversity of development options is vital in green growth discussions, as economic growth not rooted in a societal and cultural context can seldom bring about sustainability. For a large percentage of the global population who live in a subsistence state, livelihood is directly linked to a high dependence on bio-cultural diversity and ecosystem resources. Community worldviews, reasoning methods, values, norms, knowledge practices and technologies which are connected to local systems of stewardship in such societies are often marginalized in an aggregate growth model. Local knowledge practices or grassroots innovations do not get linked to productive occupations and livelihoods due to changing sociocultural production processes, lack of legitimacy for informally learned skills, challenges of intergenerational transfer of such knowledge, mismatch or conflicts with mainstream knowledge systems, lack of access and right to resources, and inadequate mechanisms for intellectual property rights protection.

Specific local needs and growth aspirations of such communities can be met through harnessing local resources and existing knowledge, strengthening neces-

sary skills, and creating a facilitating atmosphere through minimal external inputs. Various resources such as natural resources (land, ecosystem, climate, biodiversity), human resources (knowledge and skills, local concepts, ways of learning, teaching and experimenting), produced assets (infrastructure, local technologies), economic institutions (markets, incomes, legitimized ownership, price relations and credit), social resources (community organizations, social institutions and leadership) and cultural resources (beliefs, norms, values, and lifestyles) can be crucial in a locally relevant development model while appropriately integrating external resources (Haverkort, van't Hooft & Hiemstra, 2003) Such an approach often gives better control of development options and processes while also retaining benefits locally that can be sustainable in the long run.

As in the case of RCE Lucknow, facilitation of indigenous communities' capacities and assets has generated sustainable livelihood options locally. The RCE's work with the Tharu indigenous community whose lifestyle totally depends on the nearby forest resources for livelihoods, food, fodder, and health, as well as social and religious ceremonies, has generated a favourable natural resource management program while fostering a better quality of life in the community. Harnessing locally available resources to increase soil fertility, promotion of local indigenous varieties for improving food security, adoption of alternative and proximal renewable energy options are some of the examples of how growth can be achieved through an endogenous development approach. Instilling the confidence of a set of community-level decisionmakers, and reinforcing the notion of shared natural as well as cultural resources has led to increased autonomy and better self-esteem within the Tharu community.

Challenges of Transition to a Sustainable Society and Green Economy

In seeking appropriate transitions to a green economy in particular, and a sustainably developed society more generally, one needs to keep in mind advancements in understandings of quality of life and well-being since the early emergence of sustainable development discourse. In this case, the idea of poverty has been broadened to go beyond the traditional understanding of poverty as income poverty and is now understood in relation to exposure to adverse risks and a deprivation in well-being. This makes advancements in the understanding of the concept of well-being central to understanding what meaningful and appropriate transitions for sustainable development look like. Well-being is also central to developing appropriate measurements for advancement or progress. Given the contextual nature of human well-being, there is also a need for contextualized measurement of progress (as opposed to only using macro assessments that overlook these important local dimensions). At the same time, one also needs to implement, at a policy level, national and international measures of well-being in a way that captures the breadth of the concept of well-being (for example, various measures of gross national happiness) and enables consideration of a broad range of social investments and organizational strategies. The implications of well-being in relation to the marketplace in general, and the green economy in particular, also need to be thoughtfully considered. For example, one needs to consider how production and consumption systems currently relate to satisfying basic needs (such as food, shelter and health) along with one's personal security and capacity to overcome emergencies. In addition, one can reflect on the role a meaningful and sustainable livelihood (including one's livelihood activities in the market) plays in ensuring

one's own autonomy and advancing a sense of self or identity. In addition to one's capacity for self-actualization, one can also consider the broader contribution of sustainable livelihoods to collective well-being to the extent they advance a greater degree of equity, respect for individual and collective rights, and social cohesion.

Learning towards Sustainable Development: Embracing market and non-market solutions

In order to discuss what kind of knowledge production is needed for transition to a sustainable society that promotes well-being, one can first review the goals or outcomes of sustainable development that define what kinds of knowledge production are appropriate. This is doable to the extent sustainable development as a concept is focused on outcomes. One set of outcomes relates to process. Process outcomes are focused on how development occurs – whatever development paths are ultimately chosen. Such outcomes reflect concerns that any process of development respects human dignity and community autonomy along with maintaining environmental integrity (for example, through sustaining habitats). Such process outcomes are achieved through politically transparent processes, implementation and respect for laws governing these processes (for example, support for labour rights and environmental assessments), along with legal and other avenues for appeal with appropriate remedies. In addition, sustainable development has overarching outcomes tied to its two key goals going back to *Our Common Future*. This involves seeking paths of development that reduce and/or eliminate poverty (in its various forms) and environmental degradation.

Positively phrased, these goals involve pursuing development paths that simultaneously support ongoing improvements in human well-being and quality of life alongside improvements in ecosystem health and resilience. These overarching goals embody the idea of progress found in the development portion of the concept. A third set of outcomes involves sustaining various forms of capital – physical/manmade, financial capital, human capital (including capabilities and competencies), natural, and social capital. These forms of capital make possible a multiplicity of sustainable development paths. The value of each is assessed in relation to their ability to achieve the overarching sustainable development outcomes. Sustainable development involves recognizing that a number of these forms of capital may not be readily substitutable with each other so that their excess depletion might seriously constrain the choices available to future generations. This concern of sustainable development for various forms of capital also involves addressing risks associated with each. A goal, then, of sustainable development is to mitigate exposure to adverse risks associated with each form (whether traditional risks in relation to physical and financial capital or questions of vulnerability or lack of resilience for human, social and natural capital). This involves understanding the various hazards to which they each are exposed. At the same time a concern for these capital forms leads to seeking to cultivate conditions likely to minimize or eliminate hazards over the long-term while generating positive opportunities for capital formation. With all these outcomes, learning needs to take place. This includes not only an appreciation of what these outcomes might mean in general theoretical terms and at a global scale, but also what they mean in the particular, highly situated social and ecological contexts in which development always takes place.

The power of the discourse of sustainable development (and a danger of positioning discussion of green growth outside of this discourse) is that sustainable de-

velopment does not prejudge what kinds of development are the best solutions (or at least are better solutions) for attaining these sustainability outcomes. Instead, each is evaluated in terms of sustainable development's (1) process outcomes, (2) capital outcomes, and (3) overarching outcomes (as outlined above). Sustainable development as an activity can involve strategies employing market solutions (such as those embodied in the ideas of ecological modernization and green growth) but also those employing non-market solutions. More especially, sustainable development explores synergies among diverse forms of development or models of production in situated contexts. For example, in the case of human health, enhancing the voluntary or not-for-profit sector's capacity to achieve long-term population health outcomes might, in turn, have very positive synergies with attempts at quality improvement and patient-centred care by market and state organizations delivering formal health care (for example, in hospital settings). From a market perspective, a focus on sustainable development outcomes also allows for a constructive evaluation of the need for economic growth in general and what types of production of goods and services (that is, what kinds of market growth) should be pursued to most readily achieve sustainable development outcomes in an efficient and effective manner. This can include evaluating what kinds of market organizations (such as those employing international investment or forms of local investment) are most appropriate and collaborative opportunities between them in achieving sustainable development outcomes in a given setting. Sustainable development also seeks to maintain diverse forms of social capital, including sustaining market organizations (implicit in the green growth agenda) alongside other organizations (such as the capacities of the non-profit, state, professional, religious, household and academic sectors).

This social capital focus recognizes the vital contribution of each type of organization to various dimensions of human well-being. Sustaining social capital also involves sustaining the institutions that undergird these various organizations. For example, in the case of markets this implies a respect for property rights and self-ownership; in the case of countries, respect for the rule of law and the powers of citizenship. In this regard, global social capital formation and institutional development around a new personal identity, specifically the view that every person ought to have a sustainable livelihood, becomes an imperative. Sustainable livelihoods achieve the overarching outcomes of improving human well-being and ecosystem health. A sustainable livelihood is also one that ensures an individual effectively manages risk, while advancing his or her development of (and access to) a diverse capital base from which to strategically construct a livelihood.

Organizational Innovation for New Forms of Knowledge Production

A further form of social capital formation that increasingly seems essential for sustainable development is the creation of new organizational forms capable of the kind of innovation and knowledge production needed to transition to a sustainable society and that has sustainable livelihood generation at its heart. Such structures must generate research and innovation for particular contexts that create production possibilities (both market and non-market) aimed at the outcomes of sustainable development. RCEs are one example. As learning entities, their focus on research into education ensures their innovations build human and social capital while, as a corollary, creating conditions for innovation in other forms of capital (such as sustainable equipment and building design). Because sustainable development focuses on outcomes, it is not prescriptive as to what specific develop-

ment paths ought to be pursued but, instead, is open to a wide range of paths. This is analogous to the marketplace, for example, where the goal or desired outcome of an investor in a market, namely a profitable return, does not determine the nature of the investment to be made in terms of the manufacture and sale of specific goods and services. While the openness of sustainable development to a diversity of development paths is one of its key conceptual strengths, it also provides challenges as it is not obvious what types of innovation are needed to achieve these outcomes. This is further complicated by the challenge of trying to achieve simultaneously these multiple outcomes within specific social and ecological contexts. Given the number of unknowns implicit in assessing how this knowledge might be produced, it is worthwhile to examine the results of the global RCE initiative begun in 2005 among nearly 130 RCEs now acknowledged around the world.

Characteristics of RCE Innovation for Sustainable Development

In describing the strengths and distinctiveness of the knowledge generated by RCEs, one element that is perhaps not surprising (given the participation of higher education organizations in RCEs) is that knowledge is freely pursued by RCEs. This mirrors one of the basic assumptions of universities, namely academic freedom reflected in investigator-driven or curiosity-driven research. Yet there may be deeper structural reasons for this freedom as well, to the extent RCEs are self-organized and mobilize resources from their members on a voluntary basis. Such mobilization presupposes a freedom of choice on the part of each RCE participant. The view that RCE partners require partnerships in order to achieve their desired research ends tied to sustainable development also implies the need for flexible collaboration among participants (with no one partner asserting a single agenda without considering those of others). The need for RCEs to mobilize further participation is likely to also require a respect for the interests of existing and potential participants. While knowledge is freely pursued, it is also constrained in a number of ways. The nature of the research and learning goals of RCEs, namely education for sustainable development, presupposes that it is inherently transformative. It possesses some critical characteristics (Box 4.6) that make it always locally relevant, applicable to life and meaningful to communities. The transformative effectiveness of knowledge is enhanced or, in some cases might presuppose, participation by communities involved at the formative stages of the learning process. As such, communities themselves help shape the actual scholarly process with traditional researchers acting as participants alongside these. Such an approach encourages the mobilization and integration of research resources from communities of learners that includes (but is not limited to) scientific knowledge of research partners.

Box 4.6
Critical Characteristics of Learning within RCEs

- Research problems and methods emerge from local problems in communities; these, in turn, drive regional sustainability innovations
- Respecting and including different kinds of knowledge, including indigenous ways of knowing
- Encouraging transdisciplinary and holistic research
- Advancing research into models of action research and related methodologies, including participatory action research that includes marginalized groups
- Learning that promotes democracy and equity
- Learning across generations – from early to advanced age and building research aptitude at all ages
- Focusing on inclusive, transdisciplinary themes to encourage broad multistakeholder participation

A number of ethical dimensions were noted by RCEs regarding how their research is conducted that would supplement the process outcomes of sustainable development identified earlier. RCEs noted the need to do research on how to engage communities to make effective transformation for sustainable development. This required research for capacity-building where key capacities included leadership, bridging boundaries and interfacing, problem-solving and facilitating solutions. In addition, to the extent research depended on community contributions, RCEs identified a need for acknowledgement and appreciation of sources of knowledge and other contributions made by the community. RCEs also cited concerns reflected in the long-term time horizons associated with sustainable development. Those involved in RCEs expressed a need for a long-term commitment to communities within their respective RCE regions. This long-term commitment was, in turn, connected with building trust. In terms of the knowledge and other research outputs of RCEs there was a concern that this knowledge be respectful of ethical boundaries. Applied knowledge had to be linked to appropriate innovation for the particular community.

A further ethical duty for RCEs that, in turn, builds further community capacity, is the responsibility to disseminate knowledge. RCEs develop programs to immediately transfer knowledge to communities, in particular, promotion of RCE research directly to its stakeholders.

Concluding Remarks: RCE contributions to sustainability governance

RCEs as a governance system are well positioned to advance green growth and sustainable development. Central to this role are the range of communication strategies available to RCEs. The effective and efficient employment of such strategies requires the development of communication models for RCEs (for example, for websites and newsletters). These communication strategies, especially those for public (informal) education, can include major companies and cultural industries. In turn an RCE can assist its partners in tracking community engagement and affirming it. In terms of intellectual property issues associated with collaborative RCE research, RCEs noted the value of open access journals and other media along with the value of RCEs and UNU adopting open access policies enabling broad access to the research results of RCEs. RCEs as an innovative governance model involving higher education organizations enables effective and efficient mobilization of scholarship for green growth and sustainable development. RCEs can effectively enhance the capacities of higher education organizations and provide positive implications for traditional scholarship and research. RCEs enable strategically linking universities in RCE research processes (as already described) along with feedback of research results back to academic communities. Higher education organizations can make use of existing collaborative partnerships of RCEs, both regionally and globally. These partnerships can assist higher education in making use of local resources and traditional technology in advancing research. RCEs assist in deliberately including particular groups within and outside higher education in advancing sustainable development. This includes deliberate inclusion of traditionally overlooked disciplines (for example, social work and the humanities) and groups (for example, indigenous peoples, community services groups, faith organizations, entrepreneurs/chambers of commerce, SME associations, cooperatives and labour organizations). RCEs also become an important platform for university research into education for specific transformative technologies.

Networks between RCEs can readily be established to discuss methodologies and capacity-building of researchers. This inter-RCE collaboration can help build a practical awareness of transdisciplinarity among researchers, develop case studies of effective RCE research approaches, and create modules on how to do research useful for diverse settings appropriate to the research context. These new models of research can, in turn, be shared back with the participating universities, colleges and technical institutes.

While this overview of the learning facilitated by RCEs is not exhaustive, it does provide an important snapshot of key principles and strategies practically being employed by RCEs in advancing ESD. RCEs, due to their structure, have capacities that help synergistically advance many of these strategies. They also illustrate specific ways of conducting research that, when employed, are likely to simultaneously advance the multiple sustainable development outcomes previously discussed. The process outcomes of sustainable development are reflected in the need for research conducted in a way that respects the dignity of individuals and their communities in the research process, and develops research outputs appropriate to the economic, social, cultural, and environmental needs of communities. Sustainable development outcomes associated with sustaining various forms of capital (including both assets and capabilities) are also advanced. RCEs recognize and build research strategies tied to vital contributions communities are able to provide in defining research problems, identifying appropriate methodologies, and implementing knowledge for sustainable development. RCEs, in turn, enhance this human and social capital formation. RCEs also help share the in-kind and financial costs of sustainability research aimed at the long-term among RCE partners – research that, in itself, is inherently risky due to many unknown parameters. Much of the work of RCEs focuses on building the capacities of diverse RCE partners and individual citizens to develop and implement new knowledge for sustainability. Local projects, in turn, once implemented will build appropriate human, social, natural, physical and financial capital over time. Finally, the overarching outcomes of sustainable development (advancing progress related to human well-being and ecosystem health) are also advanced. Deficiencies with respect to each overarching goal (whether human poverty and vulnerability or instances of ecological degradation) are tapped into at local and regional levels as a source for developing research problems to be addressed. Cross-cutting themes and educational issues associated with these diverse sets of regional problems also then readily emerge. To the extent the new forms of grounded scholarship for sustainable development enabled by RCEs is intellectually, emotionally and spiritually a part of what makes life worth living, these too become key components of human well-being and integral to the promotion of sustainable livelihoods.

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Chapter 5

ESD and the Framing of Transformative Social Learning in RCEs

Rob O'Donoghue

The DESD has been latterly characterized by competence frameworks for ESD as a process of transformative social learning. This chapter examines these frameworks in relation to RCEs, exploring how perspectives of communication, individual competence and change practices have come to be inscribed as competences. These framings have a compelling clarity for the mediation and assessment of ESD but are surprisingly opaque to the diverse ways in which learning and social innovation play out in the RCEs.

The narrative draws on a recent oeuvre in systems thinking as well as on sociocultural perspectives on learning. This takes us beyond the compelling framings of competence approaches to more open-ended framings and into some of the sociocultural refinements of situated, reflexive learning. Some case examples from RCEs are briefly examined and a concluding attempt is made to scope some of the contours of social learning as a landscape of reflexive processes that appear to be bringing more coherence and momentum in African RCE contexts of co-engaged learning-to-change.

Introduction

This paper examines some of the approaches to framing social change within the DESD. It gives particular attention to the emergence of RCEs as co-engaged structures for enabling transformative social learning.

Wals et al. (2009) scope transformative social learning as open processes that exemplify personal and community processes of change as found in the co-engaged processes of learning in an RCE. He also points to other dimensions where practical, intellectual and political engagement might give shape to processes of social re-orientation through education that opens up new insights both for and through social innovation. This rich picture of social learning and change reflects a transformative stance that resonates with the sociocultural tradition after Lev Vygotsky. Stetsenko (2008) expands this to contemplate a *collaborative purposeful transformation of the world*. This aligns well with RCEs and with her argument that "communities belong together and co-evolve with all other communities on the global scale, sharing one common fate and history" (Stetsenko, 2008, p.490).

As ESD and RCEs have emerged, transformative perspectives such as these have developed to drive imperatives towards sustainable development through active global citizenship for sustainability, an emerging focus in global change discourses and in emerging RCE "citizen science" social movements, such as the water quality monitoring system in South Africa (miniSASS) (Taylor, Msoli & Taylor, 2013). Here the RCE notion is that sustainability can be achieved through a widening deliberative process of community-engaged transformative learning and activism for change. The ideals of active global citizenship for sustainability are at the heart of RCE approaches to learning and sustainable development and are reflected in community-engaged change practices as well as in the recent framing of competence for enacting and assessing ESD.

Conceptualizing ESD Competences

The discursive mix in relation to RCEs is diverse, encompassing both imperatives for change through reasoned practice and practical reason through the exploration to find new ways of doing things in response to a world where there is increasing evidence of human-induced change on a widening scale that extends to global bio-regional habitats and the climatic patterns that sustain life. Figure 5.1 is an attempt to summarize some of the diverse practices and processes that are found in RCE approaches to transformative social learning. The approaches comprise diverse perspectives on communication including the axes of concern in individual competence as well as community learning and social innovation. Here the scope of activities includes RCE activities where participants might take action to try out new ideas or simply meet to discuss new ideas that are circulating in the media. This diversity is found across the emergent field of social learning (Wals, 2011).

For the purpose of this scoping review of transformative social learning in RCEs, let us give attention to the perspectives on ESD and how these contour the process through the inscription of sustainable development competences. We shall then bring these inscriptions into question and explore perspectives on systems thinking and transformative social learning, which are an important missing dimension. Here we shall first examine the systemic contours of new environmental knowledge and draw on the work of Wiek, Withycombe & Redman (2011) to develop a perspective beyond the early competence inscriptions of the UNECE

Figure 5.1 The Emerging Contours of Transformative Learning

(2011). We shall then probe some examples of transformative social learning that are emerging in small-scale social innovation work within RCEs. Finally, these examples are used to scope the contours of co-engaged learning-to-change as these are emerging in some of the social learning practices in African RCE contexts examined (O'Donoghue, Shava & Zazu, 2013).

An Emerging Terrain of Competence Inscription

According to Wals (2010) narratives on learning reflect an expansive terrain that reaches from local to regional and global, seeking to integrate social, economic, ecological/environmental as well as ethical concerns around a concern for human relations and stewardship of the other than human. Here three lenses on knowledge are emerging, notably, an integrative holism, a critical perspective on change over time and engagement in responsive transformative action. These are reflected as competences in the learning to know dimension in the UNECE (2011) specification of ESD competences. Here, being competent has been inscribed as competencies in:

- Learning to know,
- Learning to do,
- Learning to be, and
- Learning to live together (See Figure 5.2).

Assertions such as these produce the illusion that transformative learning can be inscriptively mapped as human capabilities, as well as choreographed and accounted for as a rational process where all of the elements are learner-led.

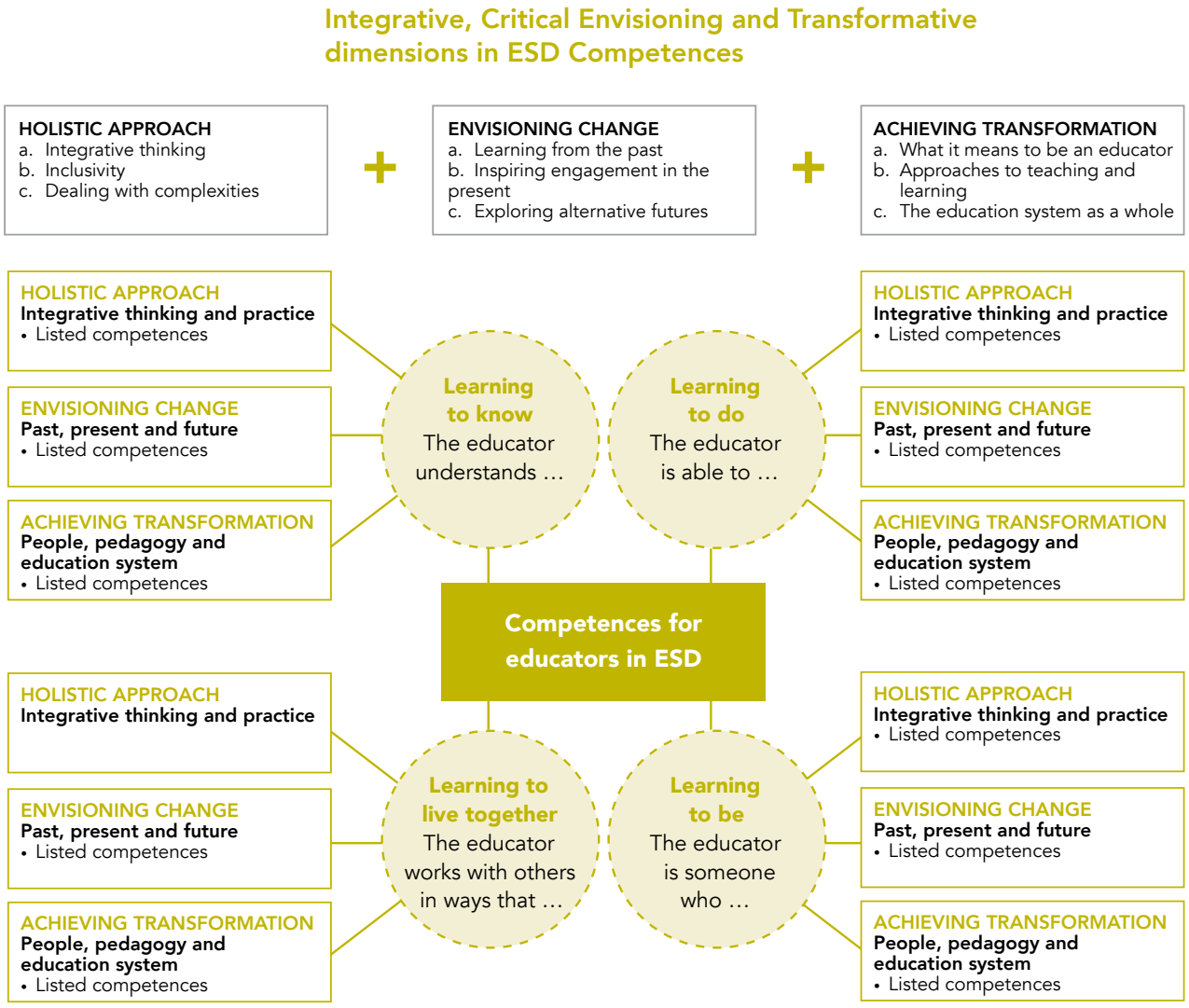

Figure 5.2 A Competence Framing of ESD Highlighting the Three Common Dimensions in Learning to Know (UNECE, 2011)

Each arena of competence idealizes holistic integration and the envisaging of change by individuals and groups who come to achieve the transformation that their developing competence makes possible. What is not evident here is a coherent theory of change that holds these propositions together to inform social learning that is transformative. Compelling as such ideal frameworks are for charting transformation, and beyond their application in assessment and evaluation, they can be relatively empty checklists that are not easily related to RCE contexts.

RCEs emerged as situated collaborations engaging the sustainability and social transformation challenges related, among other significant issues, to the biodiversity and climate challenges in the immediate and more distant future. The con-

texts and ways of doing things are very diverse, so a key challenge has been how to support local learning initiatives while tracking and enhancing the effectiveness of the learning and change initiatives. Situated perspectives on transformative learning that are better informed by knowledge and practice are necessary.

ESD in a Changing Knowledge Environment

The 20th century was characterized by continued proliferation of disciplinary knowledge and the emergence of widening knowledge fields. Notable here is how ecology developed from a fieldwork methodology in the 1920s when Jan Smuts first coined the term "holism"(1926) to refer to a wider system of integration that laid the foundations for systems theories which one now finds in the earth and economic systems sciences. Popkewitz (2008, p. 27) describes how the interplay of knowledge and risk in the modern cosmopolitan era is characterized by systemic and problem-oriented knowledge production with *flows of universals* (generalized propositions) and *salvation narratives* for mediating social life (e.g. ESD approaches to learning-for-change). The framing of ESD as competences is a form of individualizing technical specification that is compelling to the bureaucratic mind but can bear little relation to the situated, sociocultural learning processes that produce these capabilities. The individualizing relational semantics here have the appearances of being directly related to competences for learning and change, but the framings commonly lack reference to a socio-historical context or the systemic knowledge necessary to grasp the complexities in/of the world and what is involved in learning to work together to bring about change.

Systems Thinking in Situated Social Learning

In attempting to resolve some of the limitations in much of the early specification of competence by categories (checklists), Wiek et al. (2011) propose a layering where basic competences like communication and critical thinking might underpin key competencies in sustainability. Here the interplay between systems thinking, anticipatory, normative and strategic competencies and interpersonal competence are read as processes enabling learning and change. In line with the underlying systems perspective here, Forrester (2009, p.5) notes how "Many principles form the foundation of system dynamics and become a basis for thinking in all endeavors".

Figure 5.3 is an attempt to contemplate systems thinking and a developmental progression for social learning in a complex problem constellation within the social-historical context of an RCE. The bottom half of the diagram, after Wiek et al. (2011), poses how systems thinking enables the anticipatory and normative thought for strategic intervention in the company of others (interpersonal competence). This goes some way towards mitigating many of the limitations in earlier competence framings as it is often the grasp of system dynamics that allows a clearer anticipation of problems and normative adjustments, reflexive processes that require strategic competence along with the competences of being able to work effectively with others. The Wiek et al. (2011) systems oeuvre is useful to inform a start-up and systemic modelling for the acquisition and grasp of knowledge related to risk to enable the scaffolding of open-learning pathways that are learner-led.

The systems-thinking schematic is a simplified process model noted in many of the small-scale social interventions in the context of social innovations by African

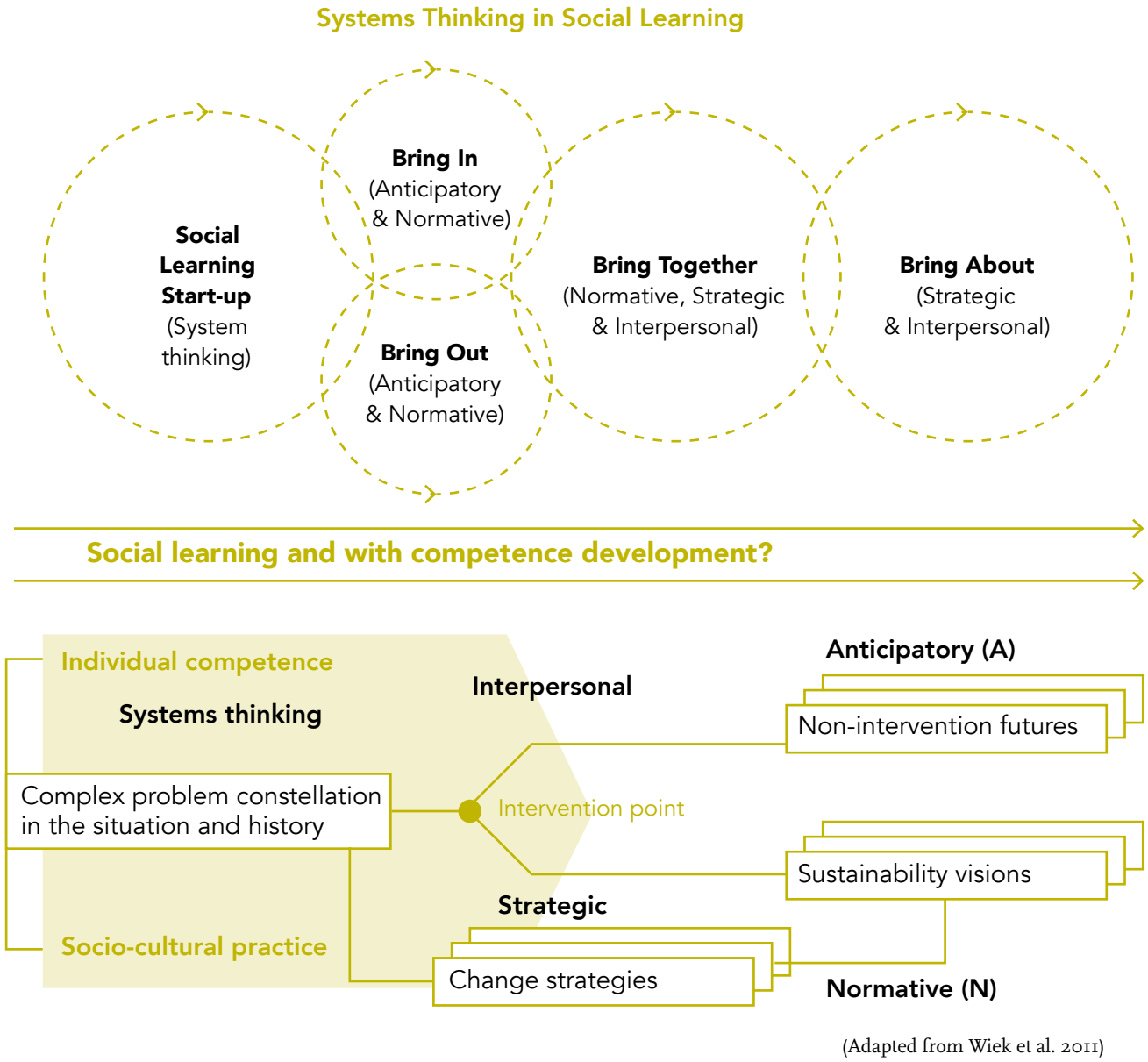

Figure 5.3 Systems Thinking as a Foundation for Social Learning

RCEs (O'Donoghue et al., 2013). Here start-up commonly reflected systems thinking in relation to historical social processes and ecosystems or indigenous knowledge systems that enabled anticipatory insights and a normative reframing of sustainability. Within learning processes such as these, participants shared storiesand insights or proposed perspectives (bring-out processes) based on their experiences and understandings around what is now known (bring-in processes). Intermeshed within these processes was an emergence of strategic possibilities that were supported by others as learned insights deliberated within emerging evidence and creative re-imaginings. For example, an innovation related to insulated cooking bags (hot bags) brought insights where the process was related to "heating with flames and cooking with coals", a process that was then taken into re-imaging cooking on a stove and with a hot bag in a way that had been

known (wood selection) and practised by indigenous women for many generations (O'Donoghue et al., 2013, p. 41).

The competences turn in education provides a competing but incomplete frame of reference for approaching transformative learning in RCEs because competence acquisition does not always translate into a capability of deploying the competence to enact ideas and change practices in a given context[1]. Wiek et al. (2011) solve this problem, in part, with a systemic thinking proposition and by inserting interpersonal competence as a centrepiece, but this does not take adequate account of sociocultural mediation or variability in social innovation as ESD responses within complex constellations of risk.

Framing Change in Complex Constellations of Risk

It is currently fairly common for ESD to be centred on problems related to biodiversity and climate change, often without directly relating these to either the context or to how these relate to the local contours of risk. Participants can thus be confronted with problems without a sense of how the practices producing risk are either evident in their context or how these might be addressed by giving closer attention to how particular patterns of practice contribute to a given problem. A simple schematic (Figure 5.4) has been helpful in making some of the systemic connections more explicit in positive ways. In small-scale RCE processes of social learning we have put constellations of systems and history at the centre of a heuristic device for situated systems modelling and social innovation in relation to water, energy, health, agriculture, biodiversity and waste. Figure 5.4 reflects how ESD processes of social learning and innovation can probe systems of resource use (handprints – what people can practically do), contemplate the restoration of ecosystem services (ecosystem) and explore the prospect of systemic changes to mitigate climate change (footprint – a measurement of the impact of using fossil fuels).

As we worked within these focus areas together, diverse modes of systems thinking came into use and each of these came to be seen in the context of the historical capital and patterns of change evident in the complex social-ecological history that has given rise to diverse patterns of risk. This situating of RCEs as co-engaged responses within complex constellations of risk constitutes the emergent responses as a purposeful collaboration in the transformation of the world through co-engaged social learning. Typologies of individual competence, although providing an initial opening, have little relevance without the framing of progressions of reflexive intervention that one begins to find in the Wiek et al. (2011) oeuvre. A more open-ended and sociocultural framing of co-engaged reflexive practices might enable an emergent grasp of the situated ethical drivers of transformation. The four case examples that follow briefly reflect an emerging competence and some patterns of systems thinking that are giving rise to an anticipatory perspective that enables a shared grasp of and response to a "wicked problem" in diverse ways that are not easily inscribed or modelled at this early stage of reflexive social learning directed at purposeful social transformation.

1 De Haan (2010) tried to get around this problem with the integrative notion of *Gestaltungskompetenz* (the specific capacity to act and solve problems). This was ascribed to 12 sub-competences (key competences) but lacks integrative coherence and a depth perspective (theory) on learning and change.

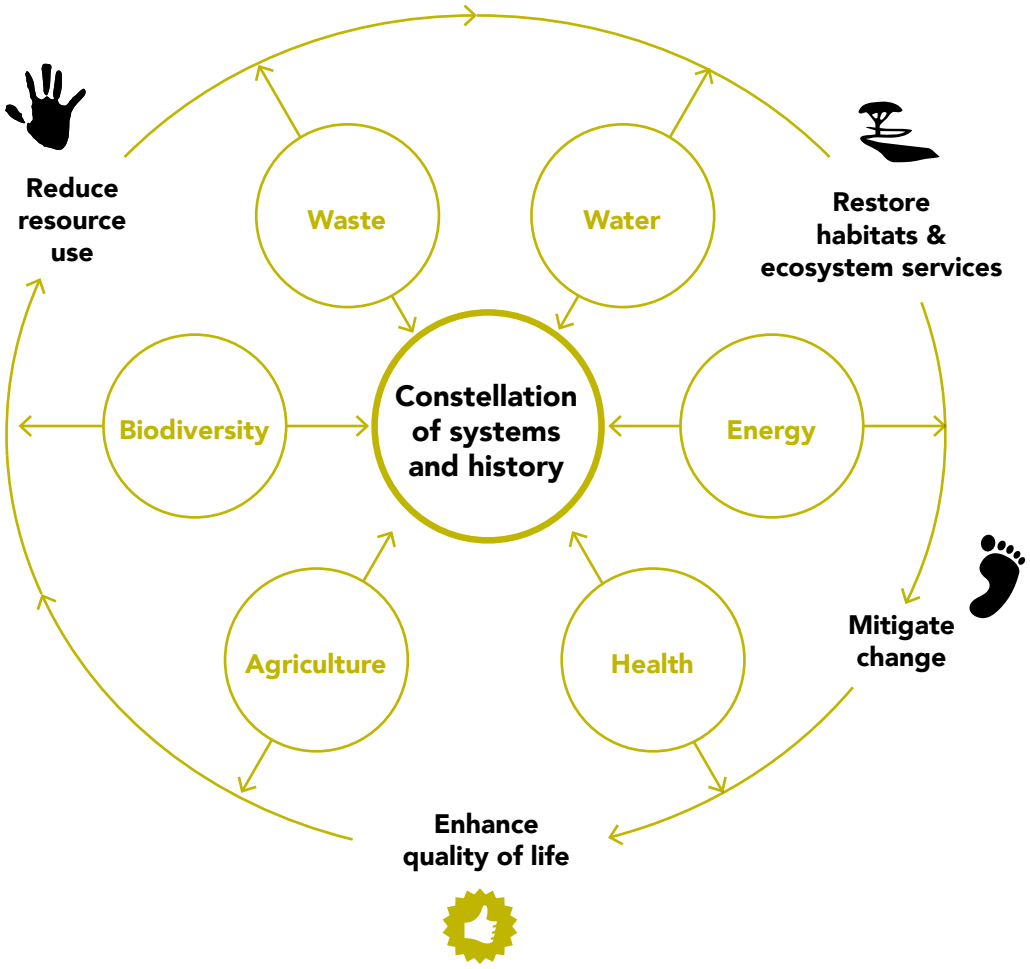

Figure 5.4 An Open Heuristic for Situated Environmental Learning

Cases of Co-engaged Learning-to-Change

An expansion in the framing of ESD to include systems thinking and sociocultural diversity has added perspective on the kinds of knowledge and systemic perspectives that are enabling a grasp of the situated complexities of environmental challenges and the associated risk in RCE contexts. A shift in the framing of ESD to a concern for intergenerational heritage and systems thinking is opening a more complex and situated terrain for reflexive social learning as noted in the example of transformative social learning associated with the use of hot bags (see above). What follows is a series of brief snapshots of some other emerging contexts and processes of co-engaged social learning in some African RCEs.

1. Video on indigenous systems of practice

Many African contexts are characterized by colonizing appropriations and an oppressive marginalization of indigenous knowledge practices that have been further eroded in the modern era. Heritage practices have emerged as a dialectic foil to enable RCE participants to develop "histories of the present" that enable a critical grasp of many emergent problems. Short YouTube videos of heritage practices are used for start-up work so that learners can explore their heritage in mother tongue deliberations as indigenous knowledge systems to inform reflexive learning in response to the risk in and of the modern day. These forms of knowledge sharing are both exploratory fun and an effective way of uncovering emergent systems of change and much of the depth of practical and ecological wisdom in African heritage practices. Today, heritage practices are often reflected as Indigenous Knowledge Systems (IKS). This introduces systems modelling and systems thinking, enabling the anticipation of how modern practices are producing risk. The emerging competence and social innovations here are open and diverse, reflecting both an emerging agency and health-producing freedoms that are enabling co-engaged learners to detour some of the risk in everyday life.

2. System modelling towards better change choice practices

RCE Makana established a Sustainability Commons (social learning commons space) that is part of a network of commons projects supported by the Wildlife and Environment Society of South Africa. Here working exhibits and photo narratives are provided as a useful starting point for a change-choice-practice approach to social innovation. The emphasis is on learning by doing and re-imagining social innovations that reduce impact and are better aligned to natural systems while meeting social needs. Picture narrative and practice approaches shift the concern for awareness creation to the production of situated competence with the capability to produce change in context. The reflexive social processes here are centred on the practical exploration of alternative technologies where, once again, systems thinking can produce the necessary anticipatory reflection to foster social innovation.

3. Modelling the practice and narrative contours of learning-to-change

Through research on rural community learning (Phiri, 2012; Rivers, 2014), materials to enable water conservation and food production were developed and pilot tested. A training manual was then developed through a course to train community facilitators so as to enable co-engaged learning to conserve water and produce food locally. A review of the curriculum of agricultural colleges is being undertaken and a co-engaged project to improve support for small-scale agriculture and extension is being developed. Here the situated narrative is an emerging cycle of social transformation that is not easily realized in a struggle for emergent freedoms within the contingency of a post-apartheid sociocultural context in South Africa. Here situated and emergent practice points to contours of learning and change that transcend the tools provided by both the early competence mappings and the systems thinking expansion that brought more coherence to curriculum planning.

4. Citizen science and social innovation

The Orange Senqu River Basin Project (ORASECOM) developed miniSASS as a citizen science process for assessing river health. Civic groups and school science teachers are being equipped and trained to monitor the health of local rivers. Results are uploaded onto a national database where findings and ideas can be exchanged and problems and actions deliberated upon to improve river health. This project is currently being evaluated using an appreciative enquiry approach to assess value enhancement and impact. The collaborative and practical site-based work of knowledge production in relation to water quality in rivers can be seen against the data generated by others and these interactions are the foundation for deliberative engagement to reduce risk and restore the natural systems and processes for river health. Here, once again, is a relatively open arena of co-engagement producing agency with the prospect of associated knowledge and action producing freedom from the risks associated with pollution and the degradation of community water sources.

Towards an Open Framework for Contemplating Social Innovation

The *critical processes of co-engaged learning* across everyday experiences (A), heritage practices (B) and what is now known (C) are reflected in Figure 5.5. In these processes heritage practices and knowledge (B) involve engagement with emergent risk and indigenous practices. Here praxis is required over text, shaping learning interactions where typologies of memory specify the place, along with related histories and subjectivities. The constellations of situated memory and activity can enable participants to contemplate both absences (often experienced as loss) and continuities, alongside possibilities that can be identified in relation to the conditions of the present (A) and what is known today (C). These critical processes of knowledge construction in learning-to-change must remain open and contested because, in all of the examples examined above, it is not possible to identify or stipulate a conclusive mediating process informing learning interactions or aligned with specific competences.

Put simply for illustrative purposes, in many cases heritage knowledge practices (B) usefully bring modern knowledge (A) and experienced patterns of practice in relation to what is known today (C) into critical relief. In a similar way, these perspectives can also resonate with, inform and enhance the modern practices of the day. In most, there is also a mutual resonance (valourization) across heritage (B) and what is known and experienced today (A and C). The context of everyday life experience (A) most often holds sway and can serve to open up a range of ideas for practical exploration around what is known (B and C). The knowledge practices landscape here thus remains open for critical co-engagement towards taking up the challenge of learning-to-change in order to make things better for people in and the environments themselves.

In complex constellations of risk, learning processes and learning pathways are open-ended but some of the enabling constituents to inform ESD processes of learning-to-change are beginning to be identified. These processes also clearly build competence that can enhance adaptive capability but the framing of ESD as specified categories of competence or as a network of competences does not shed any light on how learning and change might happen or how to support this. It is, however, notable that co-engagement in RCE contexts can be enhanced with systems thinking for enabling a reflexive grasp of matters, along with a capacity to anticipate how things are, how they came to be as they are and what might be done together to make things better.

Conclusion

This chapter is an attempt to probe some of the anomalies and constraints in early efforts to contemplate and mediate ESD using competence frameworks. First, these foreground individual competence and typify specified categories of performativity that can have a tenuous relation to the complex sociocultural and materials contexts of learning-to-change in an RCE context. Secondly, the sociocultural context may not allow a person who might claim and typify certain competences to exercise this capability in the social context. Here, for example, something may simply not be permitted or the necessary resources might not be available. Work with competence frameworks need to specify how the stipulated categories relate in environmental learning, as partially achieved in the work of Wiek et al. (2011), or be complemented by more open-ended framings of work on the complexities

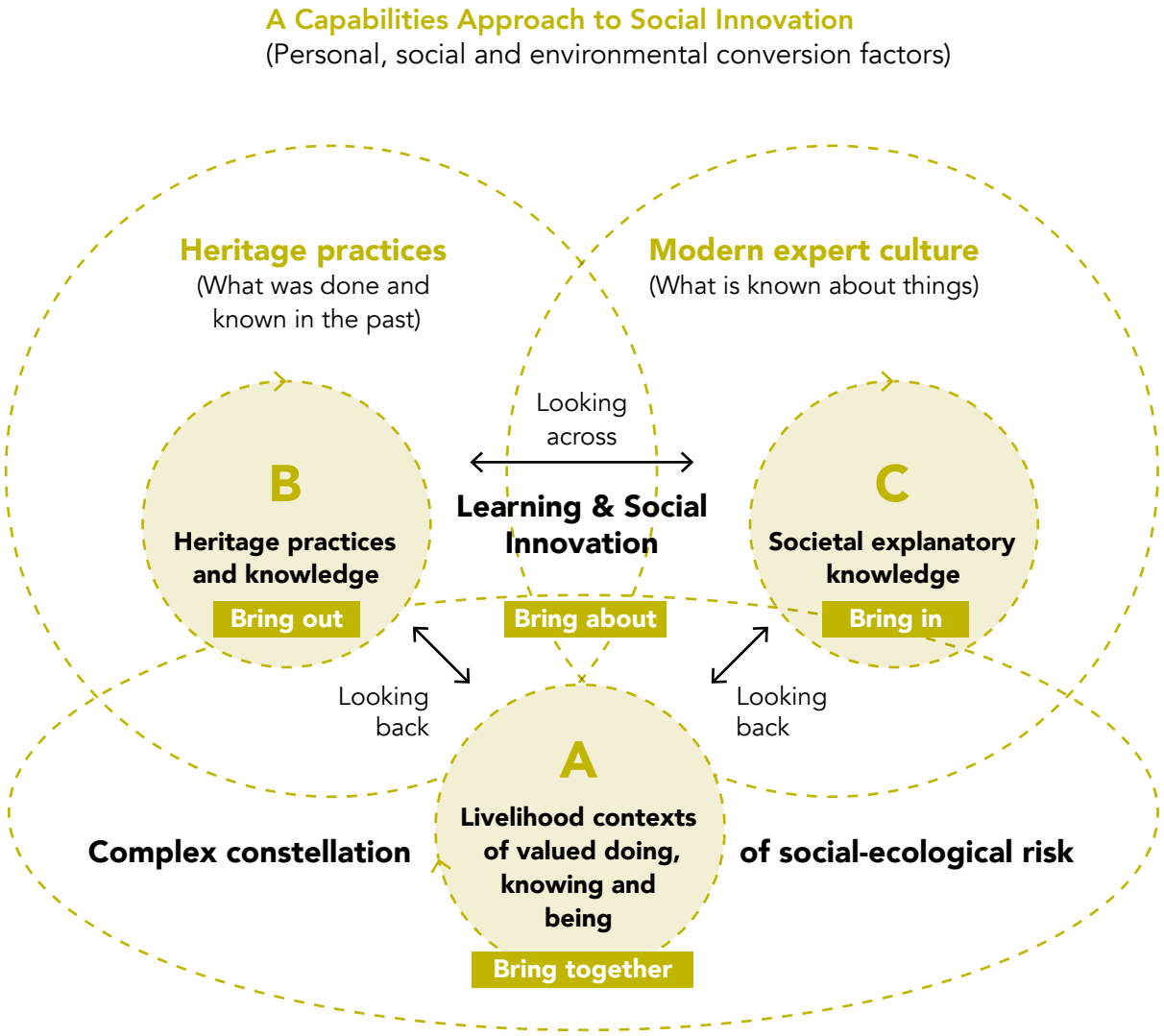

Figure 5.5 The Social Processes Landscape of Situated Social Learning in an RCE

of context and perhaps the translation factors necessary for active learning to have relevance in that context.

The chapter charts some of the innovative developments that have value but notes that stipulated competence conventions for curriculum planning still fall short when contemplating the sociocultural dimensions of learning and change in RCE contexts of co-engaged learning and social innovation. Against the limitations explored in relation to the widening conceptual schemas examined (de Haan, 2010; UNECE, 2011; Wiek et al., 2011), it is important to note that in an RCE context of reflexive engagement, the coherence of the labelling framework is often far less important than what is actually done on the ground in the complex realities of the sociocultural setting (Stetsenko, 2008). In line with this assertion,

the review has noted that when RCE processes of ESD are well situated and challenging, transformative social learning can emerge. Learning in RCEs can thus reflect *collaborative, purposeful transformation* that must transcend inscribed competences and emergent systems thinking frameworks for co-engaged human endeavour to reflexively produce freedoms that enhance sustainability and reduce risk. Here sustainability and sustainable development can mean so many competing things. This complexity often has the major advantage of forcing people to deliberate the ambiguities and give their own meaning in the mediating of the uncertainties and complexities that confront them. It can only be concluded that there is still a lot to be learned and much to be gained through co-engaged learning in RCE contexts of struggle towards more just and sustainable world orders.

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Chapter 6

Influencing Development and Implementation of SD and ESD Policies, Programs and Projects: Role of RCEs

Mario Tabucanon

The work of many RCEs is aimed at not only delivering ESD in local communities but also, and very importantly, at influencing policymakers and leaders in their decisionmaking processes towards developing policies, programs and projects on ESD and SD. The 7th Global RCE Conference in Tongyeong, with a Policymakers' Roundtable, was historic in that it commenced distinctive discussions on the linking of RCE activities with policy processes and the actors behind them, which then contributed to the development of the Tongyeong Declaration on RCEs and ESD.

The Tongyeong Conference brought forth, through the voices of policymakers, an acknowledgement of work that is already going on, and more appreciation for this kind of work was highlighted by policymakers at the 8th Global RCE Conference in Nairobi (Box 6.1).

What emerged from policymakers' discussions was the reality that there are indeed distinct models of engagement with policymakers whereby RCEs could contribute towards shaping ESD practices. Such engagements – viewed from the international, national, subnational (regional), local and organizational vantage points of influence (See Box 6.1) – can be appropriately emulated in regions across the world to facilitate RCE work with policy stakeholders in shaping ESD policies that enhance transformative learning and effectuate behavioural change. RCEs may be involved at various stages of the policy process, from engaging in policymaking itself to policy implementation. In the policy cycle, RCEs may provide support in terms of policy dialogue, policy research, consultative technical opinions and advice on policy options, and policy documentations, among other possibilities.

The following sections reflect the trends of engagement, highlight relevant examples reported by members of the global RCE community and provide some insights expressed by concerned policymakers. The presentations are structured according to levels of influence, trends, issues, and stages in the policymaking and implementation processes where engagement may take place.

Box 6.1
ESD and Engagement with Policy

At UNESCO, it has been found helpful to distinguish two thrusts: the integration of ESD issues and skills into relevant education policies (SD to E) and policies relevant to sustainable development (E to SD). There is a need to also be clear about different levels of policies: (1) Global level, which UNESCO and other UN agencies promote; (2) Regional, for example, Africa, Asia-Pacific, Americas, Europe; (3) National; (4) Subnational, where education may be decentralized; and (5) Local and city government level (UNU-IAS, 2014).

At the 8th Global RCE Conference in Nairobi, the Policymakers' Roundtable drew attention to the post-2014 Global Action Programme on ESD underscoring the various priority action areas, including policy support, whereby the RCE networks are expected to contribute towards ESD implementation beyond 2014 (see Chapter 8).

Influence at the International Level

At the international level, engagement of the RCE community with policymakers is done through collaborations with international and intergovernmental organizations and networks via international sustainability processes. For RCEs, joint initiatives with UN agencies, regional bodies (multicountry) and international/continental ESD networks and organizations provide opportunities for policy influence in countries.

The RCE community participates in ESD-related processes associated with the DESD providing inputs to ESD policy discussions and facilitating incorporation of ESD principles in various development frameworks. In the case of global policies it would be helpful to have a continuation of and reference to the DESD thrusts. A mid-Decade review of the DESD revealed that having a global framework helped mobilize national level activities (UNU-IAS, 2014). The international reference is important because governments that had signed up to the global framework had some obligations and commitments to it. The RCEs are expected to translate global ESD policies into regional and local actions, and as global policies are underpinned by national government support and agreements, these local actions could logically, in turn, lead to influencing national policies.

Engagements in International Sustainability Processes

Global policies provide coordination of actions among the national and global actors and often provide principles of actions – bases of conduct of implementation that usually accompany statements of policies – in the regional areas and localities. The RCE community being a global undertaking with connections to UNU and the Ubuntu Alliance (see Chapter 1) has a unique advantage and opportunity for engaging in the international policy processes in thematic and sectoral development areas, particularly through RCE participation at important global events. For example, at RCE community side-events at CBD 10th Conference of Parties (COP10) in Nagoya, Japan, and CBD COP11 in Hyderabad, India, participating RCEs shared insights into innovative approaches through education to address the interconnected issues of biodiversity, ecosystems and livelihoods, interactions of nature with culture, society and economy; at Rio+20 they shared experiences on "Multistakeholder Learning Towards Green Society" and at the 5th Tokyo International Conference on African Development (TICAD V) some African RCEs joined UNU and other UN agencies in sharing examples of collaborative partnerships on ESD (see Chapter 3). The success stories presented at these events could provide useful inputs to policymaking processes.

International-Local Linkages

The issue of linkages from international to local, as exemplified by Espoo municipality in Finland through RCE Espoo, is important, as is the value of intermediate connections – national-regional-local. RCE Espoo is implementing and applying key findings from EU policy such as the teaching process of learning together and making changes happen through human collaboration and integrative actions both locally and globally through its innovative gardening activities. The RCE community provides access to shaping policies at different levels, from global, international to local, and the intervening ones. The global community is so large and diverse, and various continental regions have their own commonalities. There is a need for systems thinking and making linkages across sectors and issues, and for making partnerships and providing enabling environments, which policy does at the local level. But one cannot ignore political realities, power, and the need to bring multiple sectors, including the private sector, into the discussion.

Another important point is the issue of implementation. It is frustrating to realize that of the hundreds of global environmental agreements only a few may have made satisfactory progress. In fact some might even have slid back, as was noted at the Policymakers' Roundtable at the 8th Global RCE Conference. There is, therefore, a need to exert efforts on delivery and compliance of these agreements, and of balancing carrots and sticks. ESD and the policy thereof should have the right circumstances and conditions for implementation that would be transformative.

Policies can be successful only if they are relevant to the local context, and thus need to be fine-tuned to national action plans and national strategies. In the case of intergovernmental agreements, a regional approach may be in order for developing policies and action plans on ESD at the multicountry level and coordinating their implementation at the national level. This is exemplified by the Association of Southeast Asian Nations (ASEAN), comprising ten Member States. The ASEAN Environmental Education Action Plans (AEEAP), 2008-2012 and 2014-2018, have recognized RCEs in the region as an important part of the implementing mechanisms for ESD, particularly in human resources capacity-building, networking, collaboration and communication.

Box 6.2
Engagement in Policy Development in Southern Africa

RCEs in the SADC have influenced ESD policy development and implementation. For example, in Zimbabwe in 2013 the RCE community was instrumental in linking with other stakeholders and communities of practice to produce a "National Education for Sustainable Development Strategy and Action Plan for 2014 and Beyond". The RCEs have provided forums for policy-practice dialogues that provide for non-threatening and non-hierarchical ESD deliberations, where policymakers, grassroots practitioners and the business community have met consistently.

In terms of scaling-up possibilities, RCEs in the SADC subregion can further collectively influence ESD policy development and incorporate ESD in strategic plans in and across all sectors. There are still SADC countries with no ESD policies and strategies that could benefit from RCE support. Policy-practice dialogues and deliberations can be expanded through RCE work, and are a rich ground for innovation, experimentation, modeling, exhibition, learning and agency. Such fora would benefit from bringing financial decisionmakers together with educational quality innovators and researchers. ■

RCEs started forming in southern Africa as a response to the need to re-orient education towards sustainability. RCE formation in the region was a two-way process, both as a result of and an influence on ESD policy development. Member States in the Southern African Development Community (SADC) were party to the UN resolution that declared the DESD. These RCEs have mobilized a wealth of experience from their networking, research, ESD policy development, capacity development and change-oriented practices (see Chapter 8 and Box 6.2).

Influence at the National and State Levels

RCEs and national and state policymakers have, in some cases, engaged each other in ESD in innovative ways along the lines of government policies and strategies for implementation. In this model, RCEs in some countries work closely with the national and state governments to help achieve sustainable development goals, implement projects, create good practices and provide links to global RCE networks.

Policy Mandates and ESD Integration in National Development Plans

It is desirable for countries to have National Sustainable Development Plans that include education, and have a mandate for ESD in national and subordinate plans. Within this schema, it is essential to integrate ESD principles into educational policies and align education with thematic and sectoral developmental processes at various levels, and then ensure long-term implementation.

Policy integration is a two-way street – from policy to practice, and symbiotically from practice to policy, moving from individual pilot projects to long-term learning towards sustainability. That takes learning with sustainability in mind beyond cases of isolated practice towards the mainstream. In this area, international and intergovernmental organizations as well as international ESD networks can contribute, with RCEs as partners.

Effective policy change and alignment calls for a clear image of the kinds of policies being targeted for advancement of ESD. Education policymakers need arguments showing that ESD makes education more relevant, improves its quality and encourages students to commit more. When talking to policymakers, such as those holding responsibility for mitigating climate change, one would need credible and convincing arguments and data; for example, on the ability of ESD to contribute to climate change mitigation and adaptation.

Influencing Global Movements

The influence national governments can have on global ESD movements is well exemplified by the Government of Japan, which has long been a strong supporter of ESD. Japan proposed the Decade of Education for Sustainable Development (2005-2014) in the Johannesburg Plan of Implementation in 2002, which was later adopted by the United Nations General Assembly in December 2002. The Government of Japan has not only nurtured domestic RCEs but also, in a broader context, supported, through UNU, the global RCE movement and the networking of universities through ProSPER.Net (see Chapter 2). Via these platforms it has contributed towards encouraging other countries to better appreciate the role of ESD in national development processes.

Championing ESD and RCEs

The education sector, by and large, has been responsive to ESD integration into policy and practice, envisioning best practice of ESD for integrative purposes especially on issues being addressed by the RCE community, and encouraging RCEs to document the best happening in schools and education departments of universities to showcase to government ministries.

Another area of influence is that of national governmental policies helping to synergize learning for national sustainable development agendas and at the same time promoting the goals of the DESD through development of national ESD strategies. In this process it is strategic to involve universities, which could then assume leadership in the functioning of RCEs. To have a national government agency (or agencies) spearheading the RCE movement nationally is a trend in the right direction and, hopefully, this phenomenon can be replicated widely. The National Environment Management Authority (NEMA) of Kenya, for example, champions local RCEs, and includes them in their national ESD strategy. NEMA focuses on national coordination, capacity-building and funding, while RCEs work on implementation of ESD projects and turning national strategy into concrete actions in local communities. The Kenyan Parliament has established a basic education act, and the National Education Board has made in it prescriptions for ESD. ESD policy for Kenya and for curriculum development in the country has been moved to the institutional level at universities. The Jomo Kenyatta University of Agriculture and Technology (JKUAT), a member of RCE Greater Nairobi, has developed its local policy on ESD and trained lecturers on mainstreaming ESD in the existing curriculum.

Active support of governments to RCEs is important and should be documented as best practice. The case of Kenya is very special, and it is encouraging to note that this trend is apparently happening in some other countries as well (UNU-IAS, 2014) such as in the case of RCE Greater Phnom Penh in Cambodia.

Contribution in Re-orientation of Policy Processes

Re-orienting policy and policy processes is part of the policy cycle. Policy goals, means and situations could change, thus necessitating a continuous system of policy review and re-orientation. Unfortunately, in many instances the overriding value placed on economic considerations tends to compromise social and environmental aspects of sustainable development, downgrading, among others, ethical values, human rights and environmental safeguards. Policymakers with vested interests are likely to distort realities by re-orienting po-

licies to suit certain political agenda, unsupportive of sustainable development, to the detriment of local communities and society as a whole. RCEs can therefore serve as an unbiased protector of sound policies to ensure that social, ethical and environmental injustices are not tolerated. This is exemplified by the contribution of RCE Waikato in protecting the rights and authority of Māori guardianship of traditional land, culture and natural surroundings through sustainable resource management policy (Box 6.3).

Governments Utilizing RCEs: Policymaking and piloting

Developing national plans and influencing educational and sectoral policymaking processes are areas where RCEs can contribute. It is wise for government agencies to capitalize on the expertise of RCEs. By virtue of being multi-stakeholder-based and interdisciplinary in approach to action, the RCEs could be tapped as a resource in developing community-based ESD action plans. As an example, the Indonesian Ministry of National Education and Culture relied not only on its domestic RCEs – currently RCEs Yogyakarta, Bogor and East Kalimantan – but also took advantage of the Asia-Pacific RCE network to develop a community-based ESD action plan (Box 6.4). This is a succinct example of how RCEs contribute to policymaking at the national and sub-national levels as well as to the implementation of programs and activities contained in the action plans. This brings to light the issue of the importance of continental networks – that the utility of these networks transcends local or national boundaries.

Box 6.3
RCE Policy Engagement: An example

New Zealand's Resource Management Act is heralded as a model for sustainable management policy with its stated purpose of "sustainable management of New Zealand's natural and physical resources". With the current pre-eminence given to economic growth, the provisions in the Kaitiakitanga Resource Management Act (Māori guardianship and authority over traditional lands, forests and so forth) stewardship and landscape values were seen as an impediment to development because of consultation requirements and environmental values. A proposed redefinition of sustainable management was proposed, namely to "achieve timely, efficient and cost-effective resource management processes". This refers to procedures to speed up obtaining consent for development. This brief example shows the contested ground of policy for sustainability; it also demonstrates the kind of opportunities that arise for RCEs to engage with and contribute to shaping policy. In this case, RCE Waikato collaborated with other organizations to oppose the proposed changes. The Māori party prevented the changes from proceeding in Parliament. The importance of ethics can be seen in this example of resource management where sustainability could have been redefined to serve economic priorities, at the expense of Māori interests and environmental safeguards. ■

Policy influence by example is another encouraging trend. Stakeholders of RCE initiatives are not only beneficiaries but also active executors of project activities. In terms of undertaking a pilot initiative to demonstrate the role of communities in shaping national policies on sustainable development, RCE Phnom Penh, Cambodia, offers a good example of assuming leadership in a project on sustainable agriculture (see Chapter 4). The RCE undertook the project in 2011, working with farmers to address the national policy towards improving agricultural production while decreasing the use of chemicals for agriculture in the context of ESD, sustainable livelihoods and sustainable production. On-farm experiences have helped embed sustainable agriculture and ESD in the school curricula. Learning among pupils and parents (even those who are not farmers) has continued even at home. Lessons learned from this project have been useful inputs towards shaping government policies that could be implemented nationwide.

As higher education and research institutions are significant stakeholders in RCE networks, they are expected to serve as resource bases for technical exper-

tise, providing specialist opinion on certain issues of importance to assist governments and the public at large. Through their interventions, the ESD and SD voices of the RCEs can be inputs to policy and decisionmaking processes. RCE Saskatchewan in Canada is an example of an RCE influencing government policymaking (Box 6.5).

RCE Minna in Nigeria exemplifies how governments can lead promotion of RCEs, and how RCEs can provide a platform for people – from political leaders to the grassroots – to come together to implement policies. The Niger State Government is a founding supporter of the RCE and recognizes the importance of domesticating the concept from the national to the grassroots level. As to the policy relating to ESD, the government focuses on access and quality of education at all levels, and on developing programs of specialized teacher education with an emphasis on producing quality teachers. RCE Minna has been an active catalyst of ESD in Nigeria, and acts as mediator of policies from the State government and of response to these policies at the grassroots. Mayors participate in discussions with people at the grassroots on RCE and ESD. The Governor of the State has brought a policy where people at the local level can own their own special projects, and educate and give themselves particular provisions to enhance their living without waiting for the State bureaucracy to act. All the states in the country have started to emulate this policy. Local councils and a people's forum initiated by the governor gather people's ideas and suggestions about initiatives for the policymakers. This encourages people who have been party to the initiative of policy formulation to be committed to successful implementation and sustainability of their ESD projects.

Box 6.4
Engagement of Continental RCEs in formulation of ESD Policies

The Indonesian Ministry of National Education and Culture endorsed the initiative of RCE Yogyakarta to utilize the Asia-Pacific RCEs to develop the Yogyakarta Action Plan on Community-based Education for Sustainable Development, during the 3rd Asia-Pacific RCE Meeting held in Yogyakarta in January 2011. The plan focused on youth, schools and biodiversity. Several ESD activities in Yogyakarta and its neighbouring areas are based on this action plan. The participating RCEs, in addition to Yogyakarta, were Bogor, Cebu, Chubu, Delhi, East Kalimantan, Greater Phnom Penh, Incheon, Penang and Tongyeong. ■

Policy Implementation

RCEs are promising vehicles for influencing policymaking and implementation as they can, from their experience on the ground, find what has worked and explain how it might be emulated elsewhere or up-scaled, taking into account local differences. RCEs are agents of change and transformative learning, although implementation based on lessons learned can be challenging. The problem is that not all the stakeholders are involved from the beginning and so lack a sense of ownership of the policies and their implementation. The root of the problem is therefore the lack of contributions from relevant sectors. RCEs, therefore, should not just be influencing policies but should also be involved in building partnerships with multiple stakeholders from various sectors from the commencement of the policymaking process, so that all stakeholders can be committed to successful implementation of the policies.

It is evident that RCEs have made significant contributions in the field of influencing policy, and while RCEs cross-link issues to make policies work better, most policies may be one-directional, that is, lacking feedback. The RCE movement

Box 6.5
Providing Technical Inputs to Policymaking

In Canada, considerable constitutional powers related to natural resources and energy reside with provincial governments rather than the national federal government. In October 2008, the Government of Saskatchewan created an initiative to explore value-added opportunities related to the uranium industry with a specific focus on developing nuclear power. In light of public concerns, the government held hearings to receive public input in 2009. A relatively short time frame was set for these hearings. Given the flexibility of RCE Saskatchewan's structure, its focused ESD mandate, and its connection to specific researchers among four of its higher education partners, the RCE was able to put together what amounted to the only higher education submission at the hearings. RCE Saskatchewan's constructive critique of the proposal through a sustainable livelihood lens and its seven sustainable development issue areas played a role in the Government's subsequent decision to broaden its consideration of energy options in future hearings. Because of the presence of an RCE in Saskatchewan, the provincial government's decision on a controversial public policy issue was able to be informed by peer-reviewed scholarship and technical expertise provided by scholars in the RCE's partner organizations, along with the sustainability concerns of the community that are built into the RCE's structural mandate. ■

should be taken as an indication that this initiative is working and be accepted at the grassroots level to then drive ESD further. Post-DESD, governments across the world should play a more active role and take ownership of ESD initiatives. RCEs now need top-level policymakers to appreciate and acknowledge their work. Many policymakers still do not understand the value of ESD, and RCEs have had to educate them. Now there is an opportunity, if the top leaders acknowledge the importance of RCEs, of moving to a new level.

Influence at the Local and Organizational Levels

In policymaking at the local level, the support of mayors and city/municipality executive and legislative bodies and committees is essential. One cannot ignore the fact that although the executive branches of local governments propose and execute programs and projects, it is the legislative limbs of governance that dispose of resources. It is therefore important that both branches of government be engaged with RCEs. RCE Buea has a number of local councilors as active members and more local legislators are expected to join. The RCE is consulted by policymakers on decisions regarding ESD. This alliance between policymakers and the RCE can be up-scaled if governments at all levels officially acknowledge and support the RCE.

Being community-based networks, RCEs have potentially significant roles to play in local policymaking and implementation. Local innovations on SD and ESD that break silos and cross disciplinary boundaries through working with policy and practice need to be promoted and recognized. Policymakers ought to move beyond pilot projects and it may be relatively easier done at the local and organizational levels since results can be shown vividly.

The Supreme Court of India directive that ESD be incorporated in mainstream education in the country had the states struggling to adequately revise the curricula and textbooks with ESD concepts. RCE Guwahati engaged in policy advocacy for infusion of ESD concepts in the mainstream school curriculum of Assam state. The Board of Secondary Education, Assam, played the central role, and RCE partners Centre for Environment Education and Gauhati University added value by offering technical support (see also Chapter 8).

RCE Bohol through its enabling mechanism encourages and assists its diverse membership of government, non-governmental organizations and private academic institutions, in provincial government SD policymaking to ensure implementation of SD in their individual mandated areas of concern.

RCE Munich enables frequent exchanges with stakeholders and communication with the administration and political wings of the city government, which allows ESD activities to prosper. The RCE works closely with the Department of Education, Town Hall, the Department of Education and Sport, the Institute of Pedagogy and the Department of Health and Ecology. Three City Guidelines (Education, Ecology and Solidaric-City-Community) highlight ESD. It also actively supports new approaches of local governance.

RCE Tongyeong is a special case in that the city government is the leader of the RCE and therefore intrinsic to local governance (Box 6.6; see also Chapter 2 for a related issue). It is incumbent on the local government to utilize the RCE as it embraces a wide range of stakeholders. The city of Tongyeong itself, by and large, is aware of the RCE's existence as was observed by participants of the 7th Global RCE Conference in Tongyeong.

While the Tongyeong model is a success story, one cannot be complacent. The sustainability of the RCE functioning as it should be (in the case of RCE Tongyeong) hinges heavily on the mayor, and it is not wise to assume that successive government administrations would continue to support the RCE agenda. Current officials often cast shadows of doubt on, and are thus unsupportive of, initiatives of past administrations. There are real cases among RCEs to support this claim. It is thus important and advisable that knowledge of RCE contributions is expanded to include local politicians regardless of political party affiliations, whether they are currently holding office or not, and whether they are in government or in the opposition. Politicians currently not in power might in the future come into power, and thus it is important that they are and continue to be RCE supporters as well.

Box 6.6
Local Government Coordinating an RCE

In Tongyeong the city government leads the ESD movement while the RCE uses its network's expertise to help define specific projects and actions. Members of the city council participate in RCE Tongyeong decision-making, and RCE Tongyeong partners therefore have a strong role in informing and influencing the decisions of the policymakers.

Here is an experience regarding affecting policy processes: during the last local election an international ESD forum held in Tongyeong was attended by many RCE stakeholders in which potential election candidates also participated and talked about a possible ESD agenda. Devising a policy paper for candidates in local elections and having an educational forum for politicians was a way the RCE could influence the policy process.

Another strategy for policy influence is to use RCEs to supplement programs and activities carried out through the formal governance system in their respective regions. As generally perceived, in formal governance ESD initiatives could be caught in bureaucratic wrangling that might hinder ESD and SD actions. This is where the RCE can be mobilized within the sphere of influence and control of formal governance for policymaking and implementation purposes. This strategy has proven to be successful in one particular RCE in the Philippines. In the San Francisco munici-

pality of Cebu province, governance is community-driven, and families and individuals play a strong role in sustainable development decisions. This grassroots, multistakeholder approach mimics the approach of RCEs; in this community, RCE Cebu itself has become one of the instruments of local governance. It is gratifying to witness the grassroots discussing in their own ways global issues on SD, ESD, the Millennium Development Goals (MDGs) and other related global agenda, and how to translate them into local actions. Through the initiative of the mayor of one municipality, the RCE stakeholders have been instrumental in effectuating changes. The system, with the participation of RCE Cebu, is informal governance supplementary to the formal system, which has been found effective in delivering ESD and SD to the communities – a clear demonstration of how RCEs influence policy development and programs.

In Thailand, the Sufficiency Economy Philosophy (SEP) of His Majesty the King is the cornerstone of the Thailand National Economic and Social Development Plan. RCE Cha-am advocates the practice of SEP in its ESD and SD activities in collaboration with various ministries, government agencies (national and local), the private sector, non-governmental organizations, and civil societies, thereby strengthening the link with national policy.

Local governments might serve as facilitators in providing platforms for RCEs to initiate innovation and engage in partnerships with relevant sectors and organizations. This model of engagement has been successful in Espoo, Finland, under the so-called Urban Mill concept operated by a small private concern involved in innovation spaces. The city has its own activities in this space along with universities and SMEs in the sphere of urban design/planning driven by the people. Other elements include small start-up activities; for example, a company operating with universities and the city on real life marketing and connecting activities. It also has a workshop with strong city involvement, not of city bureaucrats, but those who implement, dream and plan for action. It is an example of an RCE doing boundary-expanding actions, opening innovative ventures, and creating something entirely new using physical, virtual and mental spaces.

The role of local governments is indeed immensely important. Without government support, the RCE may be weakened in view of the lack of connections with decisionmakers and policymakers. Local governments have the ability and power to widen participation, in both formal and non-formal education sectors, and engage multistakeholders in the community. This is the foundation of the RCE and its source of strength. This model is exemplified by the situation in Okayama, Japan (Box 6.7).

Box 6.7
Local Government Coordinating RCE Multistakeholders

Okayama joined the Johannesburg Summit in 2002 and started ESD activities. The Okayama ESD initiative had the support of the city and RCE Okayama was among the first seven RCEs acknowledged in 2005. The three main features of RCE Okayama are: (1) Multistakeholder participation in RCE activities with support of universities, local committees and citizen groups; (2) Policy of the local government to promote ESD using financial and human resources; and (3) Activity of RCE Okayama supported by local action communities, including those from non-formal and formal education sectors. Post 2014, RCE Okayama plans to scale up with new concepts such as putting ESD promotion into each city's policy, and encouraging local governments to act for ESD and municipal stakeholders. The new city mayor is as keen as the former mayor to engage in ESD activities ■

Transformation at the grassroots level is a bailiwick of RCEs in view of their being in touch with on-the-ground realities while also having expertise in ESD and SD. The way engagement is conducted depends on local norms and practices as well as on tradition and culture. In Grand Rapids, Michigan, USA, the principles of grassroots involvement are practiced through a unique initiative known as the "Seeds of Promise". This model is built on the guiding principles of sustainability and governed by empowered residents. It helps transform the neighborhood by: promoting collaboration and community stakeholder partnerships; applying sustainable development best practices; building local resident leadership and trust; deep listening to neighbourhood and resident voices; meeting the needs and wants expressed by the neighbourhood; and empowering the neighbourhood community to achieve its goals. The City of Grand Rapids is looking to replicate the model within other parts of the city.

Policy Research

While RCEs are engaged in various ways with policymakers and decisionmakers, they have roles to play in policy research to provide support to policy processes, considering that one of the core elements of an RCE is to conduct research and development to advance ESD knowledge. Policy research is a crucial ingredient for informed, good decisionmaking to increase the impact of policies and learn the process of linking policymaking and implementation. This policymaking and implementation interface is well depicted by the RCE Minna experience described earlier in this chapter.

Higher education institutions play important roles in policy research both in respect to their own research agenda (see Chapter 2) and acting in alliance with like-minded academic partners. The cluster approach to policy research on sustainability is an effective way to support policymaking, where allies address ESD issues for purposes of contributing to sustainability transformation of their respective organizations and influencing policymakers.

By working together, higher education institutions can share cases that demonstrate change processes towards sustainability. Many of these institutions are stakeholders, a number of them leaders, of RCEs and they harness synergies between RCEs and their academic alliances. UNU-IAS has under its auspices ProSPER.Net, the sustainability education and research network of universities (see Chapter 2). ESD networks not only influence policies on ESD of member institutions but also engage in policy implementation on sustainability in higher education.

Policy development is a core element in UNU's mission, which connects closely with the needs of Member States in terms of research and policy development. Serving as a think tank that can pursue knowledge for its own sake, unlike any academic university, UNU is focused on how its research can be useful to the international society. This goal is underscored in particular by UNU-IAS's own mission to advance efforts towards a more sustainable future for all, through policy-relevant research and capacity development focused on sustainability and its social, economic and environmental dimensions. The RCE community is expected to contribute towards policy research and development.

Policies that entail ESD implementation refer to how education, especially ESD, is included in national SD plans. Policies also relate to sectoral mandates for ESD. ESD policies deal with national curricula and local contents thereof, formal education, teacher training, non-formal education, community and civil society participation, and the private sector.

Policy support is one of the five priority action areas of the GAP, and the RCE community can make meaningful contributions to its implementation. Chapter 8 provides examples and highlights how RCEs can assume their roles in this regard.

Summary

There is no one model that fits all so the question now is about what model of engagement fits, as various modalities may require different conditions. The model of engagement appropriate for intergovernmental and international organizations is that of providing supporting roles towards promoting ESD and in implementing the goals of the DESD in light of their respective mandates. These organizations, including UNU, are in appropriate positions to share the global perspective of ESD issues and challenges at various levels of policy and in various policy areas, as well as of the emerging post-2014 GAP. RCEs can provide useful inputs to international sustainability processes through important global events. RCEs acting as clusters may also contribute to policymaking and implementation of action plans from regional/subregional (multicountry) vantage points, as exemplified by the ASEAN and southern African RCE experiences.

At the national level, there could be a leadership approach to engagement (e.g. Japan, Kenya, Indonesia and Cambodia). Japan's impact is far-reaching in this regard. The Government of Japan assumed a leadership role in pushing for the adoption by the UN of the DESD in 2002, and supports ESD networking through UNU in higher education through ProSPER.Net, and community-based multistakeholder networking through RCEs. Kenya provides a good model of leadership where RCEs are recognized formally as agents of change and the national government promotes and mentors RCEs in the country. The same is true in Indonesia with its Ministry of National Education and Culture, and in Cambodia with its Ministry of Agriculture, Forestry and Fisheries. Certainly, there are practices of this kind in other countries as well.

At the subnational and local levels, the approach of engagement could be that of an enabler and having a facilitative role for policymakers. It is interesting to note that RCE Minna, for example, was the child of the Niger State Government. Espoo is another good example, showing the enabling conditions for policy and a market of ideas and an innovation for ESD, providing the so-called Urban Mill as a space for multiple stakeholders to discuss and initiate innovative ideas on ESD and SD. Okayama City exemplifies engagement through promotion of ESD with the local government facilitating multistakeholder involvement. Other models of engagement are demonstrated by RCEs Tongyeong, Cebu and Grand Rapids. RCE Saskatchewan has demonstrated policy influence on the provincial government's energy policy. Clusters of RCEs could also work together to tackle local, subnational or national issues – for example, as the Asia-Pacific RCEs did for Yogyakarta, Indonesia.

At the organizational level, RCEs by their constitutive character are supposed to influence policies, programs and projects of member organizations and other stakeholders. A few examples are illustrated by initiatives such as those of RCE Greater Western Sydney and RCE Guatemala (see Chapter 2). Through clusters of institutions, HEIs, for example, transforming member institutions towards sustainability can be facilitated or even accelerated as exemplified by ProSPER.Net, the Global Universities Partnership on Environment and Sustainability (GUPES) of UNEP, and other ESD-related networks.

Yet acknowledging change is not easy, and the need to focus on the vast portion of the population eager to make changes should be recognized with urgency. It is important to underscore the roles of governments in ensuring successful implementation of ESD processes. Also, one can learn from the experiences of the engagements of RCEs with policymakers and politicians around the world.

Finally, in all of these RCE actions that could potentially make policy and decision-making influence, one, of course, cannot deny the critical factor of resourcing. People tend to look at programs in terms of funding; there is a need to encourage stakeholders to mobilize their own and share resources (see Chapter 1). This boils down to the issue of behaviour change, both at the level of regions, organizations and individuals (see Chapter 5). The difficulty of doing so and how to change to accept new things is a big challenge. RCEs are about being learning networks where stakeholders continue to learn by themselves and from each other in pursuit of creating sustainable societies.

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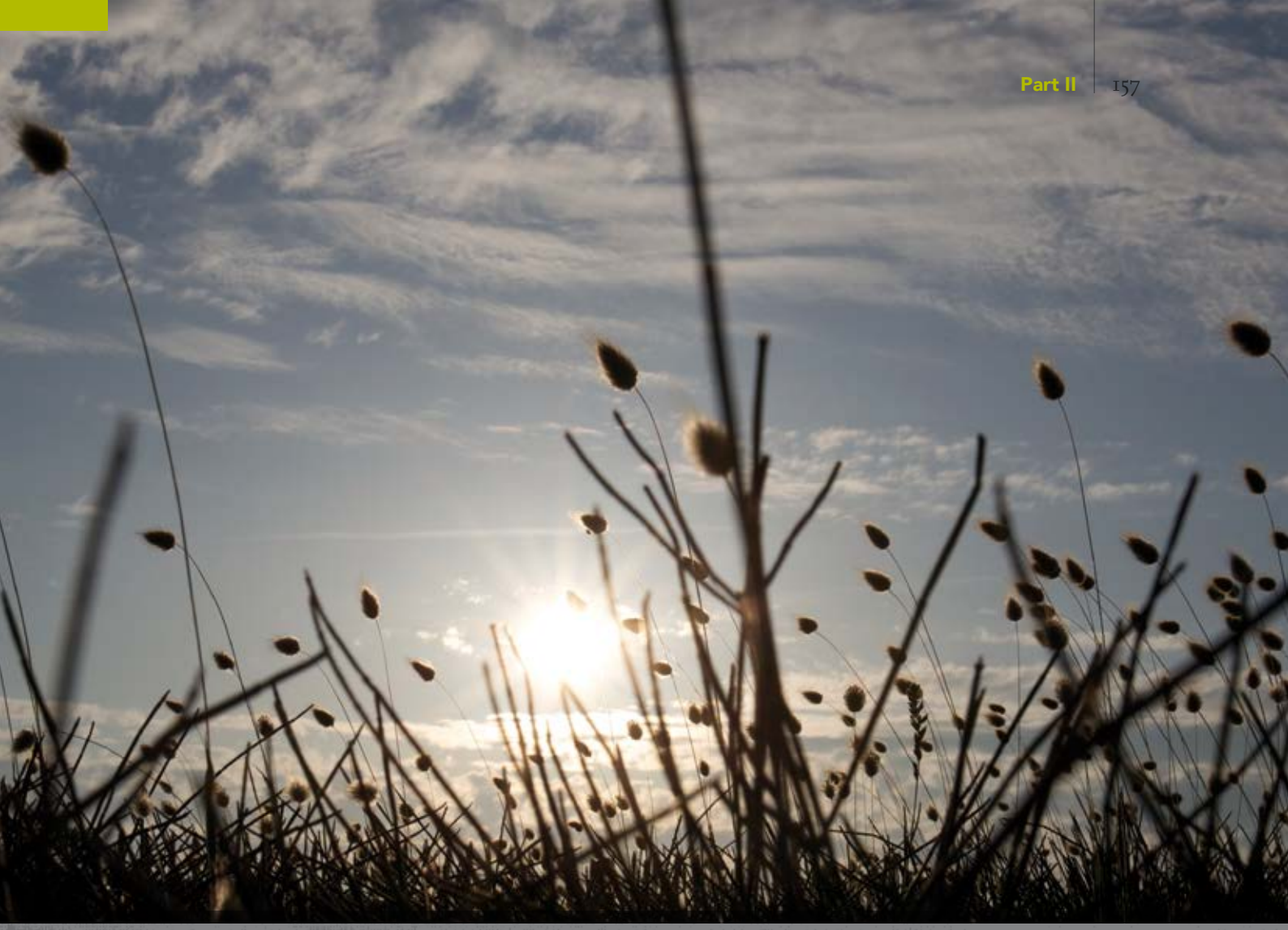

Reflections

An RCE is an effective platform for promoting ESD. During my tenure as Director-General of the Department of Environmental Quality Promotion (DEQP) of the Ministry of Natural Resources and Environment of Thailand, it was our policy to support the establishment of RCEs in the country. In collaboration with UNU-IAS, my department contributed to the facilitation of the development processes of the now-acknowledged RCE Trang and RCE Cha-am and supported funding to some of the RCE activities and programs. While the government sector supports the RCE movement, it is equally important at the political level to engage RCEs to cope with ESD at the local, national and global levels thereby enhancing the RCEs' roles.

Monthip Sriratana Tabucanon
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Thailand

Reflections

We live in an age of immediacy. With a 140 character limit, Twitter provides instant headlines. With seemingly limitless information available to us online, we seek immediate answers to questions. I read once that the American children's television program, Sesame Street, provided a maximum segment length of 90 seconds, catering to the short attention span of toddlers. In some respects, the technological revolution has reduced us all to the attention span of toddlers!

The problem with our expectation for quick, short answers is that complex issues require complex solutions. The issues being addressed by the Regional Centres for Expertise are not simple, but they are of the utmost importance.

I was privileged to participate in the RCE Saskatchewan event in the community of Nipawin in May of 2013. I was impressed by how the event brought together diverse groups to address issues of sustainability. The RCE Saskatchewan partners are serving as a catalyst for change in our province. This reminds me of Her Majesty the Queen of England's comments to the United Nations General Assembly in 2010. She said, "I know of no single formula for success, but over the years I have observed that some attributes of leadership are universal, and are often about finding ways of encouraging people to combine their efforts, their talents, their insights, their enthusiasm, and their inspiration, to work together".

I am grateful to the RCE for bringing people together to explore creative, lasting solutions that will enable our planet to thrive for centuries to come. In our region, for example, RCE Saskatchewan not only challenges our current practices with an eye to the future, they are also looking to the past for answers. Saskatchewan's Aboriginal peoples hold the key to much wisdom about our place on this earth. I will close with words attributed to Chief Ahtahkakoop of the Cree Nation, as handed down by the elders. He spoke these words in the late 19th century during treaty negotiations with the Queen's representative: "Let us think not of ourselves but of our children's children. We hold our place among the tribes as chiefs and councilors because our people think we have wisdom above others amongst us. Then let us show our wisdom. Let us show our wisdom by choosing the right path now while we yet have a choice".

Vaughn Solomon Schofield
Lieutenant Governor,
Province of Saskatchewan
Honorary Patron, RCE Saskatchewan

Chapter 7

Enhancing Monitoring and Evaluation Practices in RCEs

Rob O'Donoghue and Zinaida Fadeeva

The midterm of the DESD came with imperatives to strengthen monitoring and evaluation work in RCEs into the end of Decade. The processes examined here are how RCE evaluation has been emerging through an unfolding succession of approaches initiated in various regions of the world. These initiatives have recently informed a hybrid evaluation tool that has been piloted in the SADC region. The approach used has been centred on the adaptive use of a framework tool for co-engaged evaluation of RCEs and the value adding outcomes of their ESD initiatives in a local context. The emerging evaluation tools are to be accompanied by continuing capacity development in evaluation practices so as to strengthen the quality of data and depth of analysis of activities, impacts and value creation.

The Cultural Context of RCE Evaluation

A deliberation process on evaluation in RCEs developed midway through the UN Decade, as the pressure to evaluate programs and impacts escalated and a variety of stakeholders, including the RCEs themselves, wanted to better assess and communicate the value of their ESD activities. Here differences between what one might call participatory perspectives and more empirical or impact assessment approaches that privileged tangible measures of change, were not easily reconciled. It became clear, during the Global RCE Conference in Montreal (2009), that the necessary approaches to evaluation were not widely evident and expertise in conducting evaluation activities was not readily accessible in most RCE contexts.

It also became clear that many of the RCEs shared a view that evaluation should be based on the principles of self-reflection and evidence of change. UNU-IAS thus initiated a deliberative process, and following the decision of the Global RCE Conference in The Netherlands to establish a working group on evaluation, a concept paper was developed.[1] This was followed by a consultative, online process that was carried into the Global RCE Conference in Tongyeong (South Korea), which highlighted the importance of continuing work towards better monitoring and evaluation.

The process followed here involved clarifying the nature of RCEs and trying to develop principles for the assessment of RCE processes and the impact of their diverse ESD change practices. This work noted an expectation that the RCE evaluation should be approached as a *collective learning process* among RCE stakeholders, including elements of peer-facilitation and exchange.[2] This approach was primarily a strategy for developing capacity in monitoring and evaluation within the RCE community. Some early evaluation was undertaken by Geoff Scott in RCE Greater Western Sydney (see Box 7.3 for some details) with complementary perspectives emerging in RCE Graz-Styria, facilitated by Clemens Mader, and with RCE European Advisor, Jos Hermans, adding to an emerging suite of complementary perspectives. Key attributes of all of these have contributed to the mix of perspectives integrated into the hybrid approach under review in this chapter.

Many other RCEs, including an emerging African regional network of RCEs coordinated through the SADC Regional Environmental Education Centre in Howick, South Africa, participated in the deliberation on evaluation. This process became a testing ground for diverse perspectives as well as a consensus-seeking process on evaluation practices and principles suitable for RCEs. For example, one of the earliest propositions was that of *establishing a baseline from which an evaluation could be conducted* – the step that became a part of the constitutive and strategic evaluations undertaken by some RCEs. Other perspectives were centred on *the importance of collaborative review so that all interest groups in an RCE are included in an*

1 The members of the Working Group included Rob O'Donohue (RCE Makana), Zinaida Fadeeva and Abel Atiti (UNU-IAS), Jos Hermans (RCE European Advisor), Clemens Mader (RCE Graz-Styria), Jim Taylor and Tich Pesanayi (RCE KwaZulu Natal), and Geoff Scott (RCE Greater Western Sydney).
2 Talking about evaluation instruments in the latter part of the article, the term assessment is used for when participants have to appraise something and generate perspective and data to justify it. Evaluation is the appreciative grasp and sense that emerges through a series of appraising assessments and, eventually, the value creation that people come to have a sense of or are directing their endeavours towards. This is a fairly open-ended use of the concepts of assessment, appraisal and evaluation used with the intent of not being too inscriptive and recognizing that there is more scope when working in an arena that goes beyond schooling.

evaluation process. The latter received positive responses that exemplified participatory approaches, and appreciative enquiry emerged as an important constituent of evaluation in RCEs as collaborative civil society initiatives that needed to monitor and evaluate programs so as to be accountable to all involved, including funders.

Alongside this, *a clarifying of strategic purpose also emerged as a priority*. It was noted that some tangible baseline data, appreciative records and a strategic assessment could lend themselves to some sort of meta-analysis of RCEs, a useful feature for the reporting of outcomes to the global network of RCEs. While such roles had been originally attributed to UNU-IAS, some other processes supporting meta-analyses have been initiated by the RCEs and their stakeholders.

Towards a Situated Framework for Evaluating RCEs

With the RCEs in the region having emerged at differing times within the DESD, taking many forms (some being centred on cities while others had a regional or small-country character) and located in regions with unique attributes, the idea of a baseline for an evaluation process became a concern for the development of contextual monitoring and evaluation data.

From the beginning of the development of RCEs, with the seven pioneering RCEs in 2005, the Global RCE Service Centre requested annual reports, including basic information on the characteristics of the regions, RCE governance, and flagship projects. Those reports, communicated as document files, provided a first reflection by RCEs on their development and, later, on how they had changed since their establishment. Until 2009 they remained the basis for the assessment of the collective development of RCEs. In addition to the analysis by the ESD team of UNU-IAS, some other forms of data collection and reflection have emerged (see Box 7.1).

To support the reporting process, an online portal was developed that allows RCEs to enter and access their information online, and through this portal also get an insight to international processes and activities from other RCEs. The portal was structured to qualitatively assess processes of transformation through the partnership activities of the RCEs according to changes in their governance, shared understanding of challenges and goals, types of stakeholder involvement, and educational and learning principles, as well as innovation processes (Mader, 2013). This ongoing work fed into imperatives to assess, monitor and evaluate RCE activities and a number of innovative evaluation initiatives were pilot tested.

As has been described in the previous section, development of the Concept Paper by the Evaluation Working Group marked another stage in the development of RCE assessment. This working document became a reference point for the pilot evaluation practices of

Box 7.1
Examples of Student Engagement in the Evaluation Processes

From 2009 a series of student seminars started at the University of Graz (RCE Graz-Styria), in cooperation with the Global RCE Service Centre, focused on assessment endeavours and meth-ods for monitoring and evaluation of and by RCEs. In addition to the online analysis of data, students tested appreciative enquiry through online or personal interviews resulting in narrated and written stories about the RCEs, communicating more subjective and experience-based knowledge. A similar activity was undertaken in 2014 by the students of the University of Luneburg. ■

RCEs Goa, Mumbai, Delhi and Pune (India), RCE Phnom Penh (Cambodia), RCE Cha-am (Thailand), RCE Kyrgyzstan and RCE Okayama (Japan) from the middle of 2013 until the beginning of 2014. The development of an evaluation process, as a hybrid mix of complementary perspectives on and approaches to monitoring and evaluation, has brought further insights on the need for diverse assessment processes to report on and develop capacity in the ESD practices of an expanding global RCE community. More insights into the portfolio of RCE evaluation practices are provided in the next section. Further work on the appreciative review of how the collaboration had been constituted in a particular context has been conducted by the RCEs in the SADC region, within a project supported by UNU-IAS.

Portfolio of Approaches for RCE Evaluation

The evaluation literature on the review of education projects is characterized by the emergence of evaluation as a professional field. Broad trends are notable from the 1980s when positive approaches like appreciative inquiry took on a participatory character within constructivist perspectives on learning and change. Alongside this in the 1990s developmental evaluation emerged, and more recently there has been the advent of realist evaluation centred on interpreting evidence and the analysis of the theory of change that underpins prevailing trajectories of learning and value creation.

As has been indicated earlier, in 2013 several approaches were suggested for evaluation of the RCEs – constitutive evaluation, appreciative inquiry and strategic evaluation. These were used by individual RCEs in some of the early evaluations reported above.

Appreciative enquiry focuses on the positive experiences of RCE members in realizing ambitions stated by the RCE application and goals developed on the basis of the RCE's stated vision after acknowledgement by the Ubuntu Committee. An appreciative enquiry approach as a means of collective reflection emerged as a key tenet within the RCE community. Its primary function is *to develop a capacity to deepen understanding and promote a culture of program monitoring and critical review* in the spheres of personal and professional life. Though challenging, this helps an RCE to collectively take stock of things and *improve the quality* of actions. Such an exercise revisits and reflects on networking and governance; strategic areas such as focus, partnerships, approaches of engagement; learning for change; RCE evolution in terms of partners, projects and change-oriented perspectives including major constraints and ways of improvement; success in terms of shared indicators, good practices and evidence of success; local-global linkages; and the potential of up-scaling and sustainability (Box 7.2 presents impressions and learning experiences of RCEs Goa and Okayama in the course of the appreciative enquiry evaluative process).

Box 7.2
Learning During RCE Evaluations

RCE Goa

RCE Goa has been facilitating collaborative research, development and promotion of ESD in Goa. It would specifically like to address local sustainability challenges such as tourism and coastal and waste management issues in the region.

The RCE assessment exercise aimed to facilitate collective learning so as to improve the quality of the RCE's work by expanding its contribution to transformative learning and sustainability change, and to enable collaborative work as a networked community generating diverse social learning and change initiatives. The assessment provided an opportunity to generate monitoring and evaluation assessments that are helpful for reporting, and thus improve the RCE as a social learning-to-change initiative. Assessment helped to generate appreciative evidence on change-oriented activities of the RCE as regional stakeholders working in contexts of social learning to foster change that reduces

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The evaluation of the RCEs succeeded in generating data that demonstrated the strong points of their work and pointed out areas that required further work. Clarifying strategic focus of collective actions has become one of the results of evaluation, as evaluation has enabled the RCE stakeholders to centre attention on actions that were particularly successful or on the promising side of their work, and also on how to adjust some of the collaborative strategies in their networks. As a result "the discussions at the workshop helped in learning, understanding and updating the work profiles of the RCE partners" in Goa and in formulation of the Okayama Model of RCE development in RCE Okayama (Box 7.2).

Appreciative enquiry has proved to be an effective process for analyzing and deepening intra-RCE partner engagement as well as reinforcing key nodes of local actors and action capacities in ESD. Moreover, the experience from such an exercise at the regional/global level is diverse owing to the differing geographical contexts as well as the history and experience of individual RCEs.

Constitutive evaluation is focused on the core elements of the RCE and its functions as stated in its inception document, a peer-reviewed document vetted by the Ubuntu Committee. Interestingly, in the case of many evaluations, while appreciative enquiry served as the main argument for the RCEs to undertake the activities, constitutive assessment was what guided their evaluative enquiry and the appraisal of ESD activities (as in the case of RCE Greater Phnom Penh and of RCE Cha-am). Apparently, the RCE coordinators found the constitutive evaluation easier to conduct than appreciative enquiry as the latter seems to require specialized capacities. Another reason for the preference has emerged, somewhat unexpectedly, as an additional strategy for engagement (or re-engagement) of the regional members in, for example, realizing the learning dimension in sustainability projects. In other words, the assessment exercises served as learning platforms for existing and new members on the meaning of RCEs, ESD learning practices and how partners' respective activities could be up-scaled to embrace ESD more holistically.

risk. Such work has the potential to stimulate not only change-oriented work in a local RCE context but also coordinated work across the RCE community and with its global stakeholders.

The evaluation process of RCE Goa helped members decide to facilitate internal reflections and bring together key stakeholders so as to take stock of the RCE's activities, its challenges and constraints, and what could be done to overcome them. This exercise is of critical importance in helping RCE Goa set up monitoring and evaluative assessments of its future activities. The discussions at the workshop helped in learning, understanding and updating the work profiles of the RCE partners. This helped in collectively exploring and establishing ways to improve co-engaged ESD work, and in the process raising the quality of RCE Goa's initiatives. It also helped in developing a set of indicators that would define the impact and success of RCE work. *(S. Kazi)*

RCE Pune

RCE Pune was initiated in January 2007, building upon an existing network of individuals and organizations concerned about diverse issues of society and environment, such as livelihoods, urban planning and governance, education, housing, waste, water, transportation, and bio-diversity.

Some months ago, we and several partners undertook an RCE evaluation, a reflection of our networking at RCE Pune. The reflection helped articulate what people have found of value in the network and in acting together. Partners mentioned learning, encountering differing viewpoints, seeing interconnections, development of trust, enhanced professional and civic efficacy, and being inspired. At a personal level, one of the partners said, "I have found passion, motivation, hopefulness, inspiration, the will to go on even when the issues are difficult."

The reflection revealed that the concept of a local network about sustainability is itself a strength. Forums created, supported or even

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inspired through the RCE network, such as environment reporting, participatory budgeting, local area design and planning exercises, and innovative outreach through exhibits and activities, were cited as examples of what has gone well so far.

On governance of the network itself, it was felt that knowing each other and having many occasions to meet and act together on specific issues of concern, are key aspects. Of particular importance is a dedicated and consistent secretariat that keeps up the momentum and holds documentation of the work done. RCE Pune has always been a very light structure relying on associational activity, with the anchor organization (CEE) organically assuming a secretariat role and maintaining a neutral role.

For future work, partners have stressed the need to continue collaborative work on deepening participatory and multistakeholder local governance, using tools like social audits, public dialogues, and information support centres. For strengthening the governance of the network, partners have suggested: that different stakeholders may be part of a core team; the need for bridging links and especially stronger links with bureaucracy and politicians; regular but modest frequency of meeting (say four times a year) around some small actions; a well-defined but simple way of formally joining the network, with options for lay citizens to join in too. *(S. Menon)*

RCE Okayama

The assessment workshop was organized with the participation of 16 key stakeholders of RCE Okayama, selected by the RCE Secretariat (City of Okayama) to ensure diversity in the background of stakeholders and representation of priority organizations. Prior to the workshop, all participants were asked to submit a survey to share their individual reflections on individual activities/projects of the RCE and how the individuals perceived the RCE network (Okayama ESD Promotion Commission) – its added values, vision and goal – as a platform for dialogue and collaboration. The survey forms provided the baseline data with which to analyze the reflections

The workshop was conducted in the form of group discussions with two key questions: (1) what are the achievements, that is, the positives for your activities by being part of the network, the kind of changes brought to yourself, your organization and the community and (2) what are the challenges you have faced and what would be needed in order to overcome them?

Although the purpose of the workshop was not to evaluate individual projects or activities, it is worth mentioning that a number of good cases were shared during the workshop, which showed how the themes and areas of activity and projects have expanded over the past 10 years. Reflections of the stakeholders resulted in the formulation of an action plan for the RCE in the area of governance and coordination, expressed in the formulation of the Okayama Model.

Overall, the assessment workshop provided a great opportunity for stakeholders to share ideas and reflect on the future direction of their RCE, while the Secretariat could reconfirm the consistency between the needs of the stakeholders and the proposed future direction. Capitalizing on these results, RCE Okayama hopes to contribute to further promoting ESD through community-based actions beyond 2014. *(S. Yasuda)*

RCE Kyrgyzstan

Assessment of RCE Kyrgyzstan has been conducted in conjunction with the Seminar of Competencies for ESD, co-facilitated by UNECE and experts from UNU-IAS. This provided an interesting opportunity to exchange ideas about the RCE's results from the specific perspective of its contribution to regional competence development for sustainability and for ESD.

The importance of such assessments is critical as they provide a unique platform for exchanging views and ideas among various ESD stake-

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Strategic enquiry aims to develop an understanding of the social learning and change potential for the actions of various RCEs, including an assessment of the RCE context of risk and the emerging scope and impact of the activities being undertaken within the RCE. Strategic enquiry, as performed, for example, by RCE Greater Western Sydney (see Box 7.3), addresses advancement in the areas of strategic importance for the RCE as well as factors that influence its progress, such as resources, barriers, and strategic linkages throughout the process of collective actions – from project design to its implementation and outcomes.

Each of the three forms of evaluation – appreciative, constitutive and strategic – were suggested to the RCE community and used by it in different combinations depending on the preferences of the stakeholders and the stage of development of the RCE engaged in the evaluation process. While individual strategies are still being used, it was just a matter of time before a more coherent approach of working with a set of evaluations emerged. The next sections provide insights into that process.

holders and experts in Kyrgyzstan. It also helps, in our view, to increase understanding on ESD among its main promoters – teachers and civil society representatives – increasing their capacity for action.

As a result of this multisectoral consultation, the partners positioned themselves not only as interested parties of ESD but also as its main implementers, regardless of their sectoral affiliation. The assessment process facilitated development of new project ideas and helped consolidate efforts in their perusal.

As the seminar brought together not only RCE members, it helped to position RCE Kyrgyzstan as a leading network in advancing ESD nationally, as well as to entice potential partners to join the RCE. *(Z. Dushenova and C. Sadykova)* ■

The Emergence of a Hybrid Framework for Evaluation in RCEs

We noted that although each evaluation convention had a particular character and requirements, there were many common features and an evolving process towards a weighty realist probing of structural mechanisms and how these function to bring about positive change. These insights allowed the team of southern African RCEs to develop a hybrid start-up tool for framing evaluation processes in RCEs based on the theories and practices of the evaluative approach. Figure 7.1 summarizes the perspectives that were drawn on to construct a framework tool for situating a positive, co-engaged and developmental evaluation framework that can enable participants to probe practices, generate evidence of impact and assess value creation within the RCE network. The remainder of this chapter elaborates on the design and pilot implementation of this open-ended evaluation start-up process that can be expanded and deepened by drawing on the constituent perspectives in the literature as evaluation capabilities develop.

Contextual profiling, as a way of developing baseline data, had emerged as a situating methodology for much of the environment and sustainability research in the SADC region along with the need for a grasp of the way in which each RCE had been constituted. "Constitutive evaluation" thus became an opening feature of the evaluation framework that was to be developed for site-based collaborative evaluation across

Box 7.3

RCE Greater Western Sydney (GWS): Setting up an efficient and timely tracking and improvement system

(By Geoff Scott)

We, at the RCE GWS, are very clear on what we mean by key terms like *assessment* (gathering performance data on each RCE GWS initiative to inform evidence-based evaluation) and *evaluation* (making judgements of worth about what is happening in each RCE GWS initiative and the operation of the centre itself).

cont. ▶

An interlaced, four-level evaluation framework is being used to track and then both improve and prove the quality of what the RCE is doing. Here we look together at:

1. The quality of design for each RCE project. For that we ask questions like: How do we know this project is relevant and, most importantly, feasible (deliverable)?

2. The quality of support available for each project and for the RCE itself. Do we have staff with the right profile, the resources we need, the grants necessary to support operations, the support of the senior leadership of each partner, an effective RCE administrative system and a productive promotional/engagement strategy?

3. The quality of implementation of each project. Are those who are delivering the project reporting that it is working effectively or do they need implementation support to address unexpected challenges that are emerging as they try to put it into practice?

4. Impact is the key quality test for all our work (and the one most difficult to measure). Here the key question is: How do we know that the projects that we agree are working effectively in practice (level 3) are actually having a positive impact on those intended to benefit from all this work, and what exactly is this positive impact?

In this way RCE GWS is seeking not just to assure the quality of its inputs (levels 1 and 2 above) but also the quality of its outcomes (levels 3 and 4). If we find that we are not achieving the desired outcomes at levels 3 and 4, we "backward map" to look at what needs to be improved in levels 1 and 2. The philosophy here is, as Francis Bacon said in the 17th century, "We rise to great heights by a winding staircase". ■

the RCEs in the region. Drawing on the work done by the RCE Assessment Working Group in 2013, this opening move was then broken down into a framing of an RCE as:

- A platform for dialogue on concerns and practices among RCE stakeholders;
- A local resource base to support ESD work; and
- A networking structure for enabling ESD in local school and community initiatives.

This allowed the evaluation team to draw on the data reflected in the RCE portal to identify the common architecture of the RCEs that might be useful to review through the generating of evaluative data, namely:

1. The RCE as a coordination and networking structure for ESD;
2. The co-engaged learning activities being undertaken and their effects;
3. The notable transformations and changing sustainability practices;
4. The strategic focus areas and the learning links established;
5. Support from and collaboration with the Global RCE Service Centre; and
6. A picture of the value being created by RCE processes and activities.

The evaluation process started with the development of an evaluation toolkit as a hybrid instrument that, as noted above, draws on a range of evaluation traditions that can be adapted to differing needs and contexts. These include: Constitutive, Appreciative and Developmental Evaluation, and Value Creation Assessment.

The start-up toolkit opens with a review of documentary evidence on *how the RCE was constituted*[3] to begin an unfolding review of the RCE journey. The development of a picture of how the RCE evolved (Question 1: Figure 7.2.A) is designed to provide key reference points or a baseline around which the participants can probe the core elements of the RCE activities and practices.

3 The constitutive evaluation has been interpreted through different questions in different contexts. In some evaluations the constitutive characteristics were seen as those that are defined by the RCE concept and consist of networking, participatory governance, research and development and transformative education.

An overview of the RCE Lessons Evaluation

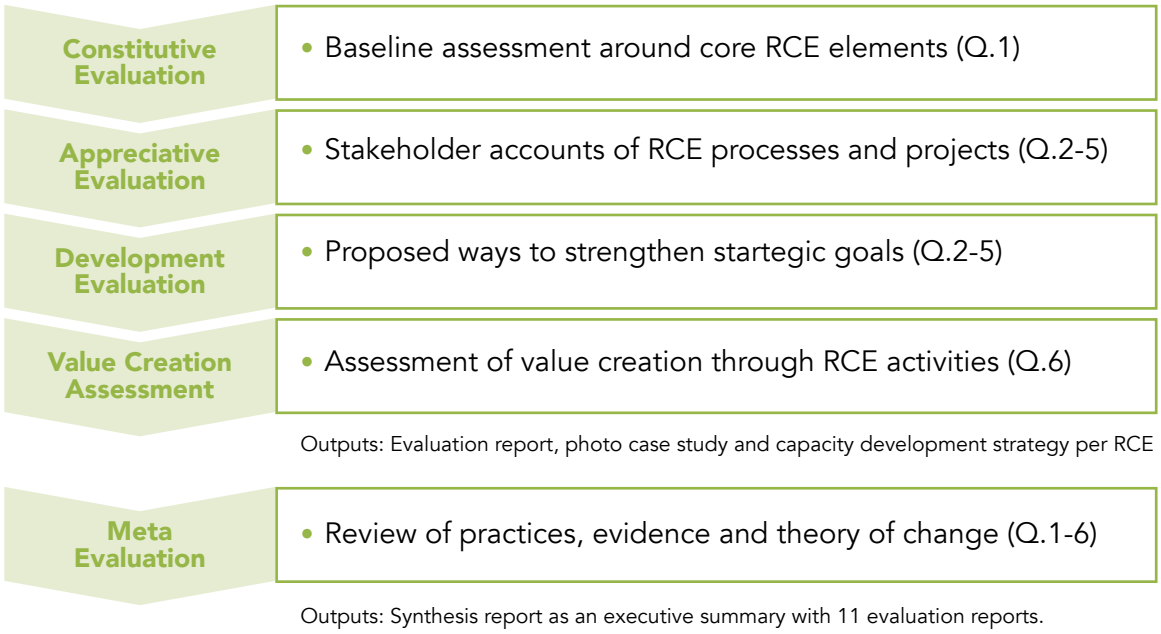

Figure 7.1 Overview of the Evaluation Toolkit developed for SADC RCEs

Consequently, the evaluation is *approached as a deliberative process of appreciative inquiry with a developmental evaluation dimension* designed to prompt expansion of successes, strengthening of collaborative governance, improving learning interactions and collaborative linkage into the global network of the RCE Service Centre (Questions 2-5: Figure 7.2.B-E). The focus areas and questions in each case are intended to loosely frame an evaluative concern to prompt appreciative conversations that generate evidence and developmental inferences that can be built on these.

The evaluation concludes with an open-ended assessment of *value creation* (Question 6: Figure 7.2.F) (Wenger et al., 2011).

Wenger et al. (2011) describe how communities of practice produce value in their work cycles of activity. Value creation starts with a sense of something that is of *immediate value* that might be seen to have a wider *potential* for value creation.

A. Constitutive overview of RCE in context

Question 1: **RCE Coordination & networking**

The RCE Journey: A review of how the RCE was constituted and is functioning to enable learning and change.

1.1 How did the RCE evolve?

1.2 How has the membership changed?

1.3 How are local issues being addressed?

1.4 What ESD initiatives have been undertaken?

1.5 a) What can be done to improve RCE work and b) how?

Reference appreciative comments to the available documents: RCE application, articles in the RCE bulletin, RCE pulications, project documents, other publications, audio visual materials etc.

B. Appreciative review of activities and effects

Question 2: **Activities & their effects**

2.1 How has the portfolio of activities of the RCEs envolved?

2.2 What have been the best/most successful RCE activities and why?

2.3 Give examples of how successful collaboration/ decisionmaking is producing the effects that are being achieved?

2.4 How can activities be up-scaled and mainstreamed?

2.5 How could better work be achieved?
- In the RCE? (inward looking)
- In the region? (collaboration and outward looking)

C. Appreciative and developmental review of processes and their impact

Question 3: **Transformation & sustainability**

3.1 What **flagship initiatives** reflect the successes of the RCE?

3.2 Summarize the **scale of a) knowledge and b) practice transformation** apparent in these initiatives over a period of 12, 24, 36 months etc.

3.3 What has changed and how is the change evident?

3.4 What **resources and governance** have enabled success?

3.5 What, besides funding, can be done to **overcome barriers** and **sustain the work** of the RCE?

D. Developmental review of learning, impact and strategy

Question 4: **Strategic areas & linkages**

4.1 What **strategic focus** areas, partnerships, activities have been key to the successes of the RCE?

4.2 What could be done to **improve learning and effectiveness** (e.g. partnerships, resourcing and scale)?

4.3 How can existing linkages, processes and programs be strengthened?

4.4 What new **strategic links** and **capacity development** could be explored?

E. Developmental review of networking practices

Question 5: **Global RCE Service Centre**

5.1 What have been the benefits of being acknowledged as an RCE?

5.2 How are you interacting with the RCE Service Centre?

5.3 How are you working with other RCEs and what are some of the activities, successes and challenges?

5.4 How has your RCE participated in regional and global RCE conferences and undertaken follow up activities?

5.5 How could regional and global RCE activities be improved to strengthen your RCE work?

F. Review of value creation impact

Question 6: **Value creation assessment**

Reviewing evidence of **value creation**

6.1 What were the most meaningful RCE activities discussed?

6.2 What potential values are the RCE activity producing?

6.3 What difference has this made that would not happen otherwise?

6.4 What difference has it made to the ability of the RCE to produce what matters through its ESD projects?

6.5 What new understandings of what produces value are becoming evident?

Figure 7.2 Foci of Hybrid Evaluation

The aspiration to create value is then initiated through *applied* work that affirms and creates value, often producing change that is *realized* in context and can involve a positive *reframing* of what is of value and worth achieving. Looking back into the document record and the appreciative data, it is possible to work with the evidence to undertake an assessment of value creation in the emerging story of the RCE as an active learning community producing value through the work that they do together.

The question framework of the toolkit (Questions 1-6) has been developed as an appreciative review process to inform and to strengthen an RCE. Finally, the appreciative and developmental story, like any appraisal, can be used for reviewing emerging ESD processes and practices across RCEs (meta evaluation). Assessment of this wider picture of the situated practices, theories of change and evidence of impact will be useful for understanding and refining our continuing RCE work both in the developing context of an RCE and across the diversity that has emerged under the RCE "brand", a new and interesting worldwide collaboration in reflexive social learning.

For such a process to unfold, the RCE community would have to facilitate capacity development practices that provide an opportunity not only to learn evaluative strategies but also to be able to intellectually review their foundations as well as the power positions behindthem and the implications for employing them. As in many areas of RCE engagement, to become another transformative process, evaluation has to be rested on learning, research, and action, undertaken as blended into a single process or feeding into each other.

Evaluation Case Study: Working with the Hybrid Evaluation Framework in RCE Makana and Rural Eastern Cape
(By Rob O'Donoghue and Ndumiso Nongwe)

RCE Makana partners undertook a participatory evaluation process using the appreciative, developmental and value creation assessment approach outlined in the RCE EvaluationToolkit. The process reviewed the RCE as a platform for dialogue and a resource base functioning as a networking structure for enabling ESD in local school and community contexts of learning-to-change.

The RCE Evaluation Toolkit was used over a three-day review workshop with 12 participants in RCE Makana involved in education activities related to:

- Water (Water for Dignity project)
- Energy (St Mary's Development and Care Centre (DCC))
- Waste and sanitation (Makana Youth)
- Cleaning and compost gardens (InqabaYegolide)
- Education services (Albany Museum)

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Used in a primarily discursive review process of six stages of scaffolding questions, as outlined in the evaluation toolkit, and with a field visit to develop case stories of situated practice, the workshop was seen as a preliminary evaluation around which other evaluation focus areas, instruments and strategies could be developed as increasing capacity in evaluation practice emerged.

Groups unable to attend the review process convened by Makana Municipality as the new host of the RCE Secretariat were subsequently interviewed using the same framework tool (Cowie Catchment Campaign, Eco-Schools, Umthathi, Fundisa for Change, RU Green, and Galela Amanzi). The interview process allowed these groups to reflect on the outcomes of the evaluation and to provide their input into the process. This was not ideal but was a necessary adaptive move that illustrated how the RCE is a moving feast of partners and activities where affiliates have tended to move in and out over the years. Here it was notable that social movements from poorer communities tended to be facilitated by more formal structures like Makana Municipality (Makana Youth and Inqaba-Yegolide) and the Rhodes University Water Research Institute (Water for Dignity)

The Makana RCE was identified as a structure for collaboration where people meet and work together or "meet-talk-act" in a local context. The Water Research Institute is exploring "a new paradigm of transdisciplinary research" at the interface between university researchers, civil society and state service institutions. These approaches were noted with appreciation as they meant that local issues could be addressed. The following positive features were recorded in appreciative deliberations:

- Beginning to communicate through water forums and by forming cooperatives (Water for Dignity)
- Supporting small gardens with composting and then seedlings (InqabaYegolide)
- Hot bags being made and shared to save electricity costs (St Mary's DCC)
- Stories of water and change-choice-practices are in the museum education programs (Albany Museum)
- Sanitation practices are changing and problems are decreasing in some areas of the municipality such as Extension 6 and Extension 10 (Makana Youth)

Appreciative Review of Context, Coordination and Networking

The opening appreciative summaries emerge from the initial interest group discussions to illustrate that RCE Makana is a mix of university, NGO and municipal community-engaged projects that are independently active across civil society, youth and community service organization structures. All are funding-dependent and most focus areas

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are reflected in the Local Environmental Action Plan (LEAP). Project implementation, however, has been weak and uneven, although there has been an Environmental Education and Awareness Strategy and there is now a provision for LEAP projects within the Integrated Development Plan (IDP) of the municipality. It was noted that some of the funding had been allocated to projects and that the municipal councilors had tried to establish and maintain a Makana Environmental Forum for collaboration and reporting on environmental problems and activities. This structure has not been a regular event and has become more of a complaints space than a project development structure. The coordination and networking has thus moved to many groups acting on their own and with the University Community Engagement structure and other independent organizations initiating and managing projects outside a municipal services framework that is not operating effectively in most sectors.

After the opening appreciative conversation and a scoping of the coordination and networking processes in play, the appreciative exploration continued in relation to activities and their positive effects that could be built on to strengthen what was being done by the groups participating in the evaluation.

Review of Activities and Their Effects

This review process was once again developed around the success stories but it probed the collaborative processes within which the learning and change emerged and then developed to examine possible up-scaling, mainstreaming and widening collaboration within the RCE and with other structures across the region. Notable here were:

- Eco-school support – primarily gardening initiatives;
- Waste communication – pilot projects at the household level;
- School water materials and exhibition at the museum;
- An emergency water proposal being advanced by civil society and the university's Water Research Institute;
- Identification of training priorities – LEAP and IDP;
- Health and service data collection and reporting to the municipality; and
- Hot bag distribution to save money and with follow-up to provide support to families suffering unemployment.

It was noted that working in and with small structures can be rewarding and effective but it was found to be difficult to scale up activities to work effectively with big structures. This insight pointed to a gap where there was a need for the training of community facilitators. A training manual, however, had been developed and a first course was being run by the Environmental Science Department and the Community Engagement unit of the university. At the local level, more community facilitators would strengthen work within small initiatives emerging in support of those

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suffering from environmental problems. It might also be possible for the RCE to work better with the big structures of municipal governance and service delivery. Here it was notable that whereas many initiatives were being undertaken and having an effect, this process could be strengthened by the RCE operating as a more formal structure supporting collaboration and community-engaged initiatives.

The next stage of the evaluation probed emerging flagship initiatives in more depth to assess positive transformation and processes that are strengthening sustainability as a project impact.

Evidence of Transformation and Sustainability

At this stage the evaluation participants went on a field trip to review flagship initiatives by developing picture narratives that would inform the evaluation process. The projects selected were:

- Health and service delivery data collection (Water for Dignity)
- Hot bag saving and family support services (DCC)
- The Umthathi SUS Garden (Makana Municipality)
- Youth cleaning and composting (InqabaYegolide)
- Waste awareness communication (Makana Youth)
- Blue Planet Gallery water education exhibit (Albany Museum)

The objective was to scope the scale of knowledge and practice transformation, and to examine how the mobilization of resources and patterns of governance might be contributing to the successes being experienced by those involved. This was to be extended to the identification of barriers and how these might be overcome to sustain and strengthen the work being done.

The photo narrative approach was successful to a point, particularly for representing what was being done. This will need to be extended, with more time allowed, to probe for in-depth data and to source wider participant accounts that can be examined in relation to patterns of resource use and governance that are contributing to learning and change. These questions of practice and effectiveness were probed in more depth when strategic areas and linkages were reviewed.

Strategic Areas and Linkages

Although it was noted that the "RCE structures enable projects to link strategically on and around local issues" this was seldom realized and most projects worked independently, particularly community/civil society initiatives that tended to work directly with a particular university or municipal structure. The key outcome from the review was that "the RCE should be formalized as a platform for key stake-holders to meet and engage around local environmental issues and initiatives".

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The key outcome of this focus was the deliberation of a strategy for capacity development training and to strengthen the RCE by establishing a platform for co-engaged ESD with the Makana Municipality structures and projects working on problem-solving and change in the area.

Capacity development for community facilitators and decisionmakers in City Hall was identified as the priority with partners who were working to:

- Get reliable data together on health and basic services;
- Develop pilot projects on key interventions that reduce risk, notably the idea of "one street one tank" to ensure potable water when the system breaks down;
- Have water forum meetings where residents will have a voice and access to change practices that have immediate and tangible benefits;
- Train museum and project staff and community facilitators to support co-engaged education initiatives; and
- Expand communication and resourcing to the house-to-house engagement of youth in problem-solving related to waste, water and sanitation.

RCE Makana and the Global Service Centre

The university-based RCE structure has been little more than an open forum that has come and gone in cycles of activity and inactivity over the years. What are needed are funds to maintain and manage the RCE as a platform for capacity development and collaboration. The RCE has also been too far removed from the municipal structures and has not had the capacity to mobilize and initiate anything more than small-scale pilot initiatives. These have been useful and have built some small-scale success stories that could now be scaled up to make an impact beyond the few participants involved. The RCE, however, has been critical for supporting community-based initiatives that would not have emerged or been sustained without RCE training support. It will be important to strengthen the training support and operate in ways that are more closely tied to and better aligned with the municipality.

Being recognized as an RCE initially produced some momentum in key areas but this has not been sustained or scaled-up sufficiently. Participation in regional conferences has enabled a sharing of ideas but a more strategic platform is needed to work up wider engagements and benefits. This evaluation report will be shared with other RCEs through the Global RCE Service Centre and it will also be used to bring projects together under the municipality as the Secretariat for the RCE.

Assessment of Value Creation

The focus here was on "what value creation would not otherwise have happened if it was not for our initiatives". This was not an easy matter to assess because many of the initiatives reviewed would probably have

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happened through university programs and community engagement initiatives or municipal project funding without an RCE that had been an open voluntary and informal structure over the years of the DESD. However, many of the small-scale initiatives in co-engaged innovation would not have happened without the social learning commons project that was established within the RCE at the Environmental Learning Research Centre.

The most meaningful activities of self-evident value to participants in the evaluation process were:

- The collection and sharing of data on health issues and water problems;
- A realization that Makana Municipality had many problems to deal with;
- That the RCE provided a platform in which small-scale community-based projects could emerge and flourish;
- The use of hot bags had high value for the electricity savings that they bring;
- There is a potential value in collaborative work but this is not yet being realized, as projects tend to work independently;
- The evaluation process gave participants support to begin to think systematically about their activities; and
- Projects can be drawn together in capacity development training within the RCE.

Overall, the review of value creation surfaced in this first round of evaluative review. The process was centred on the value that participants were finding and sharing in their work and getting out of the evaluation exercise. The evaluation was said to be useful for "getting around mental roadblocks by working from what is appreciated and practically available".

Learning and Strategic Initiatives Emerging from the Evaluation Process

The outcomes were all drawn together into a vision for the RCE, a shared image of tangible value in relation to the context and priorities for capacity development and training.

Meta Evaluation

The appreciative data and the evaluative insights reported above were consolidated and reported back to the participants at a follow-up meeting. A decision was made to have a further report back into the Makana Environmental Forum with a view to more formally constitute the RCE as a civil society platform for action to scale up and expand the ESD activities and change practices in the area.

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The evaluation data revealed that whereas there were many small-scale initiatives that were appreciated and worth taking forward within the RCE, the secretariat needed to be more formally operated as a civil society structure alongside and including Makana Municipality. It was noted that the dominant agenda was around basic service delivery and not on social innovation in response to the need for global change through ESD.

Most of the activities and their small-scale effects were not sufficiently oriented to change as they were dominated by efforts to get basic services functioning to benefit the quality of life of local people, particularly the poor and unemployed. Civil society activists have emerged, particularly in response to the recent water crisis, and they need to continue to focus on community forums and data collection so that informed decisions can be made with regard to service delivery and health risks. The data thus collected would also be an important baseline for better measures of change in future evaluation work.

Transformation and sustainability were not apparent beyond the small scale and, as noted above, were mainly centred on basic service delivery. It was felt that these must remain a priority focus area, as people must have access to basic services to have a healthy quality of life. However, the water, energy, health, waste and transport systems being initiated and maintained are not likely to reduce human impact and bring about more sustainable options. There is a need to scale up work on alternative energy and social innovations that will bring into effect more sustainable ways of doing things. The initiatives that offer useful possibilities here are the use of hot bags and exploratory work on alternative energy options that are currently being pilot tested outside of an RCE project structure that needs to be more formally constituted.

Creative alternatives could also be more strategically introduced with better civic participation and on a scale likely to have wider benefits and impact, but this will require more skills training of those working in and with civic structureslike Water for Dignity community forums. Capacity development training was thus identified as a top priority that could be extended to include capacity in evaluation practices.

Much of the appreciative evaluative discussion and strategic direction reflected above emerged in the review of value creation within and through the RCE. Here it was noted that courses on community facilitation and evaluation could be developed so that the use of evaluation tools becomes part of all projects and civic engagement activities.

The next stage of the Makana evaluation process will be a report back into the Makana Environmental Forum with a view to formalizing the RCE as a civil society projects platform.

Conclusion

The above case record and follow-up of the initial deliberative evaluation by community project partners in RCE Makana reflects how it is possible to draw on key features of evaluation discursive practice to produce an evaluation framework for participatory review of an RCE as a collaborative process of co-engaged social learning. The evaluation had high local relevance and was a step towards capacity development to access the evaluation literature to conduct more focused evaluative review of and research on RCEs. Overall, the experience of conducting a structured, collaborative review was a useful process for moving into an evaluative approach to continuing work.

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Ed. Note: In addition to the references cited in the text, we have added some useful references on evaluation in the list above.

Part III
RCEs: The Prospect

As the world looks beyond 2014, UNU and ESD stakeholders recognize the distinctive ability of RCEs to respond to global systems in crisis, and also their moral responsibility to act on issues of sustainability well beyond the end of the DESD. Part III looks forward, learning from the challenges of the past and present, going beyond the Decade towards the implementation of the GAP (Chapter 8) and alliances with other sustainability processes (Chapter 11), and addressing how the RCE community can contribute and offer future perspectives from the decade-long learning and experiences of RCEs. However, while looking into the future it is important to reflect on the past and recognize that the RCE initiative has parallels in history with the rise of contemporary humanism and modern science. Chapter 10 offers a grand narrative of RCE development in the context of long-term changes in global knowledge systems.

Contributions to both Parts II and III demonstrate the interplay of unity and diversity in the RCE network. With chapters written by representatives

of different communities and organizations, a colourful variety of cultures and approaches in promoting ESD worldwide comes to life. At the same time, the chapters demonstrate common tendencies and emerging qualities in spite of different cultural-social-economic contexts, stakeholders and action areas. A variety of practices and aspirations for the future are shared by RCEs from different continents in Chapter 9, presenting a collective outlook of the future along the lines consistent with the Tongyeong Declaration, which affirms the commitment of RCEs to "implementing strategic actions that build a global learning space on ESD".

There is no one way forward; there are multiple pathways ahead and the RCE community works with partners across the globe in anticipating the future of the RCE movement from various perspectives. Chapter 11 broadly explores the possible future directions for the development of the RCE community, and the pathways for addressing challenges for increasing the RCE potential.

Chapter 8

Contribution of the RCE Community to the Global Action Programme on ESD: Some Reflections

Mario Tabucanon, Unnikrishnan Payyappallimana,
Kiran Banga Chhokar, Abel Barasa Atiti and Zinaida Fadeeva

The Global Action Programme (GAP) on ESD is a follow-up to the DESD after 2014. Building on the successes of and lessons learned from the DESD, the goal is to generate and scale up action at all levels and in all areas of education and learning in order to accelerate progress towards sustainable development. The objectives are two-fold: to re-orient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development; and to strengthen education and learning in all agendas, programs and activities that promote sustainable development.

In order to enable strategic focus and stakeholder commitment, GAP has identified five priority action areas as key leverage points to advance the ESD agenda. These are:

1. Policy support: Integrate ESD into international and national policies in education and sustainable development.

2. Whole-institution approaches: Promote whole-institution approaches to ESD at all levels and in all settings.

3. Educators: Strengthen the capacity of educators, trainers and other change agents to become learning facilitators for ESD.

4. Youth: Support youth in their role as change agents for sustainable development through ESD.

5. Local communities: Accelerate the search for sustainable development solutions at the local level through ESD.

GAP is expected to be implemented at the international, regional, subregional, national, subnational and local levels. All relevant stakeholders are encouraged to develop activities and commitments of key partners are solicited under each priority action area. Individual RCEs and the global network of RCEs are in a strong position to commit to GAP implementation in all priority areas.

At the time of writing this book, GAP's strategy of implementation has been centred on the global governance mechanisms of the program. Drawing on this work, this chapter identifies areas and actions where RCEs can make significant contributions to GAP implementation. The reflections are informed by a survey conducted by the Global RCE Service Centre in which RCEs across the world shared views and opinions regarding the value-added roles of RCEs in engaging with each priority area[1], and the possibilities for actions towards up-scaling and mainstreaming. The chapter also highlights already demonstrated achievements and challenges to be overcome to pave the way for a more robust Global RCE Network in its quest to advance the ESD agenda.

Inputs from the following RCEs are gratefully acknowledged and are referenced in the chapter:
Africa: RCEs Buea, Kakamega, Kano, KwaZulu Natal, Greater Nairobi, Greater Pwani, Lesotho, Maputo, Minna, Nyanza, Swaziland, Western Nigeria, Zambia and Zomba;
Americas: RCEs Bogota, Greater Portland, Guatemala, Lima-Callao, Saskatchewan and Western Jalisco;
Asia-Pacific: RCEs Bohol, Delhi, Goa, Greater Phnom Penh, Greater Western Sydney, Guwahati, Penang, Pune, Tongyeong, Waikato, and Yogyakarta; and
Europe: RCEs Euroregion-Tyrol, Lithuania, Middle Albania, Munich, Nizhny-Novgorod, Rhine-Meuse, Severn, and the consortium of RCEs in Germany.[2]

1 GAP's priority areas have been interpreted from the perspective of individual RCEs and the RCE community as a whole. As GAP terminology and concepts are still evolving, the editors hope that reflections of this chapter will contribute to further shaping of the GAP.
2 Reference to RCE inputs does not present an exhaustive picture of activities of these RCEs nor that of the whole RCE community.

Policy Support

The strategic objective of the Policy Support priority action area of GAP is to integrate ESD into international and national policies in education and development. An enabling policy environment is crucial for education and learning for sustainable development and for the scaling up of ESD action in formal, non-formal and informal education and learning. Relevant and coherent policies should be grounded in participatory processes and designed through inter-ministerial and intersectoral coordination, also involving civil society, the private sector, academia and local communities.

According to the GAP, creating an enabling policy environment linked properly to implementation requires, in particular, systematic integration of ESD into:

- Sectoral or sub-sectoral education policies at the national level and also as an important element of international education agendas;
- Policies relevant to key sustainable development challenges at the national level, and into relevant international agendas in sustainable development; and
- Bilateral and multilateral development cooperation frameworks.

ESD and Policy Processes: Opportunities for engagement

As described in Chapter 6, there may be two distinct thrusts in policy process intervention, namely, the integration of ESD issues and skills into relevant education policies, and into policies relevant to sustainable development. It is also important to recognize that engagement with policies can be done along several entry points in the policy cycle: problem definition, policy objectives and options (policy framing), policy implementation (change management), and policy evaluation. These roles may occur at various levels – organizational, local, national, regional (multinational), and global – and global-local alignments are important and desirable.

By virtue of their constitutive character, RCEs have contributed to policy processes by providing platforms for policy dialogues, serving as a policy support base (e.g. policy research and providing expert opinion), and influencing policy through demonstration of good practices. ESD and SD capacity development is a major thrust in the functioning of RCEs; it behooves the RCE community to cultivate these vast opportunities into the future. As demonstrated in the following sections, in the context of GAP on ESD implementation, RCEs can add value to SD policy processesat virtually all stages of policy development.

Facilitating Networking and Creating Alliances

Value additions derived from RCE interventions in ESD and SD policy processes are evident in RCE actions. RCEs are already seen as contributors to development of national ESD strategies (e.g. RCE Greater Nairobi, RCE Zambia), and serve as platforms that bring together relevant actors to participate in designing and establishing ESD policies and policy evaluation system (e.g. RCE Buea). The aim is to integrate ESD systematically into education policies that cover the whole of the education sector or parts of it.

Specific achievements of RCEs are demonstrated in networking and building linkages with stakeholders – government and non-government – in advancing ESD (e.g. RCE Delhi) and in facilitating activities and projects that enable members to work towards the goal and objectives of national environmental education and ESD policies (e.g. RCEs Lesotho, Bohol, Yogyakarta). These included, inter alia, participation in developing ESD strategies and pursuit of ESD objectives for the country (e.g. RCEs Pwani, Greater Nairobi), lobbying for the formulation of ESD action plans, and fundraising for and guiding the implementation of ESD activities. Policy consultation meetings and policy-practice dialogues among multisector stakeholders were held by RCEs Greater Nairobi, KwaZulu Natal and Yogyakarta (as illustrated in Chapter 6), policy review and analysis were conducted by RCEs Goa and Saskatchewan (ibid.), and participation in relevant local Agenda 21 processes and collaborative work with the local government has been demonstrated by RCE Munich.

Development of Policy Research

Another way of contributing to the policy process is through policy research. This is illustrated in Chapter 6 by the experience of RCE Saskatchewan where the member higher education institutions were involved in providing analyses and recommendations on an energy issue to the provincial government. As several RCEs are led by higher education institutions (HEIs), and as all have at least one HEI as a member, they are well placed to ensure that policymaking is based, among other inputs, on process informed by science.

Participation in Policymaking at the Regional and Local Levels

National policies are expected to trickle down to the level of local governance and organizational policies. Many initiatives of RCEs centre on policy influence in organizations, including those of RCE stakeholders. These aspects are elaborated in the GAP priority action area on whole-institution approach (see next section in this chapter). RCEs assist in ESD programs and initiatives and projects are shaped into education contexts (e.g. RCE Waikato) in partnership with local government and other local multistakeholders (e.g. RCE Munich).

Some important examples of RCEs working with local stakeholders with regard to policy formulation and implementation are attributed to schools. Successful implementation of ESD policy in schools depends greatly on the commitment, effort and the level of enthusiasm of the school leadership and teachers. Eco-schools are committed to investing effort, enthusiasm and creativity in finding ways to continuously improve the inculcation of a culture of caring for the environment, society and economy. Many RCE initiatives, for example those of RCEs Zambia and Guwahati, centre on policy influence for eco-schools in terms of a vision and mission that reflect the ESD culture of concern for the environment, enhance the development of human resources in terms of skills and in ESD, and support a clean and healthy school environment with efficient utilization of resources.

Advocacy

A direct value-added contribution to policy processes is in SD policy development and implementation (e.g. RCEs Pwani, KwaZulu Natal, Bohol, Yogyakarta, Guwahati, Greater Western Sydney). RCEs provide a platform for SD policy dialogue, where stakeholders from government can articulate SD issues and learning from

RCE initiatives (e.g. RCEs Zomba, Buea, Zambia, Munich). Policy research, including designing and proposing new strategies for SD policy processes, collaboration and implementation (e.g. RCEs Saskatchewan, Buea, Goa), are areas where RCE interventions can have pronounced impacts. It is important to also recognize the advocacy role of RCEs for more holistic approaches in SD policymaking, more governmental commitment, and practical involvement (e.g. RCE Buea). Finding and reporting unsustainable practices for the purpose of self-compliance of ESD and SD ethos are actions that RCEs can contribute (e.g. RCE Kano). These are areas where ESD can be systematically integrated into policies relevant to key sustainable development challenges.

Aligning Local and Global Policy Processes

The Ubuntu Alliance, through the Ubuntu Committee of Peers for RCEs, supports the global RCE movement, provides direction, and recommends policies for the effective functioning of RCEs. Through the participation of RCEs in national and international sustainability processes (in partnership with national governments, UN agencies and international organizations respectively), their role in integrating ESD as a component of international bilateral and multilateral agreements can be enhanced. These agreements are expected to be aligned with national development plans and priorities, and when development of national plans embraces ESD and SD issues, it becomes possible for these international agreements to also include sustainability concerns. Through the influence of RCEs in national development processes, the contributions of the RCE community in aligning local and global policy processes are enhanced.

The Way Forward

Looking forward, various perceived challenges for more effective impact on policy processes need to be overcome, although to different degrees across RCEs. Prominent challenges include the inability of stakeholders to see the whole policy picture and the lack of understanding, awareness and strategic focus on the processes of policy engagement. These critical issues need to be addressed in a manner whereby local stakeholders, assuming shared responsibilities and working together, are empowered and become committed to contributing to policymaking processes and successful implementation. It is imperative to scale up actions called for by GAP based on experiences gained during the DESD; the process necessitates involvement of policymakers. It is incumbent upon UNESCO and its partner UN agencies, including UNU, to exercise their important functions in facilitating implementation, monitoring progress and serving as a clearinghouse of key actors and successful practices of policymaking and implementation.

Whole-Institution Approaches

Whole-institution approaches are based on the premise that change towards sustainability can only occur if all levels and contexts within an institution are aligned in their efforts to implement policies and practices on ESD (Ferreira, Ryan & Tilbury, 2006). The GAP priority area on whole-institution approaches to ESD requires the re-orientation of teaching content and methodology as well as of policies and practices, and collaboration of institutions with key sustainable development stakeholders in the community (UNESCO, 2013). Whole-institution approaches require a *systemic approach to change* in order to address complex and seemingly unconnected sustainable development challenges within institutions and beyond.

Underpinning these approaches is the assumption that institutions are complex social systems whose performance in sustainability change efforts is the product of the interaction of their parts (Doppelt, 2003).

Following UNESCO (2013) the promotion of whole-institution approaches to ESD at all levels and in all settings requires that:

1. All stakeholders – leadership, teachers, learners, and administration – are engaged in jointly developing a vision and plan to implement ESD in the entire institution. In other words, whole-institution approaches seek to simultaneously engage all stakeholders within an organization, as well as key external stakeholders, in aligning efforts towards agreed ESD goals.

2. Technical and financial support is provided to the institution to support its re-orientation. Technical support may include the provision of relevant good practice examples, training for leadership and administration, the development of guidelines, as well as associated research in whole-institution approaches.

3. Existing relevant inter-institutional networks are mobilized and enhanced to facilitate mutual support such as peer-to-peer learning on a whole-institution approach. RCEs are well placed in meeting this requirement.

GAP's strategic objective on whole-institution approaches seeks to build on the successes found in the areas of higher education and secondary schools. Scaling up and expanding these successes not only to the many as yet uncovered schools and HEIs the world over, but also to other levels and types of education is a key leverage point to advance ESD after 2014.

Because of their primary focus on enhancing multistakeholder engagement processes in ESD, RCEs have a distinct value-added role in promoting whole-institution approaches. The following section outlines these value-added roles, challenges and possibilities for scale-up actions on promoting these approaches to ESD.

Box 8.1
RCE Reflections on Value-added Roles

The whole-institution approach has been introduced and popularized through the University of Swaziland's Mainstreaming Environment and Sustainability in African Universities (MESA) Chair. On behalf of RCE Swaziland, the university leads an initiative for mainstreaming environment sustainability in the local institutions of higher education and teacher training. This has resulted in the mainstreaming of environment and sustainability across the

cont. ▶

Value-added Roles of RCEs

For the last 10 years, RCEs have been fostering partnerships and networks across knowledge and interdisciplinary boundaries through multistakeholder engagement processes in ESD. RCEs are thus well placed to promote whole-institution approaches to ESD. RCEs can optimize their role as networks of change agents to actively promote whole-institution approaches through explicitly linking research, transformative learning and community engagement activities of member organizations.

Working collaboratively as envisaged within an RCE network has the potential to build an understanding of how each stakeholder has a role to play in promoting whole-institution approaches. It can also enhance

stakeholder commitment to and ownership of the implementation of the whole-institution approach across an RCE network and beyond. RCE reflections highlight value-added roles and potential achievements of the multistakeholder engagement network in promoting whole-institution approachesto ESD (see Box 8.1).

From those RCE reflections and the requirements put forward by UNESCO (2013), four areas in which RCEs have distinct value-added roles to promote and implement whole-institution approaches are synthesized as follows:

1. *Mobilizing existing inter-institutional networks*. RCEs support a systemic approach to building multilevel partnerships and inter-institutional networks that are ideal for promoting whole-institution approaches to ESD. Mobilization of exiting inter-institutional networks is central to the alignment of organizational/institutional goals and those of the RCE and its stakeholders. Moreover, networking partnerships within RCEs can be used to connect RCE members from different institutions, where they may be working in isolation.

2. *Engaging with all forms of learning*. As networks of formal, non-formal and informal education organizations, RCEs have the capacity to engage with all possibilities and forms of learning and education with regard to promoting whole-institution approaches.

3. *Drawing upon pooled resources, capacities and expertise*. Through well-defined governance and coordination mechanisms, RCEs are already pooling together resources, expertise and practices on whole-institution approaches. This is critical for an RCE to produce the maximum possible ESD value, greater than the sum of what each single stakeholder could achieve in promoting whole-institution approaches without collaboration.

4. *Increasing the visibility of whole-institution approaches*. RCEs have communication and networking channels at their disposal through which they can promote a whole-institution approach to ESD as a model for adaptation. The Global RCE Service Centre has developed a communication portal (see http://www.rce-network.org/portal/home) that is very useful for increasing the visibility of whole-institution approaches. The portal and other channels of communication offer RCEs opportunities for seeking support in terms of training, strategic advice or information on available resources, including funding opportunities.

school curriculum and in institutions of higher learning. *(RCE Swaziland)*

RCE Munich tries to influence the institutions that provide ESD by encouraging them to concentrate their management towards a more holistic approach to sustainability. *(RCE Munich)*

RCE Lesotho has created a platform for networking and sharing of information that enables members to access information about further training, conferences and other opportunities related to ESD. Since the RCE is legally registered, it has a framework for sourcing funding for projects that can promote whole-institution approaches. *(RCE Lesotho)*

RCE Bohol is instrumental in the whole-institution approach by sponsoring seminars and trainings for the integration of SD in the curriculum both in basic and tertiary education. The RCE is also mobilizing its non-formal education institution members to integrate sustainable development in their functions and activities. *(RCE Bohol)*

RCE Guwahati has been engaged in demonstrating models for a whole-school approach through various programs such as Paryavaran Mitra and WASH in School. RCE Guwahati is pushing the approach through teacher training programs and activity-based modules developed for children. *(RCE Guwahati)* ■

Challenges

Although it is evident that RCEs are well placed to promote whole-institution approaches to ESD, the global network still faces a number of challenges in advancing the whole-institution approach as a model for adaptation on a large scale. One of the possible reasons is that often, activities of the RCEs have been predominantly inter-organizational in nature. Implementation of the whole-institution model requires use of a range of strategies that target different dimensions of an organization as a social system. Within an RCE network there has been a tendency for a particular section of an institution to be more proactive than other sections. As pointed out by RCE Bohol, integration of ESD into the curriculum, for example, comes easier to those rooted in ESD, such as RCE directors, but other officials of universities and learning institutions have to deal with concerns such as instruction and research, and internal operational problems, as well as external pressures such as those related to standardization requirements. As a result, "ESD is given the second, if not the least, priority". RCE Goa believes that it is extremely challenging to change the mind-set of administrators and teachers to deviate from a decade-sold approach with which they are comfortable, to a new approach. Furthermore, RCEs have not developed clear frameworks for implementing whole-institutional approaches that address multistakeholder engagement ESD processes.

Possibilities for Scaled-up Actions

As highlighted in UNESCO's GAP proposal, there is need to scale up actions to promote whole-institution approaches beyond areas of higher education and secondary schools. As a multistakeholder learning network, the global RCE movement is crucial in advancing the ESD agenda through promotion of whole-institution approaches. Possibilities for scale-up actionsare aptly captured in reflections from RCEs (Box 8.2).

RCEs are well placed to lead the way in scaling up and expanding whole-institution approaches in ESD. This is central to addressing complex and seemingly unconnected sustainable development at local and global levels. Further provision of policy, technical support, finances and training is required to capitalize on the strengths and lessons learned by RCEs on scaling up actions on whole-institution approaches. There is an urgent need to engage and enhance systemic thinking capabilities of key change agents at all levels and in all settings within an RCE network. This has the transformative potential of keeping them in touch with the wholeness of their existence in their RCEs and member organizations. Key RCE actors and change agents need to be identified with a view to forming core groups that can drive multidimensional change at various levels. This is important to attain commitment to and

Box 8.2
RCE Reflections on Scaled-up Actions

In terms of whole-institution approaches, RCEs engaged in similar work or projects can document and showcase experiences so that a rich database can be assimilated, sensitive to context and locale-specific challenges in order to contribute to cross-learning and knowledge sharing. *(RCE Goa)*

One of our next steps will be to offer advanced training on transformation from the perspective of whole-institution approaches for educators. *(RCE Munich)*

RCEs have been advocating integrated learning development that involves learning and understanding knowledge advanced through practice. The strengths and lessons learned can form a promising foundation for upscaling actions in learning and education. Lessons learned and challenges faced can be shared and solutions sought from those RCEs that have managed to address such challenges. (RCE Pwani)

Perhaps one contribution from the RCE network to the realization of GAP can be through a networked and nested collaborative action-learning experiment on locally situated multistakeholder ESD processes. *(RCE Pune)*

ownership of whole-institution approaches across institutions. Value-added roles and achievements in promoting whole-institution approaches provide a strong motivation to rejuvenate RCEs in advancing the ESD agenda beyond 2014. RCEs need to work both individually and collectively to develop and share guidelines, tools and strategies on whole-institution approaches towards promoting the model for widespread adoption.

Educators

The GAP proposal (UNESCO, 2013) reiterates a fundamental requirement of ESD, namely to:

> *Strengthen the capacity of educators, trainers and other change agents to become learning facilitators for ESD. Educators are one of the most important levers to realize educational change and to facilitate learning for sustainable development. There is a continuous need to build the capacity of educators, as well as trainers and other change agents, regarding relevant issues related to sustainable development and appropriate teaching and learning methodology.*

GAP recognizes that sustainable development requires a higher level reflection that would lead to "changes in the way we think and act" (Annexe I, 1). To achieve transformation through education, educators must first be trained in the skills and competences expected of their students (in formal education, training institutions, community, youth), in addition to the pedagogical skills required for the purpose. To become competent facilitators of ESD, educators require capacity-building and complementary support—a meaningful and relevant curriculum, access to appropriate teaching/learning resources, access to expertise, exposure to emerging knowledge and innovations, access to forums for dialogue and peer learning, exposure to and sensitization towards cultural diversity and traditional knowledge, involvement in whole-institution initiatives, and opportunities that generate a sense of ownership of ESD. A fundamental requirement is for educators to have the "capacity to be open to new ideas".

Capacity Development

A primary mandate of RCEs is capacity development in ESD and SD. RCEs are multistakeholder networks rich in expertise in a variety of fields that can contribute to ESD, anchored, as they often are, by institutions of higher education, and locally grounded while situated within a global learning space. As such, RCEs are well suited to provide the necessary support to educators of all kinds – school teachers, teachers in the higher education sector, trainers and master trainers, community leaders, youth leaders and other change agents. As RCE Severn points out:

> *The RCEs are an example of a network that has been strengthened and expanded as a platform for cross-boundary social learning. The strength of the RCE network is its flexibility and its ability to adapt to the local context and culture, and to truly engage people to take action. RCEs bring together and mobilize multiple organizations that include HEIs to address local sustainable development challenges using ESD.*

Capacity development of school teachers is a service widely offered by RCEs around the world (e.g. RCEs Lesotho, Guwahati, Delhi, Bohol, Penang, Greater Phnom Penh, Swaziland, Greater Nairobi, Kakamega, Greater Pwani). The composition of RCEs, especially the connections between HEIs, which include teacher

education institutions, and schools, provide fitting forums for this activity and the potential for an expanding reach. The role of RCEs is further enhanced by the collectivity of knowledge, skills and expertise of the network members. These characteristics also contribute to the capability of RCEs to offer professional development to college and university teachers and to develop or help develop ESD curricula. By incorporating educators in their programs and activities, RCEs are able to promote research and re-orientation of curriculum for various levels and situations.

The deep engagement of the network members with the evolving understanding of ESD and of the local context, encourages further enrichment and evolution of all kinds of capacity development programs, including those for youth leaders and community educators. RCE networks are thus well placed to undertake capacity-building, which requires constant upgrading and development. Where HEIs are the anchors of the RCEs, self-reflection in the context of ESD often leads to professional development programs for the faculty and the development of relevant and contextual curricula at least in some disciplines or subjects. RCE Waikato in New Zealand offers an example of such development. Given the fundamental ethical dilemmas of sustainable development, ESD curricula should, and often do, focus on ethical issues to provoke reflection and critical thinking. RCE Waikato has, however, introduced ethics for sustainability into the conventional Management program at the University of Waikato, a network partner; and the ethics of responsibility is a cross-cutting theme across all of the RCE's work.

As multistakeholder networks that sometimes have government agencies as constituent members, RCEs could possibly influence ESD policy at the national and subnational levels, and leverage these links to expand their reach using government networks of institutions. RCE Guwahati engaged in policy advocacy to get ESD concepts infused in the mainstream school curriculum of the Indian state of Assam. Next, in partnership with the Secondary Education Board of Assam, it developed an ESD training module for secondary school teachers in Assam, and has trained more than 5,000 teachers in SD and ESD competences. This module, which has the stamp of approval of the Education Board, has also been made available to other member and non-member organizations that have been using it to train teachers, thereby further expanding the reach of this capacity-building initiative.

Innovation and Funding

Given a wide mandate and a structure unconstrained by rules and regulations that bind formal institutions, RCEs have the freedom to be creative and innovative in the kind of activities they undertake and in their approach to work. This approach is exemplified by RCE Rhine-Meuse's OPEDUCA (Open Educational Areas) Project which enables people and organizations (including educational institutions, businesses and government departments) to interact in ways that promote integral learning, connecting theory, practice and experience, and leading to quality improvement of education from primary schools up to higher education. One of the keys to the success of the project is the "professional upgrade of teachers' skills, competences and real-life-learning abilities".

Experiments and innovations require funding, which as networks the RCEs are better equipped to leverage than individual institutions. For example, some European RCEs are currently engaged in a European Commission funded project that seeks to develop professional development opportunities for university educators to develop ESD competences.

These are all evolving initiatives. The needs of different kinds of educators can often be different and call for different kinds of capacity-building and support inputs. RCE Greater Western Sydney, for its community-based project "Our Place", provided skills training for the diversely located community educators and identified the resources, support and kind of education required by the community members to successfully engage in a grassroots collaborative project.

Resources to Support Educators

Access to appropriate resources helps support individual learning of the educators and strengthens their teaching/learning efforts. Being rooted in the region and familiar with the local contexts, and endowed with the expertise of its multiple partners, RCEs are competent facilitators for the development of context-specific materials and tools for educators for implementing ESD in the regions that educators help develop (e.g. RCEs Greater Nairobi, Buea, Greater Pwani). Working across boundaries, the RCEs in southern Africa have been very active in networking, sharing and capacity-building among themselves. They also hosted African RCEs for developing flexible and adaptable capacity-building resource materials for use in the expanding ESD work on the continent. They have also established a regional information system to document and disseminate best practices and deliver ESD to local communities. RCEs have incorporated educators in their programs and activities, which has promoted research and re-orientation of curriculum at different levels. RCE Greater Portland is involved in the Regional Equity Atlas (https://clfuture.org/equity-atlas) project and has conducted project-related training through the Coalition for a Liveable Future. They have also created a database of sustainability educators. In addition, as part of their self-evaluation exercise, RCEs are expected to document current good practices as well as mapping and collecting resources that are already being used (materials, methodologies, etc.).

Box 8.3
Forums for Learning

In line with the series of lectures Leitbild-Nachhaltigkeit, we managed to bring 15 colleges and universities as well as several NGOs together to a lecture on sustainability. This cooperation is the first of its kind in Germany. The highlight of the event was Prof. Dennis Meadows' lecture in 2012 on the occasion of the 40th anniversary of Limits to Growth. In 2013 we developed the concept of this cooperation further and turned it into the annual University Days on Eco-Social Market Economy and Sustainability (http://www.hochschultage.org/). On these occasions, exchange about possibilities concerning the integration of sustainability topics into their [educators'] teaching is playing a crucial role. *(RCE Munich)* ■

Given the multiple areas of expertise covered by RCE networks and their mandate of being the regional centres of expertise in ESD, RCEs are able to provide exposure to new or different ideas and innovations, and new or different ways of thinking and acting. Lectures, conferences and seminars, in both academic and non-academic milieux, provide educators an opportunity for ongoing learning (See Box 8.3) by gaining and updating knowledge, and stimulating thinking and reflection, especially in terms of the cross-curricular nature of ESD (e.g. RCEs Delhi, Lesotho, Munich, Greater Portland).

A powerful concept being translated into action is that of living laboratories for ESD. According to Roger Petry of RCE Saskatchewan:

> *Many RCEs are interested in creating local living laboratories for ESD to explore new sustainable paths so that unsustainable choices made in the past may be modified and, where needed, substituted in a way that maintains local employment and other livelihood opportunities and improves quality of life.*

RCE Greater Western Sydney's flagship initiative, the University of Western Sydney Riverfarm Redevelopment, links land, food, culture and water for a range of sustainability education and research purposes is one such living laboratory. The RCE is now scoping the potential of using this "as a site for researching the integration of place-based sustainability in teacher education programs".

Higher Education and Community

Institutions of higher education, in addition to teaching and research, are also charged with the responsibility of service to society, primarily through community outreach, which offers them the opportunity of much wider reach and influence. This can be a valuable engagement for collaborative action-learning for educators and students to learn through real-life projects, and for communities to benefit from the knowledge and professional approach of academia.

RCE Guatemala points out that the traditional relationship of higher education with local communities has been criticized for being that of marginal activities, unrelated to teaching and research, and of no significant benefit to the communities in solving their developmental problems. However, the philosophy, structure and objectives of RCEs are demonstrating the potential of this engagement. In RCE Greater Nairobi, educators have been working on a project to improve the livelihoods of slum dwellers in the city. For the past seven years, RCE Pune has been supporting the Participatory Budgeting process in the city, which involves helping develop systems at the municipal authority, enhancing community participation in the process by outreach work, as well as documentation of and research on different elements of the budget process, which is done through university students and their educators.

The Way Forward

Despite their many value additions and achievements with regard to GAP's priority area 3, RCEs face several challenges. A specific challenge highlighted by RCE Guatemala is that "in higher education the most difficult aspect to accomplish has been the respect for cultural diversity. The prevailing educational pattern in higher education is very Western and does not respect any other knowledge that does not have the quality of so-called scientific rigour".This applies not only to Guatemala but all across the developing world, which is so rich in cultural diversity, and also to the Western world, not just with regard to the indigenous peoples, but also increasingly with its immigration-induced changing cultural profile. A comprehensive training program for educators in the theoretical aspects associated with cultural diversity and community development methods, to promote respect for the indigenous worldview and traditional knowledge of indigenous and other peoples, is a way forward. So is introducing intercultural debate and knowledge dialogues at all levels of education to overcome "the wall of the so-called 'scientific

rigor' which does not allow appreciating the knowledge of indigenous peoples and afro-descendants". A member of RCE Guatemala, San Carlos University, has taken the initiative of promoting academic discussions within the university on indigenous knowledge, and has introduced indigenous knowledge as an element in its current curriculum. RCE Lima-Callao calls for giving a voice to local and indigenous communities in what is taught in formal education.

Other challenges faced by RCEs include a lack of a sound understanding of the ESD concept by educators both within the university and in the community (RCE Penang), and a lack of methodological competences, like multidisciplinary, holistic and systemic thinking, cross-curricular approaches and the ability to transform ESD contents into practical learning experiences (RCEs Guwahati, Euroregion-Tyrol). Time pressure and the pressure to perform dominate within the educational system, making it difficult for educators to implement newly-gained approaches within their work (RCE Munich). The challenge is thus to explore ways to integrate sustainability across the curriculum so that it becomes a part of how teaching and learning happens in all disciplines and in all spheres. But as RCE Penang points out, "When it comes to greening the teacher educators' curriculum with ESD, while many teacher educators are interested and ready to design such a curriculum, the higher authority, such as the concerned Ministry, may not be ready for it." This calls not only for continued, strengthened and extended capacity-building of educators but of other stakeholders and decisionmakers as well.

Youth

Youth comprise 18 per cent of the global population, of which 87 per cent live in developing countries (UNESCO, 2007). Whereas several challenges faced by youth need to be better addressed in sustainability policies and practices, there is also a need for creating spaces, and empowering and integrating their vision, perspectives and vitality in such policies and practices. Most importantly, youth are adaptive to innovative thoughts and developments and form the future agents of sustainability, including through influencing educational processes. Therefore, "generating action among youth and supporting youth led initiatives" has been aptly identified as one of the priority areas in the GAP Proposal. The Proposal further states:

> *Youth has a high stake in shaping a better future for themselves and next generations. Moreover, youth are today increasingly drivers of the educational processes, especially in non-formal and informal learning. There is a need for supporting youth as change agents for sustainable development through ESD. (UNESCO, 2013)*

Sustainability Challenges and Youth

Being in a state of flux, youth face several challenges of this transition from dependence to independence; compulsory education to employment; and the development of identity and citizenship. Some of these challenges include: opportunities for appropriate education; employment corresponding to capacities and preventing outmigration; effective participation and integration in societal decision-making; protection from violence, abuse, and addiction; maintaining intergenerational links and cultural identity; and health-related concerns, among several others. There are also specific challenges of girl children, young women, the differently-abled and a number of other marginalized youth communities.

A major concern is the non-participatory decisionmaking with respect to these sustainability challenges faced by youth. Being multistakeholder platforms, RCEs play a significant role in both recognizing concerns and empowering youth to address their own issues as well as the broader societal challenges of sustainability. This necessitates context-specific needs assessment as well as action planning. Several RCEs already have clear principles, active youth wings, and have developed specific youth interventions. For example, RCE Delhi has a specific mandate of youth involvement in sustainability practices. The YUVA Meet, an annual event conducted by the RCE, is an excellent platform through which the RCE has played a key role in bringing together a network of youth.

In some RCEs, such as Greater Pwani and Kano, youth even take key roles in the governance and implementation of RCE activities. The RCE youth community is in the process of formalizing a global youth network to guide contextual approaches and collective projects involving youth. An RCE youth framework has been proposed whose purpose would be to facilitate the investment and creation of societal development goals that can be achieved by youth through sustainable development projects. The projects resulting from the framework will utilize youth in ways beneficial to participating youth and their surrounding communities. These strategic steps clearly are an added advantage in advancing the GAP agenda.

Box 8.4 and Box 8.5 analyze specific interventions undertaken by the RCEs in networking, developing sustainability learning, thematic areas, and policy capacities.

Youth and Sustainability Learning

For youth to be socially responsible, ethical, environmentally conscious and culturally sensitive, it is important for them to have access to various forms of learning. They need to also be aware of sustainability practices from a multilevel perspective of local to global and vice versa. It is also critical to have appropriate pedagogical materials that impart reflexive learning and critical and holistic thinking skills.

Youth and Policy Engagement

Policy engagement is a role rarely assumed by the youth in most communities. Policymakers do not consider youth to be competent enough for such major engagement. This requires building of appropriate

Box 8.4
Sustainability Learning

RCE Greater Portland is facilitating the development of a new Portland Public Schools Youth Network, inspired by other RCE models around the world and focusing on the four Es: education, environment, economy and equity. The network connects students from kindergartens through high schools (K-12) across different school districts in the region, as well as college students who receive course credit for working with K-12 students. Currently, high school students from two schools in different towns are collaborating on a presentation on food security for the 2014 Virtual Youth Conference hosted by RCE Grand Rapids. Another group of students is developing a Hands On Greater Portland Team in order to apply their education to service projects focused on environmental, economic and social sustainability. The RCE believes it is essential to channel the psychological angst of learning about environmental problems into effective actions that give our youth hope for the future. It therefore strives to inspire them to engage in their communities and offer clear opportunities for service and volunteering. *(RCE Greater Portland)*

RCE Munich believes that youth, being enthusiastic, need steady partners for their search for meaning. Commitments to justice, nature and the possibility to change something oneself are basic ideals supporting youth through ESD. The Kreisjugendring München, an umbrella organization for extracurricular education for children and youth and a member of RCE Munich, has developed a sustainability strategy over the past few years. A platform is being currently developed to enable the numerous project groups of youth (subcultures) to be involved by online communication. *(RCE Munich)* ■

YUVA Meet 2011.

YUVA Meet 2011.

Box 8.5
Thematic Competences

RCE Greater Nairobi: Conservation Education
Wildlife Clubs of Kenya (WCK) provides conservation education to youth and supports wildlife clubs through training, information sharing and advocacy. WCK seeks to share knowledge and stimulate interest in ESD, especially about wildlife conservation and biodiversity. This is supported through a teacher-training program and an annual student competition on ESD best practices. WCK has also published and distributed a number of ESD-related materials including thematic packs on conservation of forests, energy, water, wildlife and combating climate change. To create awareness WCK also organizes an annual community conservation day and supports radio programs on environment and youth. WCK has a mobile environmental education outreach program for schools and HEIs. *(RCE Greater Nairobi)*

RCE Guatemala: Wisdom Dialogues
Through the wisdom dialogue project, the RCE engages with the keepers of culture withinlocal communities. These include indigenous groups, youth, elders, faith organizations, artists and cultural organizations. The basic philosophy is to promote cultural diversity and pluralism through comprehending, revitalizing and promoting good practices in Mayan communities. *(RCE Guatemala)*

RCE Guwahati: Carbon Dialogue
RCE Guwahati, over the past six years, has hosted more than 100 interns and volunteers to engage in ESD activities. Constituent educational institutions direct interns/volunteers to the RCE Secretariat, where on need-based matching, they are engaged in various programs in partnership with other member organizations. A formal internship program offered in partnership with UNU has been proposed by the RCE to engage and train youth in ESD competences. The RCE Guwahati Secretariat has also promoted a youth group named CARBON, which is running a cyber dialogue on Facebook https://www.facebook.com/groups/214497101982085/. *(RCE Guwahati)*

RCE Penang: Energy Efficiency Awareness
A project on developing awareness on energy efficiency among schoolchildren is being run at Universiti Sains Malaysia, the lead organization of RCE Penang. The successful implementation of the project has had the involvement of two ministries, namely the Education Ministry and the Ministry of Energy and Green Technology. A review of the national curriculum to integrate energy efficiency awareness across the curriculum is being undertaken. The project involves the training of more than 2,000 teachers to reach out to more than 100,000 students (youth). Students from the Sejahtera campus work on raising awareness among the students in the entire university. *(RCE Penang)* ■

skills and technical competences among the youth. Some RCEs, such as Kwazulu Natal, have initiated programs to familiarize youth with policy processes and policy practice linkages.

The Way Ahead
The GAP identifies youth key stakeholders and change agents in advancing ESD. They have a critical influence today in shaping non-formal as well as informal learning processes. GAP calls for the enhancement of learner-centred learning opportunities for youth. This is to be done by utilizing the strengths of information and communication technologies, and by developing participatory skills and empowering youth to act at multiple levels of sustainable development processes such as local, national and global (UNESCO, 2013).

Being multistakeholder networks, RCEs have a vital role in advancing this agenda as outlined above. Several RCEs have evolved a clear vision and perspectives (e.g. RCE Goa, Box 8.6), and developed focused model projects. Documenting and replicating good practices, knowledge sharing and capacity development, inter-RCE networking, joint RCE projects, and policy engagement are the means to achieve this goal. In this

context, the RCE youth network is developing a youth framework for action and is identifying a few areas for immediate action. They are prioritizing potential focus areas, formalizing the youth network and regional nodal points. They are engaged in capacity development, creation of an active online community, sharing stories and good practices, and active policy engagement. They are participating in various RCE meetings and conferences, encouraging innovations through youth awards, networking and engaging with other multilateral and national organizations, and in RCE internship programs aligned with academic interests on specific themes. They have also identified some key challenges, such as the long-term sustainability of the network and financial resources for productive engagement. It is expected that a strategic approach of the RCE youth network would help contribute to GAP and beyond.

Box 8.6
Perspectives

Youth are not only receivers of impacts/outcomes of the various sustainability interventions, nor just active facilitators of or contributors to it; they are also a connecting link for the targeted sustainability initiatives being driven in society for the larger public good. RCE youth can continue to take forward their current work with individual RCEs at the community/society level. They can create youth platforms at the formal education institutes with which they are affiliated by taking a lead role in getting other youth involved. RCEs can thrive on this multidimensional strength to guide and facilitate the formation of a larger youth brigade under the identified RCE domains of work. *(RCE Goa)* ■

Local Communities

Priority 5 of the GAP calls for accelerating "the search for sustainable development solutions at the local level through ESD", a goal relying on developing, strengthening and expanding local multistakeholder cross-sectoral networks. It recognizes the role of ESD in supporting multistakeholder learning and community engagement, and links the local to the global. Local authorities and governments are seen as critical partners in realizing the ambitions of Priority 5 as they are able, among other measures, to openly support learning opportunities for all stakeholders and facilitate the integration of ESD in formal education.

The track record of the RCEs as well as the principal characteristics of the RCE community demonstrate their ability to contribute to individual priority areas of the GAP focused on policy, whole-institution approaches, educators and youth in the earlier sections. However, its role in accelerating search and implementation of sustainable development solutions at the local level (Priority 5) is what makes the RCE movement particularly powerful. Having said this, one must be careful not to assign RCEs exclusively to one or the other priority area.

Collaboration for Meaningful Learning

Through the first conceptual articulation and at each stage of development of the RCE community, the RCEs were envisioned as entities that would mobilize and up-scale sustainability of the regions through transformative learning and action research (Chapter 1). It brought learning into sustainability processes (E to SD) and sustainability and resilience principles into educational practices and policies (SD to E). The RCEs contribute to regional sustainable development either by aligning the vision of the stakeholders (as shared by RCE Yogyakarta, Indonesia) or by promoting work around stakeholders' areas of interest while searching for opportunities to synergistic actions (as shared by RCE Goa). They have been a platform for dialogue on concerns and practices among RCE stakeholders, a local resource base to support ESD work, and a networking structure for enabling ESD

in local educational and community initiatives. In some regions, work of the RCEs has been focused on development of a community of practice leading to change.

The learning community character of the RCEs lends itself to aspirations towards meaningful and relevant learning articulated by the GAP. Through reflexive experimentation and change practices, and by assessing directions of learning and charting new trajectories, RCEs help organizations and people in the communities to understand ongoing processes while serving as living laboratories for change (Box 8.7). Information shared by the partners of individual RCEs and between RCEs, according to RCE Bogota, helps "empower communities to take appropriate decisions in relation to their ... problems and allow[s] them to change their roles as mere observers to actors in the construction of [their] own reality". Processes of engagement, technical assistance and knowledge-sharing opportunities "move ideas into fruition, without top-down approaches of management, or charity" (RCE Greater Portland).

Box 8.7
Changing Ways of Thinking and Acting
(By Roger Petry, RCE Saskatchewan)

As noted in the GAP proposal, SD requires higher-level reflection that leads to "changes in the way we think and act" (Annexe I, 1). This higher-level reflection, however, needs to be thought of both individually and collectively. For a community to reflect at this level, especially regarding pressing sustainability issues of the day (which force often difficult reflections on the current degradation of systems providing long-term support for such communities), requires new institutional and organizational structures. RCEs can usefully play this role by acting as catalysts for such reflection. With the expertise their members gradually accumulate, RCEs can create pointed and strategic educational interventions in local communities and regions where a region is at a critical juncture in its development path. An RCE can capitalize on opportunities that emerge within a region where systematic patterns of unsustainable development practice self-generate new points for critical reflection at all levels. RCEs need to, in turn, identify local capacities and strengths to reflect, learn, collaborate and act on these situated experiences. At the same time, an RCE should not be purely reactive. Many RCEs are interested in creating local living laboratories for ESD to explore new sustainable paths so that unsustainable choices made in the past may be modified and, where needed, substituted in a way that maintains local employment and other livelihood opportunities and improves quality of life. ■

Aligning Learning and Action

As has been asserted earlier, the multisectoral, transdisciplinary character of RCEs lends itself not only to information exchange but also to the alignment of learning and action. From the perspective of RCE Lithuania:

> *A multistakeholder approach in the context of RCEs means not only cross-sectoral or integrative approaches in exploring particular sustainability questions, but also a rational interplay between research (by involvement of higher education institutions), practice, and public interest leading to transformative innovation ... the "citizenship triangle", i.e. education-research-community is emerging together with the knowledge triangle of studies-research-business.*

In such alignment of actions, the partners receive a unique opportunity to counteract pressure on various learning communities to focus narrowly on limited, from the perspective of sustainable development, sectoral goals. RCE Greater Western Sydney, for example, recognizes that in the changing financial policies of the federal government channeling funds away from public academic institutions, it is critical that RCEs deliver convincing outcomes (for regional development) in the core areas of higher education – outcomes that can be leveraged through the whole RCE network, helping research and education be more useful to the communities through programs and research work (as shared by RCE Buea). Many RCEs,

including Zomba, Yogyakarta and Rhine-Meuse, reflected on their own considerable strength in aligning stakeholders from government, academia, the private sector and NGOs to have a common vision and to work on the transformative community projects making them innovative, intellectually reflective and politically recognized.

The RCE was conceived as a concept, and consequently implemented as a strategy, to re-orient education towards sustainability as understood at the regional level. It has been developed further to bring the learning aspect into the development agenda, thereby becoming a regional community of practice and change. As a community it succeeded in bringing learning and action (Box 8.8), and exchanged the experiences through various regional and global fora. Inter and intra-regional exchanges of the RCEs often play a critical role in facilitating learning and development innovations, enabling steps outside of the institutionally designated opportunities. RCE Saskatchewan, for example, has a regular event showcasing best sustainability projects of the region. RCE Bogota regularly organizes community events and workshops to give visibility to innovations. The annual RCE Award gives global recognition to RCE projects thereby providing visibility to local practices while inspiring creativity in others.

Box 8.8
RCEs as Centres of Innovation and Practice for Sustainability Commons
(By T. Pesanayi, RCE ZwaZulu Natal)

Sustainability commons were developed at RCEs Makana, KwaZulu Natal, Swaziland, Zomba (Malawi), Lesotho and Mutare (Zimbabwe). These are centres of practice of ESD through exhibiting, modeling and using working models, among others, of energy saving, alternative energy, heritage practice, visual art, water harvesting, sustainable and climate-smart farming. Through value creation and more intensive networking, the RCEs can create more sustainability commons using community input that can provide fora for purposive and incidental learning. These commons appear to work best where practitioners, researchers, interested users and advocates work together collaboratively. ■

Mediating Local and Global

Contributions of the RCEs in the realization of the fifth priority area of GAP would not be complete without highlighting the international dimension that RCEs bring to the regions. RCE Lithuania asserts that connection among the RCEs and between the RCEs and international sustainability development processes provide mutual learning beyond the community of local stakeholders. That signifies not only a multisectoral approach but also a multicultural approach and values clarification in regional development. "A great advantage of an RCE is that it chooses the areas and approaches appropriate to its environment and the SD priorities of where it is located – no two RCEs are exactly the same" (Goolam Mohamedbhai, Advisor to African RCEs). As contextuality of RCE actions leads to a diversity in their actions, the diversity of cultural contexts within and between the RCEs becomes elevated. Such realization results, according to observations of RCEs Guatemala and Lima-Callao, in "knowledge dialogues and respect of all systems and types of knowledge, including indigenous and traditional knowledge" (RCE Guatemala).

Box 8.9
Translation of Global Sustainability Agenda into Local Realities
(By Betsan Martin, RCE Waikato)

[There are] many global initiatives for sustainable development, such as the work of the International Union for the Conservation of Nature, the Earth Charter and the UN engagement process for the post-2014 Sustainable Development Goals (SDGs). These vast global aspirations can be overwhelming in scope; the RCEs offer a global network grounded in local practice. The RCE network is a learning community where good practice and challenges sit alongside encouragement to inno-

cont. ▶

vate in our own context. At the present scale, the RCE network has the quality of face-to-face engagement and keeps the possibility of interaction among RCEs. The generous and warm-spirited interactions at regional and global conferences make this evident.

Belonging to the global RCE network bridges the global scope of sustainability aspirations through an interactive, inspiring global network of practitioners, and enables local practice to be developed in ways that are highly contextual and globally referenced. The universalist discourse of sustainable development must always be open to questioning from local situations. A prime example is to make provision for the worldviews and voices of indigenous peoples. There is a risk that sustainable development will overwhelm the specific qualities of indigenous knowledge, and exclude some of its dimensions, such as spirituality and the understanding of human kinship with all living things. This is where RCEs have a role to play in keeping alive local, grounded, practical and responsive activity that feeds into policy at national and global scales. ■

Global sustainable development processes also are better translated into local realities when there is a community of partners, such as RCEs, that, through collaborative engagements, question universal discourses while enabling sustainability-inspired change processes (Box 8.9).

Concluding Remarks

The ability of RCEs to bring together significant stakeholders, including policymakers and regional administrators (Chapter 6), engage across educational and sectoral boundaries, including with traditional knowledge holders (Chapter 3), and their ability to mediate local and global alliances (Chapters 1, 2 and 6), make them significant partners in realizing the potential of learning in the regions and local communities.

The RCE community has developed and matured during the DESD and now provides a powerful platform for the mainstreaming and scaling up of ESD after 2014, along the GAP priority areas and beyond. With the change of international agenda and the emergence of the SDGs, UNEP's 10-Year Framework of Programmes on Sustainable Consumption and Production (10FYP), green growth discourse, and others, the RCE community needs to also transition to the next level of development to deliver its full potential. This will be explored in the next chapters of the book.

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Reflections

Practitioners, observers, and others with interest in ESD are eagerly awaiting the adoption of the Global Action Programme (GAP) on Education for Sustainable Development during the World Conference on ESD to mark the conclusion of the UN DESD in Japan in November 2014. As a follow-up to the DESD, GAP will focus on strengthening ESD in five priority action areas. As key partners of UNESCO Bangkok from the very beginning of the DESD, the RCEs will once again be expected to play an important role in implementing GAP, notably under the Partner Networks of the implementation structure, through their activities and expertise that will help other stakeholders generate activities that support and enhance ESD.

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Chapter 9

The First 10 Years: Reflections and Prospects for RCEs Post-2014

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From its inception, the RCEs have been a living, global experiment to advance ESD at a regional level through innovative and appropriate learning strategies true to the local educational context, needs and aspirations through which individual RCEs were created.

The year 2012 marked a watershed moment for RCEs when they convened at the 7th Global RCE Conference in Tongyeong, Republic of Korea, and formulated and approved the Tongyeong Declaration. In many ways the Declaration both built upon the journey many RCEs had thus far undertaken, and also concretely articulated a profound set of aspirations for what was now viewed by many as a global RCE movement. The ambitious set of goals, both as they relate to the overall ESD outcomes and the instrumental means for achieving them, emerged from the complex dynamics RCEs face at a regional level in advancing ESD. In addition, there are many shared features across RCEs that provide a primary impetus for global inter-RCE collaboration.

The aspiration to collaborate across sectors and between disciplines at local, regional and global levels to generate education for sustainable development is breathtaking in scope; RCEs are inspired and demanding networks that put to work the well-documented importance of collaboration to achieve sustainability. In this chapter many of the features of RCEs are drawn together to inform the prospects for ESD post-2014. Knowledge and experience of practice are woven together with research and academic sources. The complexity of the collaborative system of RCEs is made manageable through action on agreed projects. Collaboration generates a strong relational quality to RCE initiatives, so skills of cooperation, interpersonal communication, and time for organizational networking are important attributes. As of August 2014, the context-specific design of RCEs has occurred globally in nearly 130 sites during the 10 years of the DESD.

The Decade offered a major navigational course for local and global practices in education for sustainability, and the signatures of these are recognizable in the themes that follow. The wider challenges of climate change, global inequality and poverty, and transitions to low carbon economies are all matters with which education must engage. The Decade sits alongside and complements many other global initiatives for sustainable development, such as the work of the IUCN, the Charter for Responsibility, the Earth Charter and the UN engagement process for the post-2015 SDGs. These global aspirations are very large in scope; the RCEs have a quality that is characteristic of some other global initiatives. Local practice contributes to the global network, and is further resourced and given coherence by UNU-IAS. While sustainable development is a global scale aspiration, RCEs are designed to integrate economy and society with ecosystems in specific practices.

The RCE network is a learning community where good practice is born of encouragement to be creative within each RCE's own contexts. As experience is shared between RCEs, the RCE network builds capacity for innovation, and this knowledge exchange is greatly enhanced by regional meetings, such as the Asia-Pacific meeting or the Conference of the Americas, where the quality of face-to-face interaction among RCEs brings the enjoyment and inspiration experienced in personal meetings, trust building and generous, warm-spirited interactions. This is also true at the global conferences, where the opportunity to address larger scale issues such as policy and research again has the beneficial quality of meeting and dialogue informed by global sustainability aspirations (see Box 9.1).

Box 9.1
Sustainability in an RCE Context

A brief word on the widely interpreted concept of sustainability/sustainable development is in order. In essence, sustainability for RCEs is referenced to the transformative imperative of social, cultural, and economic systems nested within the life supporting capacity of ecosystems (Griggs et al., 2012). Sustainability takes account of present and future generations and cautions against robbing future generations of the source of life and well-being. Sustainability has been introduced into local and global discourse as a way to address the over-exploitation of nature by traditional industrial development with the consequential disruption of life support systems, including climate change. It is therefore intended to chart a course of economic development that safeguards the integrity of planetary ecosystems.

There is recognition that the marked increase in inequality with the concentration of wealth in the hands of a few is analogously unsustainable and inherently unjust. An identification of ethical principles may reduce the susceptibility of sustainability to weak interpretations (Martin, 2014). The possibility of a universal principle as an ethical reference for

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Setting a Direction for the Future of the RCE Movement

As we near the end of the DESD, the need for a declaration, as formally expressed in the Tongyeong Declaration, reflects the importance and value of articulating a greater self-awareness of the RCE movement. This need is tied to the degree of maturation of the movement to date, along with visioning about where RCEs see themselves in relation to the sustainability challenges their communities face, as well as their own structural needs. The Tongyeong Declaration provides a valuable self-understanding for RCEs with the completion of the Decade on ESD (2005-2014) and the unfolding of the UN's post-decade Global Action Programme on ESD.

The Tongyeong Declaration focused on several important themes:

Governance
One theme examined how RCEs could improve their governance systems and the quality of their actions as RCEs. A primary strength of the RCE initiative involved giving individual RCEs the power to establish and adapt their own governance structures as appropriate to their respective regions. Despite these diverse structures, RCEs have recognized a shared need to devise strategies and processes to effectively relate with partner organizations and to form new partnerships.

Partnerships
In the context of collaboration for ESD, RCEs affirmed the importance of partnerships, both forming new collaborative partnerships as well as strengthening collaborations with existing partners, in order to increase their collective impact.

Capability of Response to Immediate and Systemic Crises
Building on these collaborative partnerships, RCEs have a distinctive ability to respond to global systems through their actions to transform systems for the better. This ability to respond to crises includes both unanticipated adverse events that impact a region over a short time frame along with gradual stresses impacting a region over the long-term due to unsustainable practices.

RCEs which also respects and upholds cultural plurality may be found in an ethics of responsibility. The notion of rights has become a universal reference for justice, yet this may not be adequate to meet the relational quality of collaboration and the future orientation of sustainability. Responsibility is the foundation of community; it is a value that can be identified in all cultures, though sometimes expressed as duty and obligation, and often with an emphasis on intergenerational obligations (Sizoo, 2010). The profoundly relational aspect of responsibility can be seen in the idea that everyone is responsible because every being is a part of others and interdependent with other humans and with all other life forms. In slightly different form, "response-ability" suggests the two aspects of accountability and responsiveness. These understandings resonate with the collaborative design of RCEs as well as with the collective and relational dynamics of their programs.

In many ways the sharing of knowledge, practice and aspiration across sectors and cultures in education for sustainability is one of the most powerful means to transform an orientation of self-interest into a common good. Responsibility, or response-ability, refers to a notion of accountability, as well as the ability to respond. Rather than being oriented to wrongs, response-ability can be oriented to solutions in the future, to a prospective accountability and a caution to safeguard against unforeseeable consequences of the use of new information or technology where the impacts are not known for a long time (Jonas, 1984). This is the reason that countries like New Zealand are taking the precaution of not allowing genetically modified organisms or food into the country. ■

Transformative Potential

The distinctive ability to respond to systems in crisis highlights the important underlying transformative potential of RCEs to:

1. Create transformative learning processes to develop new policies, programs and projects for ESD that are critically informed by science and the social contexts of RCEs.

2. Create sustainable market opportunities across the economic spectrum including at the corporate and business levels, endeavouring to create inclusive and environmentally responsible economic initiatives, and to generate sustainable livelihood opportunities, especially for the most marginalized. The overall impetus is to simultaneously advance human well-being and ecosystem health integrated into business and development goals.

3. Broadly shape culture and ethics for positive social transformation in a way that gives all individuals the opportunity to learn the values, behaviours and lifestyles required for a sustainable future while respecting diversity.

4. Revitalize education at all levels through transformative educational projects that promote research and innovation.

Building a Global Learning Space for ESD

The four areas of transformative potential appropriately inform a final theme of the Declaration where RCEs act strategically to build a global learning space for ESD. A global learning space for ESD recognizes that much learning will be embedded in specific community settings where the practices invite action and reflection, review and assessment, which make them living laboratories for ESD. At the same time it presupposes RCEs will have the scholarly freedom and regional resources necessary for such innovation. Analysis of the RCE experience during the DESD and its evolving discourse provides new insights into the role of this global network for understanding sustainable development and stimulating relevant learning practices towards sustainability. It is a strong belief that as a vibrant and long-lived network, the RCE community will continue to be a thriving community of action for decades to come.

Elements of each of these five larger themes and the four transformative subthemes are explored below with particular reference to the post-Decade future state of RCEs.

Collaborative Governance

Governance is the arena of decisionmaking and setting direction. It applies to the public, private and civil society sectors, and in the case of RCEs as an example of collaborative governance, may cross all these sectoral boundaries.

Collaborative governance deepens legitimacy by partner involvement in decisionmaking and policy development. RCE collaborative governance is designed to involve partners in dialogue, problem-solving and planning, which may involve various constellations of partners: higher education, business, local government, schools, and NGOs, among others. The governance arrangement of an RCE usually

sits alongside existing institutional and bureaucratic systems of governance, which may or may not have their own provisions for collaboration. Commitment to RCE governance therefore requires an additional investment of the parties to frame goals, manage financial accountability, set objectives, and to agree on strategies and desired outcomes.

The process of engagement for an RCE venture is pre-eminently one of relationship building and therefore requires interpersonal skills to establish trust and transparency and build a shared vision. This is not authoritarian decisionmaking and rule-setting; rather it is a form of leadership that recognizes the expertise of the contributing parties while being attentive to different knowledge, worldviews, priorities and interests, with a certain willingness to modify perspectives and direction. The complexity of governance indicated here even suggests a quality of unruliness with elements of evolving and responsive dynamics.

Governance for ESD sits in the interface of social, ecological, and economic systems and is therefore still an experimental and evolving art. The core principles of engaging with a cross-section of academia, community agencies, local government, schools and business is a groundbreaking move in terms of crossing institutional boundaries and organizations with narrow accountabilities. It is the arena of shared responsibility and is a dynamic, alive and evolving journey. It involves a bigger crew with aptitude for the task and a willingness to accept constraints, demands, creativity and the investment of working together. Generosity, hospitality, sharing of resources, and a regard for the common good are also helpful qualities. These provisions support the ability to go further and achieve more than an individual or organization can do alone.

RCEs support the unique purpose and histories of constituent partners, while bringing value-added programs through collaboration. As challenges to sustainability expose the complexity of issues and permeability of boundaries, the more evident the need for collaboration becomes. For example, education cannot be separated from the economy because this is the training ground for employment. Health, poverty and housing are interconnected. Land management determines the quality of rivers. Yet in the decisionmaking arena the ideal of collaboration may sit in tension with partner self-interest. This may be played out in competition for funds, in tensions between environmental and business interests, and in short-term pragmatism over long-term sustainability. The relational aspects need to be balanced with a realistic assessment of interests, commitment, resistance and power dynamics. The weight of institutional influence or corporate interests can override cultural differences, citizen organizations and community groups, and therefore RCEs must seek to manage in the interests of all parties.

The benefits and challenges of horizontal networks also carry the risk of protracted time-consuming processes and delays in implementation, so there is an important role for skilled facilitators who give attention to supportive contributions as well as to dissent, bringing synthesis to decisionmaking thereby leading to action. This facilitative and coordinating role provided by key individuals in RCEs reduces the risks of protracted processes and ineffectiveness.

All of these hallmarks are recognizable in the process of establishing and navigating the implementation of an RCE. Some of the hurdles are reduced where the groundwork of trust and working relationships are already laid. There is widespread recognition of the value and importance of collaboration, yet wariness of the time investment for organizations already stretched in their capacity to fulfill the requirement of their core business. Collaboration is resource intensive in every sense – of time, expertise, relationship development, program implementation and funding. While funders favour programs with pre-identified outcomes, few will make a financial investment in the collaborative engagement process, let alone in ventures that have uncertain outcomes. In these cases, RCEs shine by taking up these neglected opportunities.

Many of the characteristics of liberal democratic governance may be present across the RCE global network. Different traditions of governance are also possible, such as in indigenous forms of governance where kinship, intergenerational obligation and the authority of elders are an important reference in decisionmaking and law (Durie and Aikman, 2006).

Every RCE has the capacity to create a governance structure that is responsive to the context and aspirations of its region (See Box 1.7 Chapter 1). As RCEs design their own governance structures, the facilitation of the global network by UNU is a source of wider reference and creativity. UNU-IAS provides compass points from a global view, with additional resources of research and teaching, PhD programs, and special courses. These resources highlight core attributes of governance: accountability, responsibility, monitoring and review, with innovative aspects designed to mobilize sustainable development at multiple levels (Bernstein 2014). Resources such as these are being developed from the interface with RCE practice and at the frontier of dialogue and documentation for guiding institutional and social transitions to sustainability.

Partnerships: A Key to the Future

The Power of Networks

Looking back to the evolving RCE network, the essential question arises: Why have RCEs proven to be such an appealing way of thinking and acting for ESD in different parts of the world?

Perhaps all RCE members at the start were asking themselves why the idea of an RCE attracted and involved them, in spite of the variety of other associations, networks, coalitions and movements around. In the authors' view, the first key idea in answering this question seems to be the value of multistakeholder, cross-sectoral partnerships.

The idea of mobilizing efforts of different organizations interested in formal and non-formal ESD is the core idea of the RCE model. An RCE deliberately includes different sectors (public, private, NGO), levels (international, regional, national, local) and cultures. Professional/thematic and social networks are considered engines for change by RCEs worldwide. This is clear by looking at the reports of RCEs mid-Decade in 2009 (see Box 9.2).

It should be noted that a multistakeholder approach is one of the core principles of sustainable development: "The complexity of our work and the interdependence

of the different sectors require identifying different stakeholders and supporting varying methods that honour diversity and are appropriate for particular conditions. RCEs serve as a crucial cross-sector nexus or hub for groups that might not traditionally work together, even though we function within the broader context together" (Kim Smith, RCE Greater Portland).

Box 9.2
RCE Partnership Metaphors
(Extracted from 2009 RCE Reports)

Our RCE is:

- A network of creative forces (RCE Skåne, Sweden)
- A rich resource pool being tapped for common goals (RCE Delhi, India)
- An umbrella towards change (RCE Tongyeong, South Korea)
- Possibly best described by an African proverb: "If one wants to go quickly, one goes alone. If one wants to go far, one goes accompanied" (RCE Porto Metropolitan Area, Portugal)
- Like a busy bee yard (RCE Nuremberg, Germany)
- The spring field that has various kinds of sprouts and young leaves and flowers everywhere (RCE Okayama, Japan)
- A good example of educators' cooperation (RCE Kyrgyzstan)
- Like a spider in the regional web of activities related to sustainability (RCE Rhine-Meuse, The Netherlands)

Participation in the global RCE network and thematic groups brings an added value to the activities of an individual RCE. "We believe that RCEs can contribute effectively to implementing the proposed Global Action Programme because of its organization in a network which facilitates the coordination of joint programs among several RCEs that share common interests and goals" (Olga María Bermúdez, RCE Bogotá). Networking provides a possibility of benchmarking for mutual learning and developing of RCEs. It is important for exchanging experiences in national/local policy development and specific activities, such as using traditional knowledge or developing quality assurance in higher education.

Networking facilitates the integration of an international dimension into an RCE's local activities, facilitating transfer of knowledge, practical experiences and worldviews into national and local contexts. Consequently, "exchanges between RCEs could also lift regional issues on the international agenda" (Thomas Schwab, RCE Munich), and allow RCEs to be part of processes coordinated by UN agencies worldwide. In a broader scope, it means an emerging multicultural approach in the activities of RCEs and critical opportunity to clarify values for sustainable development issues.

The involvement of different actors and interests seems to be an essential factor for a holistic approach in investigating the complexity of processes in contemporary societies, for multistakeholder decisionmaking as well as for achieving synergy in actions and intercultural understanding. At the same time, the dynamics of RCE activities suppose the role of partnerships not only for specific projects, but also for rethinking the role and methodology of ESD and sustainability science as well as the criteria for project evaluation.

The potential of partnerships is important also for facilitating interconnection in implementing the GAP priority areas: achieving policy support on different levels might be essential for the other four priorities; qualification of educators is closely related with a whole institution approach; educators and youth are driving forces for creating sustainable local communities, etc. Looking further, a rational synergy of the GAP priorities could be seen as a precondition of transformative up-scaling. It is also important to facilitate connections between different levels of education

and between different forms of education (formal and non-formal) in implementing the GAP priorities on whole-institution approaches, qualification of educators, and youth. For example, universities of applied sciences may be encouraged to support technical vocational education and training (TVET) at the secondary level; cooperation of classical universities with universities of applied sciences could facilitate their research component. Ultimately it is through partnerships that RCEs can efficiently achieve a variety of aims (see Box 9.3).

Partnerships with Higher Education

A multistakeholder approach in the context of RCEs means not only cross-sectoral and integrative approaches in exploring particular sustainability questions; it also provides interplay, through the involvement of higher education institutions (HEIs), among research, practice and public/community interest, in turn leading to transformative innovation. It is a win-win situation for HEIs by strengthening their integration of studies and research into developmental processes, as well as for business and local communities by developing their intellectual potential for technological and social innovation.

Note that in this process the social sciences and humanities are as valued as the natural and applied sciences and technologies, particularly with the shift from discipline-based to problem-based studies and research. In this context, a key notion of Agenda 21 (UN, 1992, para 35.10) is still relevant, namely, that:

> *Social processes are subject to multiple variations across time and space, regions and culture. They both affect and are influenced by changing environmental conditions. Human factors are key driving forces in these intricate sets of relationships and exert their influence directly on global change. Therefore, study of the human dimensions of the causes and consequences of environmental change and of more sustainable development paths is essential.*

RCEs bring together experts on these human dimensions, within their social and geographic contexts, to understand the root causes underlying unsustainable human activities, to inform the goals of sustainable development and well-being at regional levels, and to address these challenges, individually and collectively. For example, RCE Greater Portland has put a particular emphasis on social sustainability, asking its community to consider core questions related to social justice and equity.

Box 9.3
Efficient Partnerships

Partnerships are established and efficiently used by RCEs for different aims, as exemplified by several RCEs:

RCE Munich: "It is possible to develop an open environment which allows ESD activities to prosper through frequent exchanges with [an RCE's] stakeholders, and communication with administration and politics. RCE Munich is a neutral meeting point for networking and multistakeholder exchanges, and also an incubator for project groups and project work." *(T. Schwab)*

RCE Guwahati: "Engaging and educating local communities has been a priority area of RCE Guwahati's programs over the years. RCE partners are bringing in expertise of handling different stakeholder groups. The competencies needed to handle a livelihood-focused program or a school-focused program are different. Partners bring in expertise required for diversified activities." (S. Kalita)

Southern African RCEs: "Through value creation and more intensive networking, RCEs can create more sustainability commons using community input that can provide for purposive and incidental learning. These commons appear to work best where practitioners, researchers, interested users and advocates work collaboratively together." *(T. Pesanayi)*

RCEs are well positioned to champion such multidisciplinary and transdisciplinary research processes because they can draw on professionals and practitioners across disciplines and ways of knowing, with a key focus on sustainability learning and action.

Through RCEs, universities can facilitate the development of a plurality of positions and strategies, democratize access to knowledge by strengthening relations with NGOs and community-based organizations, and provide expertise and advice in decisionmaking. For example, the *People's Sustainability Treaty on Higher Education* (UN Conference on SD, 2012) provides guidelines for HEIs in terms of eight principles. The last principle, "sustainable development as a whole-of-institution commitment" (which is also reflected in the GAP) could be considered as a major precondition in the HEI acting as a principle agent for societal transformation.

RCEs could also contribute significantly in defining and evaluating the academic quality of HEIs in relation to ESD. According to the *UNESCO* definition of academic quality: "Quality in higher education is a multi-dimensional, multilevel and dynamic concept that relates to the contextual settings of an educational model, to the institutional mission and objectives, as well as to specific standards within a given system, institution, programme, or discipline" (UNESCO-CEPES, 2007, p.70). Representing different stakeholders and initiating public debate, RCEs can provide incentives for rethinking the mission and actions of member universities, as well as discussing qualitative indicators for evaluating sustainable developmental goals.

Partnerships with Secondary Education and TVET

RCEs can help address challenges in advancing ESD within secondary schools and vocational training. For example, ESD is frequently missing within vocational training or only minimally found in curricula frameworks. Hence the basic question and challenge is to see how ESD can be implemented in professional curricula and school-based curriculum.

School culture and profession-oriented curricula often pose a difficulty for the inclusion of ESD content in the classroom. Concerns are raised about how to assess the technical and interdisciplinary skills of students related to ESD and to what extent the needs of potential future employees are covered within the framework of ESD. However, the challenges of doing this assessment do not undermine the need for this type of education. In many ways, ESD provides a vehicle for building students' innovation and entrepreneurial capacities. This can be especially valuable in engaging students who do not respond to traditional ways of teaching with learning and performance issues.

Methodological approaches for ESD are also often neglected in professional education. These approaches presuppose an interactive use of media and tools, along with interaction within heterogeneous groups and possibilities for independent action. Methodologies need to be action-oriented and student-centred to allow a high level of self-initiated participation by students. The challenge is to train teachers to be able to teach key ESD competencies with appropriate teaching methods while practicing and training occur in situated contexts or on the job.

RCEs, as local and regional multistakeholder networks, can provide a wide range of learning opportunities to support schools and TVET. This is especially the case in developing and adapting ESD-based school curricula to be state of the art in terms of global ESD research and discourse. Teachers can also be supported by RCEs in adapting their teaching to students' learning styles (especially students with special needs) to achieve learning outcomes for sustainability that increase sustainable forms of employment, entrepreneurialism and lifestyles. Issues of sustainable development should be prepared and organized in a methodical way such that students can make a connection between their daily habits and lifestyles, their professional training, and global sustainability challenges. An important inter-RCE example demonstrating strategies RCEs employ to collectively address critical challenges of improving quality of vocational education is found in Box 9.4.

RCEs Responding to Immediate and Systemic Crises

As an initiative of UNU and originating under the DESD, RCEs have a distinct ability to respond to global systems in crisis. This is due to RCEs providing a unique capacity for relationship building at various organizational and geographic scales, whether through local and regional initiatives or inter-regional partnerships outlined above. Their connection to the UN system means that RCEs are able to access global research and knowledge on particular sustainability issues generated through the UN and its agencies, in addition to global higher education organizations (see Chapter 10). RCEs also indirectly assume the institutional authority associated with implementing the various UN commitments to SD and ESD within their regions.

Box 9.4
Education for All: Improving the quality of vocational education

This inter-RCE process seeks to improve the quality of vocational education by building on principles of ESD and creating better labour market conditions. It is focused on schools and curricula development through the establishment and/or redesign of flagship vocational education and training institutions in different countries of Europe and Africa, based on specific local needs. It includes elements of teacher training that empower educators to facilitate development of vocational education and training programs based on existing good practices. It also aims at establishing action research to develop methodologies that enable grassroots and other local initiatives in regions around the world to design and develop needs-based vocational education and training institutions. The project aspires to redesign the structure and infrastructure of vocational education by integrating marginalized groups and giving entrepreneurial skills to young people and vulnerable groups to increase job security. Capacity development for these new initiatives in vocational education and training will be secured through collaboration across the RCE community thereby creating a worldwide network of interrelated helping organizations. RCEs from Kenya, Nigeria, Bangladesh, Germany, and the Netherlands are currently aligning their actions to formulate project strategies and to advance fundraising efforts.

RCEs also have the legitimacy associated with the regional and local organizations with which they are affiliated, including regional and local governmental authorities, higher education and school partners, and other NGOs. These long-term relationships build trust and enable RCEs to transcend traditional disputes between governments and other economic and organizational sectors that may prevent inter-regional collaboration due to competition and organizational limitations. The governance structures of RCEs bring different groups to the same table in a way that is uncommon in many places and systems.

When reflecting on global systems in crisis, whether ecological, social, or economic, it is important to think of the capacities RCEs provide to their respective regions and national and global organizations to respond to adverse shocks and stresses at various scales. RCEs can play a critical role in facilitating communication and collaboration, thus creating resilience at both regional and global levels in the face of unsustainable human activities, livelihood patterns and use of inappropriate technologies. RCEs, within their own region, can work with local communities to identify and measure what is occurring, publicize the adverse consequences over the long-term if alternative methods are not employed, and offer research solutions.

RCEs can also formulate new livelihood practices. This can include identifying traditional knowledge of earlier sustainable practices that could be reintroduced, as well as pioneering new livelihood practices through active engagement of local RCE partners and community members. Often the inability to alter a practice stems from complex social systems and relationships, especially those associated with power imbalances and lack of long-term organizational accountability for degradation of environmental resources and quality of life. In this case RCEs are able to foster dialogue and engage in broad popular education, creating political and economic space for organizational actors to move to alternative livelihood patterns and land uses. At the same time, RCEs can assist organizations in adopting policies to increase accountability and/or create new regional organizations to implement initiatives, thereby addressing potential policy inertia and citizen passivity. Depending on unique regional needs, RCEs can identify experts and share both codified and tacit knowledge within and between regions.

In the case of responding to shocks (natural or social) that impact a community suddenly in the short-term, RCEs could offer informed, timely, and comprehensive intervention strategies to avoid a significant drop in community productive capacity and individual well-being. When one is dealing with unanticipated events for which communities are ill prepared or events of such a magnitude that previous preparations are inadequate and overwhelmed, the social capital found in the networks inherent within an RCE is indispensable. In this case RCEs will be able to creatively mobilize a multisectoral response to such crises. Their positions of trust in the community and pre-established inter-organizational and individual relationships would be critical in times of social breakdown, collective paralysis, and individual opportunism common in disaster situations. In order to avoid exacerbating adverse conditions, RCEs can help increase awareness of critical social and ecological dimensions of the problems being addressed and transform disasters into important learning opportunities that allow communities to rebuild using more sustainable building practices and reduce exposure to future risks.

While natural and social disasters may be rare in a given region, the likelihood of such events occurring somewhere on the planet is a regular occurrence. This means that, over time, RCEs experiencing disasters are able to share their experiences through the global RCE network. This occurred, for example, with the 2011 Tohoku earthquake and tsunami in Japan, which had significant adverse impacts on the Sendai region. RCE Greater Sendai was able to share stories and lessons from this region through the global RCE network. Given such shared knowledge and the political connectedness of RCEs to governments, businesses and NGOs, including

international bodies such as the UN, RCEs can play a growing role in lobbying for strategic interventions in relation to disasters as well as appropriate educational responses.

In some cases these shocks may be addressable through the ability to put out a rapid call through the global RCE network for shared scientific expertise and knowledge (such as dealing with unexpected shocks to ecosystems impacting food security and livelihoods). Because most RCEs are structured so as to take advantage of unanticipated opportunities that emerge over the short-term in their regions, this makes them adept at mobilization in response to disasters.

Lastly, RCEs provide a platform for developing shared global concern in relation to regional shocks and disasters. Such empathy occurs because RCE participants intentionally engage with each other, across regions and over time, thereby developing a deeper understanding of what a natural disaster actually means for a region and its inhabitants. Even the ability of RCEs to express heartfelt sympathy for other regions in crisis or offer friendly good wishes for their recovery may have a much greater impact in creating a global culture of care than is otherwise anticipated. The self-understanding as a global family of RCEs, with a shared global destiny, further reinforces this shared culture of caring and mutual assistance.

Transformative Potential of RCEs

As identified earlier, RCEs have significant tranformative potential in four areas, namely, policy leadership, creating sustainable market and other livelihood opportunities, shaping ethics and culture, and revitalizing education through transformative projects. Each of these four areas of transformative potential will be discussed in turn.

RCE Policy Leadership and Prospects for Post-2014 Policy

National governments are currently being asked how they will contribute to the GAP. Strategically, RCEs can offer to help governments with suggestions for both policies, programs and various types of resourcing needed at local, regional and national levels, in addition to helping implement initiatives. RCEs are also responsible for reminding national governments of previous commitments made during the DESD as well as new state roles given within the terms of GAP. Thus there is a need to ensure that national and local governments and regional offices of UN agencies are made aware of RCEs and their role in advancing ESD. Such offices could assist in networking RCEs at a continental scale or in relation to addressing specific sustainability issues that are part of their mandate.

Box 9.5
Gathering Youth Voices

RCE Oldenburger Münsterland in Germany demonstrated the power of local youth voices through its regional Youth Report. They gauged how youth and young adults between the ages of 12 and 24 years judged the attractiveness of their region in terms of their

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The global discourse of sustainable development must always be open to questioning at the local level. A prime example is to make provision for the worldviews and voices of indigenous peoples. There is a risk that sustainable development will overwhelm or exclude some of the specific qualities and dimensions of indigenous knowledge, such as spirituality and the understanding of human kinship with all living things (Tunks, 2013; Thomas, 2011). RCEs can help keep local, grounded, practical and responsive knowledge and

activities alive and shape policy at national and global scales. For example, RCE Greater Portland's NGO partner, Wisdom of the Elders, collects the stories and knowledge of Native Americans and shares their traditional knowledge with youth within and outside of their indigenous communities. A further RCE example involves gathering voices of youth (see Box 9.5).

Given examples like these, the proposal to extend contributions of RCEs to the GAP is founded on 10 years of implementation and practice. Hopefully, these efforts will generate an international imperative for governments to support and implement the work of RCEs as part of their global actions and responsibilities. Implementation at this scale suggests the need for major strengthening of institutional capacity through UNESCO and possibly through other UN agencies and global partners, with strategies for national level institutional development. At this level it will be most effective to build the capacity of organizations already working for ESD. Given the scale and urgency of the GAP, an implementation plan akin to important global agreements such as the Convention on Biological Diversity or the UN Declaration of Human Rights is needed.

private and professional future along with identifying action-oriented policy changes that could promote their desire to stay and work in the region. These results inform future political, educational and economic decisions at a regional level through a multistakeholder advisory board established by the RCE. This regional data is especially important as the results of national or international youth studies often misjudge or disregard the specific situations and challenges of young people, particularly those in rural regions.

To achieve this, every country where RCEs operate and where governments have signed a protocol for implementation of ESD could be asked to establish an RCE-led Commission for ESD to oversee and support policy development, professional development for leadership, curriculum development and integration of ESD into early childhood, primary, secondary and tertiary education. Such commissions could then ensure that the dynamic and responsive processes of RCEs continue to inform public policy and practices. Such a role includes safeguarding the unique indigenous education programs and development initiatives, as well as embracing the social sciences and humanities in addition to science and technology. Such provisions ensure that ESD continues to benefit from diversity of practice, and that public policy for ESD retains a dynamic quality that resists the risk of becoming enclosed in institutional ideology.

Innovations in Policy Processes, Programs and Projects for ESD

A key RCE contribution exists in helping inform appropriate policies for ESD. If policies reflect the intentional goals of organizations then sustainable development requires self-awareness, reflection and revisions to existing policies within governments, businesses, NGOs, cooperatives, professional organizations, and education institutions (among others). When creating such policies, the challenge is to remain grounded within local and regional dimensions of sustainability, including the diverse voices of all stakeholders. Such an alignment will not occur through top-down processes. These international and national policies need to be responsive to (rather than constrain) local policy formulation for ESD that, in turn, is tied to locally embedded practitioners of sustainable development. An iterative and educational global and national listening exercise in policy formation (vs. a centralized command-control model) would allow for reformulation and transmission of global and national policies back to diverse communities who see these policies reflected in their realities.

How is such a process to be managed and constructive policy cycles created? RCEs provide potential vehicles for being attentive to regional policies of various organizational sectors and inspire learning across sectors and geographic regions. Through the ongoing incorporation of government policymakers in RCE decision-making structures and networking with national and local government authorities at RCE events, RCEs provide an opportunity for essential networking between governmental authorities. The exchange of information can also be enabled through the development and collection of model SD policies from various governments into an RCE database that can be adapted to specific contexts. In addition, RCEs are able to pioneer new regional authorities helping to monitor and regulate sustainability issues that are either trans-jurisdictional or subregional. Chapter 6 provides examples of how RCEs can critically and constructively engage in policy processes in various regions.

RCEs can facilitate the *delivery of programs* for ESD at a regional/local level where there are larger scale national or global funding bodies (and/or organizations with non-financial resources) committed to advancing dimensions of ESD including the SDGs currently under negotiation. UN agencies can see RCEs as UN ambassadors within local communities and as active partners and promoters of the values, conventions and initiatives of the UN, including those dealing with SD, ESD and global citizenship. The workability on the ground of UN and other organizational programs can be enhanced where RCEs serve as both implementers and sounding boards for improving program design, especially where organizations recognize the need for some flexibility in how this delivery takes place.

To the extent that RCEs mobilize ESD efforts, frequently on a voluntary basis, key conventions arising from UN sustainable development agendas (such as those dealing with climate change, biological diversity and desertification) and the new SDGs can serve as regional rallying points for ESD. This is distinguished from traditional UN programs being primarily implemented through national governments. This new model creates a very different and innovative role for various global covenants and agreements for ESD than has existed in the past, and new dynamics around how such local programs or projects should be supported, monitored and evaluated, recognizing that resources often principally derive from local communities.

RCEs are also able to provide important policy and programmatic innovations for educational organizations, especially as it relates to educational curricula. Programmatically, RCEs can also create living laboratory projects that directly engage individuals in situated learning experiences. For example, RCE Saskatchewan is employing an eco-museum model to develop living laboratories in both urban neighbourhoods and rural communities within its region. The University of Western Sydney's Hawksbury Riverfarm in RCE Greater Western Sydney is another important example of a living laboratory (see Fadeeva, Payyappallimana & Petry, 2012, Chapter 5).

In developing new educational programs, a further challenge is the need to recognize new paradigms of knowledge that are intentionally associated with actions and processes. Such transformative practices are key to the future. Sustainable development, by its nature, involves activity. While building upon a new paradigm of

knowledge, however, ESD also draws upon all our previous knowledges, especially those that have been overlooked in the dominant development paradigms associated with industrialization. These knowledges include indigenous or traditional ways of knowing, scientific knowledge (including the social and natural sciences), engineering, the humanities (including areas focusing on the past (history), the future (e.g. ethics), and what makes life meaningful (e.g. literature, philosophy and art)), experiential learning, learning within professions/trades/occupations, and broad-based cultural learning.

Creating Sustainable Market Opportunities and Sustainable Livelihoods

In addition to the transformative potential of RCEs in policy development and programming, they have further potential in the area of creating sustainable livelihood opportunities, including market opportunities. The background statement of GAP outlines the need to provide "meaningful and relevant education" and relates this goal to the UN Secretary-General's Global Education First Initiative "which pursues the promotion of global citizenship as one of its three priorities" (UNESCO, 2013).

At first glance, this might seem to be in tension to the extent that "relevant" education is often viewed quite narrowly to mean meeting demands for skilled or specialized labour in relation to existing market conditions. However, relevant education for advancing citizen livelihoods would also include, for example, building skill sets that are generally held by the public, promoting a general ability to use intermediate technologies appropriate to a given local market and/or ecological setting, and advancing non-market livelihood specializations (such as those enhancing one's volunteer capacity). Furthermore, implicit in "citizenship" is the notion of self-directed, self-governing activity – whether by an individual or community – in a way that is conducive to autonomy and interdependence at the local and global level. This implies a transformed way of thinking about how human beings make a living and how development is done, that provides much greater control than has historically existed to individuals and their supporting communities in the local, regional and global development agendas. Yet this view of greater grassroots and community control is consistent with how sustainable development and sustainable livelihoods have been understood. RCEs can (and, in many instances, do) play a central role in generating self-reflective communities that are able to create livelihood activities that are sustainable and meaningful.

RCEs allow communities to collectively ask the question "What is meaningful and relevant for us and for our planet?" The ability to reflect on this question demands an education that is grounded as much in the humanities and social sciences as in hard sciences, mathematics and engineering. Relevant education also implies examining the inequities and stratification systems within societies and the timeliness in addressing local opportunities while remaining cognizant of increasingly challenging limits imposed by our ecological, social and economic systems. These limitations (which are, perhaps, better thought of as creative opportunities to rethink existing practices) emerge if one takes seriously one's ethical duties towards the poor and vulnerable, to non-human species and to future generations. RCEs can help communities take an active role in charting their own development paths that take into account these short-term impacts and long-term consequences. In so doing, these paths effectively map out a range of substantive

freedoms for action situated in communities that are consistent with the moral and practical imperatives of SD.

Several challenges are already evident. Many communities lack traditions of setting their own sustainable development paths. At the same time, individuals also lack confidence and experience in constructing their own (sustainable) livelihoods. This implies that RCEs can play an important role in providing encouragement and courage to local innovators – whether individuals, organizations or collaborative initiatives. Many RCEs, in identifying and providing recognition of ESD projects at the regional level, provide this vital role. By creating platforms for sharing stories, including successes, mistakes and lessons learned, RCEs develop new spaces of learning for sustainable development. They also can showcase other examples from RCEs around the globe that may work locally to further inspire change. This showcasing is, in part, occurring through the Global RCE Awards program initiated by UNU in 2012 and the annual reporting requirements of RCEs that document RCE flagship projects.

Rather than traditional models, where development happens to communities, RCEs can provide gentle, yet persistent, leadership that empowers individuals and organizations and provides ideas for guidance that reinforce their own decision-making power. This gentle leadership is especially possible where an RCE's authority derives not from financial or material resources, but from its accumulated expertise. These new "houses of wisdom" respect that the need for resource mobilization for sustainability is frequently voluntary, which requires an approach that is respectful of the freely-willed choices of individual and community actors. The voice of an RCE, however, is distinct to the extent that it can offer a collaborative voice through its membership both within and outside the organizations participating in the RCE. This is enhanced to the extent that an RCE is conceptualized as a regional movement for ESD (as opposed to only an organizational entity) and the global RCE initiative is seen as a global movement.

As such, RCEs need to help identify strategic tipping points for action within their respective communities that critically examine the cultural and structural aspects of the communities, and create game-changing conditions for sustainability that further drive systemic changes. To do so, RCEs can play a role in monitoring and advancing new livelihood practices and patterns of sustainable consumption and production. In addition, RCEs have a role in facilitating the education needed for the adoption of transformative or disruptive technologies, or both, that challenge the status quo and provide competitiveness for poor, small and medium-sized enterprises, and alternative enterprises (such as cooperatives and credit unions). This can play a critical role in ensuring that the well-being of the most vulnerable is advanced, especially in regions where state and other social supports are in decline or non-existent.

The education needed for this type of technology, which is appropriate to the needs and challenges of a given region, is highly specific and contextual. Sustainable vocational schools advanced by RCEs can help provide such an education and training (especially to a broad citizenry). It is possible that, combined with such

schools, RCEs could help in mobilizing productive capital (buildings, equipment and vehicles) that are available and shared at a local level from which an individual or a small company can engage in various forms of local production and local non-profit community organizations can mobilize such equipment on a voluntary basis for community projects. RCE Kano and RCE Saskatchewan are among several RCEs exploring this possibility.

RCEs can also be more intentional in identifying supportive organizations and structures within communities and/or globally that have a structural interest in helping these market and livelihood transformations to occur. For example, the global community of cooperative enterprises under the auspices of the International Cooperative Alliance (ICA) is already examining how it can, as a sector, help advance the SDGs and has adopted sustainability as one of its five priority areas emerging from the UN Year of the Cooperative in 2012 (ILO & ICA, 2014).

RCEs also have the potential to support broad changes in culture for sustainable development. This requires RCEs engaging with the keepers of culture within communities. This includes intentionally engaging indigenous groups, youth, elders, faith organizations, artists and cultural organizations. This, in turn, allows for a vision to emerge where all people are viewed as being both educators for SD as well as learners within their respective contexts. From hosting films and forums to engaging in service and reflective activities, RCEs can continue to help facilitate cultural change towards sustainable paradigms. Using "E4 models" of education, environment, economy and equity, ongoing transformation for sustainability can become culturally embedded and deemed normal practice in the diversity of communities on our planet.

Intercultural Dynamics, Diversity and Ethics

Culture is the geography of sustainability, the soil in which practice is planted, the ground for growth, the interface of people with land and productivity, and exchange. All this is a way of saying that education for sustainability is culturally contextual. Sustainability is a framework that has the potential to be implemented in ways that safeguard cultural diversity; it also has the potential to exert hegemony – a stifling uniformity that disregards cultural and traditional knowledge.

The specific grounding of RCEs in regions and cultures gives them not only the ability to facilitate engagement among various communities in their regions (see Box 9.6) but also a generative capacity to speak across the global network of RCEs. The regional and global conferences bring opportunities for intercultural dialogue on a global scale to life while respecting differences. Sharing experiences and cultural knowledge from far-ranging sites such as Colombia, Peru, Uzbekistan, Mongolia, Kenya and New Zealand, bring the globalized effort for sustainability to the level of face-to-face encounters. Chords of resonance and of unfamiliarity are equally compelling for recognizing the diversity and complexity of shared endeavours.

To meet the objectives of sustainable development, it is necessary to foster a knowledge dialogue, bearing in mind the great cultural diversity there is in the world today. Academia, educational institutions and communities have to work together to rescue the knowledge and management that peasants, indigenous popu-

lations, migrants from other regions, second-generation immigrants, and other groups have regarding their environment, in order to be included in the projects to be carried out in the future. The contribution and support of educators, with their work in formal and non-formal learning sectors around the planet, is fundamental to achieve the recognition and appreciation of traditional knowledge that allow these "others" that are less visible in today's globalized world but have much to contribute from their traditional knowledge towards sustainable development to be both seen and heard. Cultural diversity is a competitive advantage in many regions worldwide, which must be assessed in its proper perspective and incorporated into development projects that are unfolding in different parts of the world.

Valuing cultural diversity involves not only respect for but also the understanding of cultures that have other forms of knowledge and ways of appreciating what exists, that are no less valuable and useful for interpreting reality. While in many countries Western culture has been regarded as the only valid culture, there are other cultures, using other logics and worldviews, which have also developed ways to see and interact with the environment; those ways have contributed to the respectful and harmonious management of nature and natural resources in different parts of the world.

That is why ESD stakeholders and RCEs as networks that share ESD ideas and also have representatives of many communities as their members, could enable a knowledge dialogue to thrive. Thus, together with academia, other institutions, andcommunities, they can build and generate proposals for environmental education and socioeconomic models that are based on the reality of ecosystems and the diversity of the cultures of the different regions. An important element to carry out the knowledge dialogue is research that will focus on collecting and evaluating the experiences of indigenous and other populations, systematizing these and drawing conceptual and methodological elements and alternative technologies, which form the basis for the formulation of future policies and guidelines for action. In the words of García Canclini (2004, p.134), "conceptual work has to use different theoretical contributions [in] discussing their interactions."

Given systems of power and stratification around the world, the patterns of colonization and displacement need to be acknowledged to take into account the history of the present in the way education for sustainability is implemented. Many initiatives to remedy historic breaches of trust and of treaties[1] are part of an evolving process to change institutional and systemic patterns of domination that are firmly established and therefore set in patterns of continuity. Changes are needed to restore systems of indigenous tribal authority, revitalize traditional knowledge and languages,

Box 9.6
Cultural Diversity and Knowledge Dialogue in RCE Bogotá

This openness to a knowledge dialogue has already been demonstrated in countries such as Colombia. In 2001, the National Policy Research framework was approved by the Ministry of Environment, which recognizes "Mode 2" research. It is represented in complex systems as diverse as "... traditional and alternative systems of generation and transmission of knowledge, innovations and ancestral practices of indigenous, afro-descendants and other human populations, as well as settlers", which are all relevant to the environment (Ministerio de Ambiente y Desarollo Sustenible de Colombia, 2001, p.34). In this context RCE Bogotá developed a research

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1 Many colonial systems were initiated or implemented through treaties, such as the 1840 Treaty of Waitangi in New Zealand.

project with the Pasto indigenous community located in the south of Colombia, to see how climate change is affecting food security, the motherland, and the culture of the indigenous population. This qualitative research explores a case study on the recovery of traditional knowledge regarding the ancestral and indigenous *chagra* and *minga* communities. The strategies explored in the case study ensure food security in the community through mitigating climate change. It is important to mention that *minga* is a practice that involves friends and neighbours coming together to do communal work accompanied by some benefit (such as an elaborate meal provided by the recipient of the help).

It is important to disclose these practices, knowledge and strategies from the perspective of indigenous tradition in the Latin American, Asia-Pacific and African contexts, as these practices point out different ways of relating to the environment; they "preserve biodiversity and provide inspiration to respond jointly and properly to the global issues we face currently" (Bermúdez et al., 2005, p. 120). The contribution and strong support from ESD educators, whose work can disseminate this knowledge and values in educational institutions of all levels, located in different regional and local contexts around the world, will be essential to achieving these goals that can promote and be consolidated within the global RCE network and on behalf of the GAP. ■

address gross disparity in educational, employment and health outcomes, enable return of indigenous lands, and restore cultural systems and economies. In today's world this requires a proactive and conscious strategy of cultural recognition.

The establishment and support of RCEs enable this legacy to be engaged. Supporting cultural diversity within RCEs informs remedial ways of working, develops shared and forward-looking pathways and fosters partnerships with indigenous communities in an RCE's region. The idea of remedy includes cultural respect, setting aside dominant assumptions and worldviews, having openness to knowledge from different cultural traditions, and approaching programs and planning in consultation and partnership with indigenous communities and all stakeholders as much as possible. Remedy has the further dimension of working for beneficial environmental and social outcomes, so intercultural relations include forging improvements in the health of rivers and transitions to low carbon energy, in addition to employment pathways in work for sustainability such as clean energy, organic agriculture, green technology, corporate social responsibility and environmental accountability. RCEs present the opportunity to restore the cultivation of relational ethics that are respectful of cultural difference and that are Earth-centred.

Yet it is also true that sustainability has been interpreted by some to serve the purposes of corporate exploitation and profit at the expense of the environment and, indeed, through the exploitation of people. An identification of ethical principles may reduce the susceptibility of sustainability to such weak interpretations. The quest for an ethics to express universal principles that guide RCEs and yet uphold culturally and socially diverse practices can be found in the notion of responsibility.

As Sizoo (2010) found in a comparative study, while understandings of responsibility vary, it has a universal quality. In some cultures obligations are handed down through generations and thus extend across time; they can be between species, with understandings of all living beings as related. In Western cultures, responsibility has more of an element of choice; it may be associated with legal duties and have a personal orientation with a more limited time scale. Nevertheless, this is an ethic that expresses interdependence, recognizing that all living things are bound together, with each other and the planet.

As practices of sustainability move towards more ecocentric worldviews and to economic systems which take account of life-sustaining services provided by ecosystems, ethics need to evolve to become not only inter-human but also inter-species. RCE practices, through recognition of cultural diversity within an RCE and across communities, must also involve recognition of systems and practices that are destructive to the planet and that perpetuate injustice.

Transformative Learning

A further potential of RCEs relates to an RCE's ability to transform learning. Transformative education is a paradigm shift away from education to shape individualistic agency, ownership and competitiveness. It embraces a relational understanding of human development that is other-centred rather than self-centred. Transformative education embraces ecologically-centred perspectives, rather than a human-centred worldview, with people considered as part of a dynamic and inter-dependent whole.

Education for sustainable development is also inclusive of experiential learning, such as in civics, where students participate in strategic planning for the school, in forming submissions to local councils and contributing to public forums. Such opportunities for direct participation are supported by transformative learning processes that question assumptions that are often taken for granted. Asking how to move into the future consciously and deliberately involves asking bigger questions about values and purpose: "What is important to us? What are the consequences of our actions? How do we relate to one another and to our communities?" When young people and adults learn in engaged and transformative ways, they recognize how their actions have been based unconsciously on beliefs, values, feelings and judgments assimilated from others. They often reframe their deepest understanding of how things work personally and professionally, and in the groups, communities, organizations and society in which they live and work. Of course, transformative learning looks and feels different in different cultures. A small anecdote (Box 9.7) demonstrates experiential and transformative learning as included in the RCE Waikato program.

A further example of transformative learning is tied to problem-based learning linked to specific issues of sustainability in a given region. This, in turn, promotes research and innovation. A valuable example comes from the OPEDUCA Project approach developed by RCE Rhine-Meuse and adopted by many RCEs. Box 9.8 provides an example where sustainability issues related to water were a central focus.

Box 9.7
Water has Consciousness

A group of scientists, university students and *kura* (Māori medium language school) took an observational river walk with a Māori Kaitiaki (tribal guardian). Bulldozers were being used to remove the surrounding willow trees from the adjacent land, leaving the ground barren and exposed, denuding the river of its protective skin and shade. Willow trees are deemed invasive and damaging to the river ecosystem. The cooling effects of trees on the dynamics of water and sedimentation had not been accounted for. Erosion was evident along the banks, native seedlings were destroyed and signs of algal blooms from water exposed to the sun were evident. The Kaitiaki claimed, "Water has consciousness." A student inquired further, and the response was "Water has intelligence. The behaviour of the river will change to respond to the increase in light and heat from the removal of trees and changes in sedimentation processes from the loss of root systems." (TeRangiita, R. Personal communication, Turangi, 2013). This transformative learning experience highlighted the river as a living being with an integrated river ecology. It brought into question decisions that prioritize development interests over ecological integrity. ■

Participants in the 6th GLobal RCE Conference in Kerkrade, The Netherlands

Box 9.8
Problem-based Learning

An example of one of the many ... good practices is based on the theme of water and comes from the Graaf Huyn College in the city of Sittgard-Geleen (The Netherlands). … A group of 200 students, aged from 14 to 15, started working on the theme in late 2011 … [T]eams of students explored the theme of water, performing extensive research and sharing and debating the answers they collectively found. Questions that remained unanswered were handed over to the RCE Secretariat, partner companies and knowledge institutions. A phase of arranged visits from students to their "partners in knowledge" followed. These were full of guided tours, excursions, debates and experiments. Lessons learned during these visits were presented by students at the School Market to peers, managers, parents, teachers and policymakers. This phase alone was a large happening and became a festival of learning for 200 students and around 300 visitors. *(Fadeeva et al. 2012, p. 105)* ■

Box 9.9
Non-formal Education as ESD

One of the objectives of RCE Bogotá has been the promotion of non-formal education and citizen environmental education as education for sustainability. The RCE community sees the challenge of environmental education and ESD into the future as being of great importance, with its role as a key element in the strategy of cultural change (Bermúdez, 2003). This strategy fosters innovative pedagogy that breaks traditional patterns and covers a new paradigm that favours the value of the same, that encourages knowledge of our ecosystems and cultures, and the proper management of our "biological and cultural treasures" (Morin, 2000), and helps clarify the

cont. ▶

Reaching Wide: Going Beyond Formal Education

The network of RCEs can help disseminate the values, behaviours and lifestyles for a sustainable future and for positive societal transformation by implementing non-formal education programs for a wider coverage of the population that falls outside of the formal education that is taught in the classroom. Non-formal education is education that reaches the ordinary citizen, the housewife, the elderly and all those who do not go to school or university – a great number of people who, for a variety of reasons, are not addressed by the formal education system. The network of RCEs has proposed and developed projects within the domain of non-formal education or across formal and non-formal education, which seek to achieve educational changes as well as open new spaces that facilitate comprehensive training for all, including lifelong learners and those that are disenfranchised and marginalized. Such education would have special characteristics, paying attention to values that might be lost or under-emphasized at this time, such as solidarity, respect for diversity and all forms of life, collaboration, environmental ethics and responsibility. Box 9.9 provides an RCE example of non-formal education.

Evaluation as Learning: Appreciative reflection on RCE processes

Part of the transformative learning engaged in by RCEs relates to the role evaluation has played in the evolution of RCEs. As RCEs contemplate their future handprint in expanding ESD in the post-DESD period, UNU-IAS has appropriately facilitated an appreciative enquiry of the past experiences of RCEs as a guide to mapping out the future. Recent RCE evaluation processes were carried out in Australia, Asia, Europe and Africa and have included very young RCEs (that are mostly looking at learning from the early mobilization stage and developmental evaluation) to older RCEs learning from existing processes and formulating and measuring outcomes and impacts. Chapter 7 demonstrates how various approaches have been used in different contexts resulting in the development of a hybrid evaluation framework by a group of southern African RCEs.

Concluding Reflections: Developing a global learning space for ESD and the importance of freedom

As shown, RCEs possess distinctive transformative potential related to policy and program development, sustainable livelihoods, ethics and culture, and transformative learning, including evaluation of learning. All of these potentials, grounded in the distinctive collaborative partnering arrangements of RCEs, are made possible by the freedom RCEs have to form these partnerships in the first place, based on the needs of their regions. The creation of a global learning space for ESD built on these distinctive transformative potentials and outlined in the Tongyeong Declaration must also be built on this freedom of inquiry.

As an initiative of UNU, RCEs see themselves, in part, as a global scholarly network with a central goal of research and innovation related to ESD. As a global scholarly network, RCEs need to structurally resist being categorized in such a way that hampers their curiosity and freedom to investigate the most promising educational solutions to sustainable development challenges whether or not they fall within the priority research and action areas of specific organizations (whether national and state governments, businesses, NGOs, etc.). The participation of RCEs with higher education partners presupposes that conditions of academic freedom need to be maintained by the RCE as part of this UNU initiative. The loss of the formal conditions of academic freedom through administrative restrictions imposed on RCEs through administrative directives (more appropriate in the corporate or government worlds) would lead to RCEs losing credibility from the higher education sector and, in turn, a reduced capacity to freely mobilize (both financially and ethically) the support of individual professors, students and other community-based scholars. Ultimately these educational partners are motivated through curiosity resulting, in turn, in pursuing investigator-driven research – all of which only occurs under conditions of scholarly freedom.

Having stated this, there is much to be curious about in the ESD agenda and RCEs can harness the creative energies inspired by such curiosity about what a sustainable future might look like. The needs and actions of their specific organizational partners, communities and regions may prioritize particular issue areas and practical problems related to sustainable development that require research and innovation, which may not traditionally have emerged within higher education and other research settings. Learning that takes place within these living laboratories can then be globally networked among RCEs with exchanges of people, technologies and educational resources that, in turn, can be freely adapted to particular local settings.

meaning of being a citizen of the world. The RCE's *Forum Environmental Program* seeks to educate citizens of the city of Bogotá towards achieving harmonious interactions between society and nature in their personal and collective life (Bermúdez, 2003), encouraging practices such as healthy eating, recycling, responsible consumption, citizen participation, a sense of belonging and identity with the city and its public spaces, among others. It encourages learning and teaching processes that facilitate collaboration among participants, who belong to different educational levels and age groups. It contributes to the dialogue of knowledge among the public, academia, traditional knowledge representatives, universities, educational institutions and environmental NGOs, contributing their experience in voluntary work with communities, thereby enriching teamwork. It promotes innovative, free, open and inclusive spaces in which the joint construction of knowledge and reflection make possible "discoveries" and dissemination of advanced projects in different contexts and practices, providing adequate solutions for regional and local needs. ■

A global learning space will emerge as RCEs receive further structural support (both financial and in-kind) from international organizations (e.g. UNU and other UN agencies, global businesses and cooperative organizations committed to SD, human service organizations and environmental NGOs). The additional support will enable RCEs to flourish as a global community. During the DESD, RCEs proved their worth with only modest resourcing from UNU and other UN bodies, but have not been able to achieve their full potential. Further support from UN bodies and other international organizations during the next decade can symbolically legitimize RCEs to other regional actors. It will also help them implement their ESD strategies more effectively, given that RCEs can enable global organizational partnering with local organizations that are most able to deliver programmatically their national and international goals. Such resourcing needs to be done in a way that is fully transparent and not restrictive of an RCE's local autonomy, in order to maintain the trust of its constituents and best meet the needs of its communities.

Box 9.10
Individual RCE Programs Addressing Multiple GAP Target Areas

A practical example of such a program would integrate three of the GAP priorities: (1) whole-institution approaches, (2) improved qualifications of educators, and (3) youth. In this case, universities of applied sciences could be encouraged to support TVET at the secondary level; cooperation of classical universities with universities of applied sciences could facilitate their research components; and, finally, appropriate evaluation systems and counting prior learning by giving relevant credits would facilitate an educational continuum that provides innovative models for lifelong learning. One could also conceptually imagine the following program being developed by RCEs in their regions that addressed all five target areas of the GAP, namely, "youth educators in local communities for transformation of policies leading to whole-institution approaches for ESD". Such a program could be implemented by a school of public policy, working with a high school within a given RCE or with multiple RCEs. ■

RCEs are new structures that seek to bring whole-institution approaches of ESD to the policy level to give effect to the second goal of the GAP (2014, p. 3, sec. 9). In this case, at both a regional and global level, RCEs become a reference and impetus for policy development. They are also a source for research on whole-institution approaches for regional organizational stakeholders and national and international organizations. In addition, the RCE global learning space can also holistically approach all five areas of the GAP through strategic regional approaches to ESD, potentially addressing more than one of these five target areas at a time (see Box 9.10).

Looking ahead, a rational synergy of the GAP priorities could be seen as a precondition for transformative up-scaling of ESD work. Growing RCE networks can increase collective impact by facilitating connections between different levels of education and between different forms and sectors of education (formal and non-formal) in implementing all five priorities. The fifth priority area (focused on ESD and communities) could be especially highlighted by RCEs as they seek to provide bottom-up versus top-down learning opportunities for sustainable development. In this way RCEs could supply networks of organizations and institutions of all educational sectors with material, concepts and knowledge that are grounded in the circumstances of their respective regions, thereby increasing collective impact, overall.

RCE Tongyeong's Bridge to the World project

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Chapter 10

Advancing ESD through New Multisectoral Learning Partnerships: Parallels between the RCE Initiative and the Earlier Rise of Humanism and Science[1]

Roger A. Petry

If history is to be any guide in seeking to move to sustainable ecological, social, and economic systems, one can usefully examine historic transitions from earlier systems in crisis. A historical focus is important where sustainability is viewed as necessitating substantial changes to current production practices and existing organizational and institutional arrangements. Such an examination is also merited given significant amounts of time between these major transitions. A bird's eye view of history can shed light on the significant potential of the global network of RCEs that have emerged rapidly since the start of the DESD in 2005 and are, arguably, one of its success stories.[2] Created under the auspices of UNU as a global learning system, RCEs share important parallels with earlier multistakeholder learning initiatives that, in turn, were central to historic developments in new forms of scholarship and knowledge production, specifically the rise of science and the earlier rise of humanistic knowledge. These parallels support the contention that the RCE initiative is an important global institutional and organizational development[3] in education and research with the potential to produce much needed knowledge in transitioning to sustainable global systems.

1 An earlier version of this chapter was originally published as chapter 15 in Fadeeva, Z., Payyappallimana, U., and Petry, R (Eds). (2012) *Towards more sustainable consumption and production systems and sustainable livelihoods* (110-123). Yokohama: United Nations University.

2 Now in 2014 numbering nearly 130, the RCEs are notable for emerging under a period of significant resource constraints and retrenchment within higher education globally, receiving only modest financial support.

3 Substantive innovation for sustainable development requires innovation in both the institutions and organizational structures advancing research and other elements of scholarship (such as teaching and community service). New institutionalism theory usefully distinguishes between institutions and organizations where *institutions* are "sets of rules, decision-making procedures, and programmes" while *organizations* are "material entities with employees, offices, equipment, budgets, and (often) legal personality" (Young, 2002, p.5). A scholarly *institution*, for example, would be the scientific method understood as a kind of social practice (along with rules defining the roles of scientists and their interactions) while scholarly *organizations* would include specific universities, colleges, vocational and technical institutes (among others).

Specific forms of institutional innovation in research that can support transitions to new sustainable systems are possible in light of both the opportunities and limiting conditions found in existing institutional arrangements and organizational players.[4] The historical and contemporary cases examined below of multisectoral learning organizations established outside the traditional academy illustrate the capacity of large-scale systems to creatively innovate across organizational and geographic boundaries. These new organizations build on resources from multiple types of existing organizations including financial resources, but also conceptual and other in-kind resources. At the same time, an examination of the process or pathway of their formation illustrates likely constraints in the development of their modes of research, methods of disseminating this research and mobilization of resources to support this research.

RCEs, the Royal Society of London and the Trilingual College of Leuven

The relatively recent formation of the RCEs can usefully be compared with earlier historic multistakeholder scholarly organizations. These are characterized by the involvement of both academic and non-academic leadership in their formation. While associated with universities and retaining academic freedom they act outside the traditional structures and powers of the academy. They are notable for having pioneered new models of knowledge production and dissemination within their geographic contexts and time periods enabling the transformation of existing social and economic systems during periods of crisis.[5] While a number of such organizations might be considered, two historic examples will be considered that meet these criteria. The Royal Society of London for the Advancement of Natural Knowledge, founded in 1660, was a self-governing fellowship that included (but was not restricted to) university scholars and pioneered the scientific method (see Box 10.1). Associated with the rise of this scientific knowledge was a range of technologies central to the industrial revolution beginning in the mid-18th century in the United Kingdom. An earlier historical innovation in learning and scholarship is found with the rise of humanistic goals in education. One can, for example, see in the teachings of Confucius (551-479 BCE) and the Confucian school of thought emphasizing the need for rulers to be ethically virtuous in their official roles with an appeal to a study of earlier historical periods as a model for social and political reform. A much later example (for the purposes of this study chosen for its historical proximity and accessibility of historical records) is the development of the Trilingual College (*Collegium Trium Linguarum/Collegium Trilingue*) of Leuven, Belgium, in 1517. The Trilingual College is credited with advancing the rise of humanism in northern Europe by drawing upon the classical writings of the ancient Roman, Greek and Near Eastern societies that, in turn, had broad organizational and cultural impacts in Northern Europe during this time period (see Box 10.1). The innovations in knowledge production of the Royal Society and earlier humanistic schools subsequently became incorporated in higher education organizations, so it is now commonplace for universities to have specialized departments in the sciences and humanities.

4 The Brundtland Commission report, Our Common Future, noted early on that "[t]he concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities" (1987, pp. 3.27).
5 These new models of knowledge production are subsequently formally incorporated within the institutional frameworks of higher education organizations once their scholarly merits and social and economic benefits have been demonstrated.

In considering points of comparison, one important commonality between RCEs, the Royal Society and the Trilingual College has been the participation of scholars and higher education organizations in their formation, yet in ways that innovate beyond the traditional academy. These three organizations can, at the same time, be usefully contrasted given the differing role played by other institutions and organizations in their creation. As such, while there are common roles needing to be played in supporting the respective organizational governance structures and inspiring new kinds of innovation, these roles are seemingly played by *different* organizations and institutional forms in the case of RCEs, the Royal Society and the Trilingual College. A listing of different institutional forms supporting distinct organizational types is provided in Table 10.1. The listing reflects the historic emergence and seeming institutional dependence of each, with volunteerism as the chronologically latest form, working back to those that arise in earlier time periods. The earliest voluntary sector organizations emerged in the 19th and early 20th century (for example, the YMCA or Scouting). These became institutionally possible where individuals in society were freely and legally able to volunteer and, hence, associate and mobilize resources around social causes they found desirable yet typically deemed inadequately addressed by other organizations (such as government or business).[6] The development of market organizations is earlier than that of the formal voluntary sector, with merchants and their commercial activity evident, for example, in feudal societies and earlier classical periods (see, for example, Zacour, 1976, pp. 39-67).[7] Other contemporary institutions and organizational forms which are familiar, such as aristocratic or religious forms, had (as identified by anthropologists) earlier origins with distinct purposes and traditional models of governance.[8]

If one examines the primary institutional processes and concepts being employed by each multisectoral learning organization, it will be argued that RCEs principally apply *volunteerism* and institutions of the voluntary sector to advance new forms of research and scholarship, while the Royal Society historically applied *market institutions* and concepts in developing science, and the Trilingual College applied *state/governmental institutions* and concepts in advancing humanism. They also apply these institutions (volunteer, market and governmental, respectively) to their governance structures. At the same time, a critical set of research questions and resourcing for each organization initially seem to be associated with those organizations providing social supports and maintaining social order in the given time period of their creation. In this case it will be argued that governmental orga-

6 This freedom to associate emerged with the rise of modern democracies and rights of citizenship. It also relied on legal powers of incorporation associated with the market where entities (such as for-profit corporations with limited liabilities and, now, not-for-profit corporations) have legal standing as persons under the law.

7 Such market activity, in turn, depends on institutional frameworks (such as ownership of private property and contract law) made possible by governments/states (such as monarchs) and their imposition of codified laws and judicial systems over large territories.

8 The remaining institutional forms in the table can, in turn, be seen as having their historic roots and institutional dependence on the earlier form listed in the row beneath it. The last four forms (state, aristocratic, religious and family) likely parallel the political organizations identified by anthropologists (namely, states, chiefdoms, tribes and bands) and the institutional developments associated with each form. For an anthropological overview of these see Ember &Ember, 1996, pp. 431-439. It should be noted, however, that these earlier forms may take advantage of contemporary institutional frameworks to advance their interests and build their capacities, so that a mosque or church may become legally incorporated and make use of the freedoms made possible by a robust citizenship (such as freedom of belief and association) analogous to organizations in the voluntary sector.

Institutional form	Examples of associated organizations	Historical sequence of development
Voluntary	Not-for-profit corporations, voluntary associations	Latest
Market	Private businesses, cooperatives	
Governmental/State	National governments, provincial/state governments, city/municipal governments, international governmental organizations (e.g. the UN)	
Aristocratic	Nobility/aristocracies and specialized craft guilds/professional associations	
Religious	Faith organizations (e.g. temples, synagogues, churches, mosques)	
Family	Immediate and extended families	Earliest

Table 10.1 Institutional Forms, Associated Organizations and Historical Development

nizations (city governments, provincial, national and also intergovernmental organizations such as the UN) have played this role with RCEs (as shown in Chapter 1), while the Royal Society relied on the support of the aristocracy, and the Trilingual College on religious organizations, specifically the Christian church.[9] At the same time, the innovations of these multisectoral scholarly organizations receive some support and have substantial benefits over the long-term for the dominant productive sectors of the day.[10]

New Multisectoral Learning Partnerships: The Role of Higher Education

From the perspective of scholarly capacity, the participation of higher education organizations in each multisectoral learning partnership plays an important role in legitimizing new forms of scholarly activity not yet formally accepted within the traditional academy.[11] This allows the participation, recognition, and support of students and professors in a new scholarly enterprise. At the same time, higher education's participation helps assert a culture of academic freedom in these part-

9 Interestingly, from Table 1 it is evident that each of the organizational types that initially posed the research questions and provided resourcing for the particular scholarly network (for example, the Christian church in the case of the Trilingual College) is at an institutional level two earlier in time than the institutional form inspiring the new mode of scholarship and governance structure associated with it (for example, the state/government in the case of the Trilingual College). In the case of RCEs, governmental organizations (a much older institutional form) have helped frame research questions and provide resourcing for RCEs, while volunteerism (two institutional forms more recent or "younger" in Table 1) inspires the new form of scholarship and governance model of RCEs.
10 In Table 1, these dominant production forms are located between the newest institutional form at the time inspiring new forms of scholarship and the institutional form providing initial resourcing and general research questions. For example, in the case of RCEs and in the current time period, market institutions and organizations shaping the dominant system of global production are located between the voluntary and the state sector.
11 The Trilingual College relied on the scholarly support of the University of Leuven while the Royal Society relied on the initial support of Gresham College, London, and RCEs, UNU and higher education partners within their respective regions.

nerships, more specifically, a capacity for investigator-driven research, something typically constrained in moments of broad social resource constraints associated with each of these periods of institutional innovation.

The Role of the Most Recent Institutional Forms in Creating New Scholarly Partnerships

In forming the new multisectoral learning organizations under consideration, each creatively applies ways of knowing, productive practices, and institutional forms associated with the latest or newest type of organization in a given time period (such as volunteer organizations in the present time period). By applying the most recent institutional form to pressing research problems of the day, this creatively generates *new paradigms of knowledge, new ways of conceiving human and natural systems, new scholarly governance structures enabling new forms of knowledge production* (including new research methods), and *new forms of knowledge dissemination and technology*. In the case of the Trilingual College of Leuven, one sees the application of state or government ideas to pressing research questions of the 16th century; with the Royal Society one sees the application of market ideas to address research questions of the 17th century; and lastly, with the RCE network one sees the application of voluntary sector ideas to address pressing questions of sustainable development of the late 20th and early 21st century. Each will be discussed in turn.

In the case of the Trilingual College the *state idea* of the centralized will of a king or government shaped the College's structure; in this case the College was literally determined by the dictates of the legal will of the late cardinal Jerome Busleyden (d. 1517) expressing his personal will, plan, and intentions for the College (DeVocht, 1951 vol. 1, pp. vii-ix). Later the terms of this will acted as a legislative constitution for the College (ibid, vol. 1, p.6). Ideas of state autonomy were also implicit in how texts were to be studied. Classical texts on their own were treated as autonomous objects of study from which to derive evidence, rather than relying on "the word of the master" (ibid, vol. 1, p. vi, 239). In turn, inferences were made from an accurate reading of these texts to other subject areas (such as theology) or to one's personal life (in applying their humanizing ethic). Students as autonomous learners were also able to choose whether or not to attend these freely offered courses, as they were not part of the set curriculum (ibid, vol. 1, p. vi). Through personal study, students were also expected to employ their own autonomous reasoning when examining texts (ibid).

Market ideas were also creatively employed in the formation of the Royal Society and the practice of science. Knowledge is generated to meet the needs of society – to be useful – yet without judging the moral, social, or political preferences there might be for this knowledge (see Shapin, 1996, p. 13). Here the dispassionate market assessment of the merchant is reflected in the objectivity sought by science; this is further enabled by a mechanization of scholarly methods that sought to eliminate the role of human passions and interests (ibid). Artificially contrived experiments were intended to produce new experiences with quality control of the emerging factual claims (ibid, p. 88). These particular experiences and facts were taken as givens and foundations from which to inductively infer the theories of natural philosophy (ibid, p. 90). This is akin to the merchant taking market supply and demand as givens separate from economic theories explaining underlying market preferences and behaviour. Artificially contrived scientific experiments

involved control, calculation of probabilities, the removal of subjective measures, and the seeking of regularities expressed in the language of mathematics (ibid, pp. 61, 96-101). These are akin to the quantitative mathematical measures associated with market pricing and market calculations of risk and profit associated with the sale of a product. The development of the Royal Society's scientific journal, aptly entitled the "Philosophical Transactions of the Royal Society", was also conceived on a for-profit model.

Similarly, the RCE network creatively employs ideas associated with the *voluntary sector*. The concept of sustainable development can be viewed as a political concept (Baker, 2006, p. 27) volunteered by the broader society as a result of political policy processes (see, for example, Annexe 2 of WCED, 1987, pp. 352-387). In form-ing RCEs, organizational partners freely associate to advance the cause of ESD while its regional boundaries are "volunteered" by ecological, cultural and livelihood factors affecting community interest in participation. RCEs locally and globally also self-structure to network on common sustainability themes (see Chapter 1 for the thematic areas of collaborative RCE work; see also Dahms et al., 2008 Table 2, p. 389). RCEs are required to mobilize most of their own resources of necessity requiring voluntary contributions by an RCE's partners. The openness required for voluntary resource mobilization extends to RCEs adopting inclusive theoretical perspectives in their forms of knowledge production. These inclusive forms include social learning, meta-learning (involving inter-personal learning between different groups), pluralistic approaches, transdisciplinary and/or problem-based approaches, and those involving learning by doing (Petry et al., 2011, p. 85). The research methods employed reflect grounded ways of knowing based on volunteerism that mobilizes conceptual resources in particular contexts, especially where there are a large number of variables and significant unknowns.[12]

The Participation of Well-Established Organizational Forms

In addition, each multisectoral learning partnership being examined also receives early support and scholarly objectives tied to well-established organizations from the respective time period; these organizations have a prominent role in *providing social support and maintaining social order*. In the case of the Trilingual College this role was principally played by religious organizations, more specifically, the Christian church; in the case of the Royal Society this role was played by the aristocracy. In the case of RCEs and contemporary society this social safety role is primarily played by the state (for example, in terms of governmental social welfare functions, its role in providing public infrastructure, and policing). In the case of religious support for the Trilingual College, Jerome Busleyden, who posthumously financed

12 In such grounded methodologies (see Charmaz, 2004), communities themselves help shape the research enterprise by informing the concept of sustainable development, volunteering their own definitions and meanings found when attempting to understand human well-being within a given local context; indigenous and other forms of local knowledge related to human self-understanding and ecosystems also supplement existing scientific knowledge. Organizational and individual members within the RCE region, both formal scholars and community members, are similarly mobilized in a participatory way to contribute their own disciplinary and organizational understandings to the research endeavour. The transformative social, cultural, economic and environmental impacts of this research can then be a basis for further study. A grounded case studies approach (see Berg, 2007, pp. 283-287) is frequently used by RCEs to the extent sustainable development strategies, especially those advancing livelihoods in particular regions, are context sensitive. Comparisons between such case studies can be applied at a variety of temporal and geographic scales, whether within or among RCEs.

the College, had an extensive career in the church serving as a parish-priest, Archdeacon, ecclesiastical councillor and canon (DeVocht, 1951 vol. 1, p. 2; Neve, 1856, p. 42). Five of the six executors of his will also had ecclesiastical careers or were associated with church-supported educational organizations (DeVocht, 1951, vol. 1, pp. 50-55), the latter being something quite common in the medieval period (Shapin, 1996, p. 126).[13] The Royal Society, on the other hand, relied considerably on the aristocracy, with resources from self-financed gentlemen scientists and offices held by prominent lords, barons, and knights (Shapin, 1996, pp. 134-135). Individual RCEs as self-organizing multisectoral regional entities often receive some governmental support; it should be noted, however, that they also frequently receive support from non-governmental sources and may intentionally strive to be independent of government within their regions. They may also mobilize resources (both in-kind and financial) through organizational partners redirecting and re-aligning their resources to ESD initiatives (versus financing the RCE directly as an external, separate entity).

Central research questions to be investigated by each new scholarly partnership also have been shaped by these organizational sectors with the goals of the Trilingual College reflecting extensively (though not exclusively) religious interests, the Royal Society reflecting concerns of the nobility, and the RCE initiative reflecting sustainable development research questions raised (or influenced) by governments with respect to development priorities. In the case of the Trilingual College, scholars were meant to study three languages – Latin, Greek, and Hebrew – to help understand the books of the Hebrew and Christian Scriptures in their original languages, and the writings of the early Church Fathers along with the classical cultural context in which these texts were written (DeVocht, 1951, vol 1, pp. 305, 309-310). Direct access to the original texts was viewed as allowing for a solid linguistic interpretation and textual criticism that would overcome the errors of translators and copyists and, in turn, provide a preparatory basis for (and enhanced study of) theology (DeVocht, 1951, vol. 1, pp. vi, 297, 304, 345). Jerome Busleyden, its founder, wrote that the College was meant to "bring glory to God and to the Church" (ibid, vol. 1, p. 23). With the Royal Society, the aims of the aristocracy were reflected in its traditional concerns for discovery of what was new, peculiar, rare, or unusual. This interest in what was new and rare was reflected in the "cabinets of curiosities" fashionable among European gentlemen of the time (ibid, p. 90). The Royal Society's aims had been partially inspired by the writings of Sir Francis Bacon that contained a general optimism about the possibility of discovering new knowledge (Shapin, 1996, p. 20).Its aims also reflected the interests of the nobility in what was hidden and secret. Sir Robert Boyle, in his correspondence from the late 1640s prior to the formation of the Royal Society, refers to an association of experimental philosophers known in his correspondence as "the Invisible College". Aristocratic society at the time was also fascinated with the hidden features of constructed automatons that through internal mechanical movements imitated human activities (ibid, p. 158).[14] Just as the mechanical clocks (also popular at the time) visibly showed the movement of a clock's hands while its inner workings

13 The formative leaders of the College in its early stages, such as the famous humanist scholar Desiderius Erasmus, also had backgrounds in the Christian church.
14 An early 18th century lecture by Marin Clare to the Royal Society focused on "the history of automata... on the circulation of the blood ... [and] on magnetism" (Jacob, 1988, p. 146).

were typically hidden, it was felt that the natural features of humans and animals (including their movement, digestive, and respiratory systems) and features of astronomy could similarly be explained by otherwise hidden mechanisms (ibid, pp. 32-36). From the perspective of scientific research, this meant going beyond mere appearance and commonly observable qualities to discover the hidden secrets of nature explained in terms of fewer and more basic qualities, frequently different from those experienced in common experience (ibid, pp. 52-53). It also meant developing specialized instrumentation that required focused training (such as the microscope and telescope) to extend and improve the human senses (ibid, pp. 19, 93). The interest of the aristocracy in individualism and yet also, at the same time, maintaining the social order and preventing radical reform could also be usefully advanced by science.[15] Lastly, the goal of sustainable development, and more specifically of RCEs, reflects the interests of national governments that have made various national and international commitments to ESD reflected in their decision to create the DESD in December 2002 (UN, 2003). It is in support of this Decade that UNU undertook the RCE initiative. State governments also have constitutional and other legal responsibilities (1) to regulate, conserve, and protect environmental systems, (2) to promote literacy and support public education, and (3) to meet social responsibilities to the poor and the general citizenry through social welfare systems and employment generation. These three goals are implicit in the concept of ESD that simultaneously seeks to promote educational strategies to advance human well-being and healthy ecosystems.[16] The institutional culture of each of these three organizational forms also helps shape the structure of each new partnership.

Despite these organizational influences on the culture of the new scholarly structures, the cultures of each supporting group (church, aristocracy, and state government, respectively) are also creatively challenged. New forms of inclusiveness push the boundaries of their traditional domains enabling innovation. While religion plays a key role in reinforcing ethnicity and culture, the Trilingual Colleges challenged Western Europe by introducing the study of classical Latin along with Greek and Hebrew, which enabled a re-interpretation of the meaning of religious scriptures and a re-discovery of classical, pre-Christian culture.[17] The Royal Society advanced not only the specialized interests of the noble elites (who saw themselves as set apart culturally from the commoners), but initially focused on the scientific study and refinement of the skills of ordinary craftspeople (Shapin, 1996, p. 139).

15 Science, on the one hand, powerfully challenged previous knowledge that had been accepted purely on the basis of authority and tradition; at the same time it provided a new, commonly acceptable platform for knowledge (for those willing to follow the scientific method), one not prejudiced by religion and politics – topics not allowed for discussion at meetings of the Royal Society (ibid, 135; see Jacob, 1988, p. 78). Other scholarly pursuits in the Royal Society were tied to earlier interests of the nobility such as attempting to turn base metals into gold and the art of flying (Shapin, 1996, p. 140).
16 Governments also aim to create conditions for their leaders (and citizens more generally) to exercise power and planning over the long-term requiring relative stability or, at least, predictability. These long-term time horizons are also implicit in sustainable development's focus on meeting the needs and aspirations of future generations.
17 Science, on the one hand, powerfully challenged previous knowledge that had been accepted purely on the basis of authority and tradition; at the same time it provided a new, commonly acceptable platform for knowledge (for those willing to follow the scientific method), one not prejudiced by religion and politics – topics not allowed for discussion at meetings of the Royal Society (ibid, 135; see Jacob, 1988, p. 78). Other scholarly pursuits in the Royal Society were tied to earlier interests of the nobility such as attempting to turn base metals into gold and the art of flying (Shapin, 1996, p. 140).

Finally, RCEs, due to their novel geographic boundaries (shaped by ecological regions, livelihoods, transportation, and cultural patterns) typically cut across traditional political jurisdictions; this requires the networking of multiple scales of governmental authorities (including cities, rural municipalities, states/provinces, countries, and international governmental bodies such as the UN). At the same time, the interdisciplinary nature of ESD requires ongoing inter-departmental networking within each government. Lastly, any centralized direction of RCEs is always in the context of being attentive to what is desired in a region around ESD; given the RCEs' governance basis in volunteerism, this requires gentle, facilitative leadership that empowers and links partner organizations around common research efforts versus the exercise of centralized coercive power by the state.

Institutional Support at Larger Geographic Scales: Bishops, Parliament, and the UN

One of the primary strengths of these new multisectoral learning organizations is their ability to generate new knowledge based on integrating information, research, and knowledge dissemination over larger geographic scales (whether a bishop's diocese versus a local parish, a national House of Lords versus the land holdings of a local lord, or the global UN system versus an individual national government). This scholarly activity over larger territories is enabled by a further kind of organizational involvement, specifically organizations operating at larger geographic scales yet associated with each of the previously mentioned institutional forms (church, aristocracy, and state) in the given time period. In the case of the Trilingual College of Leuven, its history is connected with the support of higher religious offices such as bishops and their role in geographically integrating larger ecclesiastical territories. For example, not only is Jerome Busleyden's ecclesiastical career an example, but his elder brother served as the Archbishop of Besançon (De Vocht, 1951, vol. 1, p. 2). The Bishop of Vienna, a friend of Erasmus, established his own trilingual college (to which he donated his library), while a further friend of Erasmus, Richard Fox, the Bishop of Winchester, established Corpus Christi College in Oxford on a humanist foundation (ibid, vol. 2, p.356). The Royal Society, on the other hand, was associated with the national institutions of Parliament (comprised of the House of Lords (including representation of the nobility) and the House of Commons). The inspiration for the Royal Society was tied to a period of civil war against the king with support for parliament and non-absolutist government at the time being shared among natural philosophers and others engaged in scientific experimentation (Jacob, 1988, pp. 75, 93).[18] Finally, the RCE initiative is a global initiative through its institutional dedication to the goals of the DESD and the institutional direction and support of the UNU. Here the UN can be thought of institutionally as a government organization to the extent it acts as a "government of governments". These organizational forms operating at a larger geographic scale (as before, whether a bishop's diocese versus a local parish, a national House of Lords versus the land holdings of a local lord, or the global UN system versus an individual national government) provide not only support and protection for these new forms of scholarship, but also a general form of social legitimation.[19] In addition, these larger organizational forms also

18 Margaret Jacob sees "the natural philosophy inherent in [Sir Isaac] Newton's science as the metaphysical foundations of the Whig constitution" (ibid, p. 138). Sir Isaac Newton himself was later a member of parliament.

19 In the case of RCEs, for example, the importance of their association with the United Nations often plays a role in the ability of RCEs to mobilize support in their respective regions and to network internationally.

assist in generating important questions that can be addressed by the new forms of scholarship afforded by these scholarly partnerships. The humanist scholarship of the Trilingual Colleges, for example, provided important scriptural knowledge to inform ecclesiastical debates, especially those associated with the Protestant Reformation of the 16th century. The scientific scholarship of the Royal Society was brought to bear in addressing questions raised by parliament and its government agencies (Jacob, 1988, p. 92). RCEs are structured to address research questions raised by the DESD, and are also poised to address specific questions raised by UN agencies such as UNESCO, UNICEF and UNDP, among others.

The larger geographic scales afforded by the association of these new scholarly partnerships provides a distinctive platform for innovation and resource-sharing that would otherwise not be possible at such a scale (see Box 10.2). Lastly, the institutional dynamics of these organizational forms operating at larger territorial scales also seem to be somewhat emulated within these new partnerships. For example, the Trilingual College innovated with the formation of specific financed academic chairs in each of the three languages (DeVocht, 1951, vol. 1, p. 13); these chairs perhaps reflected the *cathedra* (Latin for "chair") or the bishop's throne that symbolized the bishop's authority to teach. The Royal Society structured itself as a self-governing fellowship with a presidency, perhaps emulating the workings of a Parliament with its own Prime Minister. The UN culture and structure are evident in global RCE meetings that occur annually, while some RCEs are notable for employing UN concepts, such as having general assemblies, within their regions. The culture of the UN associated with its being a non-European, post-colonial, global institution also contributes to the potential for RCEs to have a more inclusive approach to knowledge production.

Openness and Support for Organizations Engaged in Primary Livelihood Practices

The previous analysis has shown the key institutional and organizational role of higher education in these multisectoral learning partnerships; the innovative use of ideas and institutions from the newest institutional sector of the time in devising their models of research and scholarly governance; and the role of those organizations engaged in providing social support and maintaining the social order in devising research questions, conducting transformative education and providing initial supports. Yet these multisectoral learning partnerships are also noteworthy for their openness to the participation of further organizational forms, particularly those engaged in the dominant or primary forms of livelihood practices during the time period and upon which the learning partnerships have considerable impact over the long-term. A key difference between each organization is the type of systems of production (and resulting livelihoods) dominating during each period, with the Trilingual Colleges emerging in a period with resources brokered among elite aristocratic families, the Royal Society with strong state systems of tribute paid to and dispensed by centralized authorities (e.g. monarchies), and RCEs with the global dominance of market organizations and industrial production systems. At the same time, each organization makes compelling appeals to these livelihood systems. The humanist education of the Trilingual College appealed to members of the aristocracy, administrators and other professionals. The Royal Society formally engaged state power, specifically that of the monarchy, when King Charles II gave it a Royal Charter. The Royal Society also had significant benefits for both

governments and the merchant class with the advent of the Industrial Revolution. Finally, RCEs themselves are notable for their diverse participation that includes those engaged in market-based livelihood practices (e.g. small, medium and large businesses and cooperatives), non-governmental organizations, schools, faith organizations and members of the general public.

It should be noted that specific benefits were thought to accrue to organizations engaged in the dominant livelihood practices of the day by the respective founders of the new scholarly partnerships. Erasmus, in his work "The Education of a Christian Prince" (1516), extolled the virtues of a humanist education for the aristocracy at a time when universities were primarily dominated by priests and other church officials. In terms of supporting aristocratic values, Erasmus and others viewed the study of classical languages as promoting eloquence and the "pleasing expression" of ideas (DeVocht, 1951, vol. 1, p. 157), something that would benefit those of higher social standing. In addition, a humanist education was thought to create virtue and produce civic utility through the direct study of religious scriptures and other classical works that offered practical ethical instruction (Shapin, 1996, p. 127). Nicolas Vernulaeus noted the success of the Trilingual College stating, "There has not been during these hundred years in any part of the commonwealth any one of any renown or any doctrine, who has not been a disciple in this College, which is in fact the Palaestra of Princes, of Nobility and of Great Men" (cited in DeVocht, 1951, vol.1, p.1). In the case of the Royal Society, Sir Francis Bacon, whose work "The New Atlantis" (1627) envisioned scientific inquiry and inspired the formation of the Royal Society, viewed the rise of science as having significant benefits for the state. In this work, the king of an imagined land establishes "Salomon's House" that does research to extend natural philosophy (science) and expand state power. In this imagined house, scientific labs were populated by government officials (Shapin, 1996, p. 130).

Despite relatively minimal support of the monarchy for the Royal Society in its early stages, the Society proved to have significant benefits to the state akin to those envisioned by Bacon. Its scientific discoveries in geography and navigation advanced British military power and trade, specifically at sea (see Jacob, 1988, p. 64). Scientific innovations also helped advance industry and agriculture with new mechanical devices, which produced wealth that was deemed to promote general utility that, in turn, supported social order (ibid, pp. 30-31, 92). Science also provided a basis for shared beliefs after Europe's centuries of religious sectarianism (Shapin, 1996, pp. 122-125). The RCE network in its early stages has also sought to advance sustainable development for market-based livelihood activities. This has included specific work at its global conferences focusing on the topics of SCP as well as specific initiatives in this area at a regional level to create market opportunities (see Fadeeva, Payyappallimana & Petry, 2012; Chapters 3 and 4). More generally, the RCE network has significant opportunities for benefiting business (see Box 10.3).

Benefits to Newer Organizational Forms

Worthy of note are the benefits that each multisectoral scholarly partnership has had for those organizational forms that were the newest or the most cutting edge in a given time period: in the case of the Trilingual College, the growing role of the state and government; in the case of the Royal Society, the emerging productive role of the merchant or business class; and in the case of RCEs, an increasing productive role for the not-for-profit or voluntary sector. In the case of governments, the study of Latin and Greek through the Trilingual College was important in understanding elements of earlier judicial systems of the Roman Empire (such as the *Codex Justinianus* and the *Codex Theodosianus*), which, in turn, was important to the revival of the study of law in the West and the rise of state authority (DeVocht, 1951, vol. 1, p. vi). Students of the Trilingual College also filled the demand for secretaries and advisers to the state, and for school masters by towns (ibid, p. 239). In the case of the Royal Society, from 1660 there had been a commitment of the Society to be useful to trade and industry, which included developing the scientific knowledge needed for many significant industrial innovations (Jacob, 1998, p. 130). Its success is perhaps reflected in there being more than 100 working steam engines in Britain by 1730 (ibid.). Finally, RCEs, with their emphasis on sustaining human well-being and ecosystem health as goals of sustainable development, can play a central role in advancing the objectives of not-for-profit human service agencies and environmental non-governmental organizations. In doing so, RCEs also build community capacity for increased volunteerism.

Innovations in Knowledge Sharing

With new forms of knowledge production also come innovations in the forms of *knowledge dissemination*. In terms of written or otherwise codified knowledge, the Trilingual College advanced the authentication and publication of complete classical works versus earlier incomplete compilations (DeVocht, 1951, vol. 1, p. 191); old manuscripts in European libraries were also itemized and catalogued, a practice of Busleyden (the College's benefactor) during his lifetime (ibid, vol. 1, pp. 3-4). Experiments of the Royal Society were recorded in minute detail to enable replication by others; these scientific materials, methods and findings were then published in the first scientific journals (Shapin, 1996, pp. 107-108). Many RCEs seek to document and study existing and evolving educational practices for sustainable development in their respective communities, finding ways to store and manage this content in online and other formats for a diversity of community users, both within and outside higher education. At the same time, each educational partnership develops new ways for sharing experiential knowledge (i.e. know-how or tacit knowledge). As previously discussed, the Trilingual College pioneered free lectures on languages that were open to all members of the university without these lectures being part of any set curriculum or being focused on a particular practical aim (DeVocht, 1951, vol. 1, p. vi). The Royal Society held performances of specialized experiments at its meetings where the audience acted as witnesses to these experiments (Shapin, 1996, p. 107). Many RCEs have taken a decentralized approach to knowledge production and are in the process of creating regional learning spaces or "living laboratories" where various alternative livelihood practices (tied to traditional knowledge, local community history, locally available materials, and learning opportunities associated within a given ecosystem) can be studied by multiple educational sectors (e.g. school systems, universities, technical and vocational institutes, and the general public; see, for example, Fadeeva et al., 2012,

Ch. 5). In terms of diffusion of new knowledge, what is also notable is the relatively rapid rate at which this occurs in these new scholarly partnerships that, in turn, helps prove their social usefulness in their formative years.[20]

Concluding Reflections

The previous analysis suggests that organizational innovation through the formation of new multisectoral learning organizations outside the traditional academy (specifically the *Trilingual College of Leuven*, Belgium (1517), the *Royal Society of London* (1660), and UNU's *RCE initiative* (2005)) have played (or in the case of RCEs may potentially play) a central role in creating and formalizing research and disseminating new forms of knowledge (in this case, humanistic knowledge, scientific knowledge, and knowledge for sustainable development respectively). These two earlier knowledge systems, in turn, played a crucial role in moving to new systems of production (such as the industrial revolution in the case of scientific knowledge). The RCEs share important institutional parallels with these two earlier multisectoral learning partnerships suggesting that the global RCE network could play an important role in advancing sustainable development on a global scale.

These historic parallels with earlier scholarly networks also point to the scholarly potential of the RCE initiative in pioneering new forms of knowledge production for higher education organizations including advancing their educational goals and those of other organizations (such as the UN). The preceding analysis suggests that considerable institutional complexity underlies these new scholarly partnerships. Such complexity possibly constrains the range of new forms of scholarly institutions that can emerge and be successful in globally advancing sustainability in a timely, efficient, and effective way, especially in light of significant global institutional and resource constraints. Lastly, it points to the potential value of participation by a range of organizational sectors (perhaps, most especially, business and the voluntary sector) in specific RCEs and the RCE initiative more generally, in order to advance their own organizational possibilities in times of increasing uncertainty and resource constraints.

20 In the case of the Trilingual College of Leuven, Jerome Busleyden died in August, 1517, and already by October of that year, Erasmus had engaged the executors of Busleyden's will to hire a professor of Greek and of Hebrew to give lectures at the university (DeVocht, 1951, vol. 1, p. 60). The publication of the first scientific journal, the *Philosophical Transactions of the Royal Society* began within five years of its founding. Many RCEs within a year or so of their acknowledgement by UNU have already established their own websites and content management systems for documenting and sharing knowledge within their respective RCEs and between RCEs. Many also engage in mapping ESD projects in their region. In a short time period, extensive work has also been done to create global portals for RCE knowledge-sharing. Many traditional academic publications in established academic journals have also emerged from the work of RCEs.

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Supporting Smarter Development through Knowledge-based Collaboration

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As Chair of the DESD in 2009 and 2013 and throughout six years' work with the Interagency Committee (a highly motivated and committed group of UN partners) on implementing the DESD, I had the pleasure of close association with the UNU-led global network of RCEs. This network was initiated at the beginning of the DESD to implement what is embodied by ESD. Growing and investing in this network is supporting transformation towards sustainable development at scale. I participated in two RCE network annual conferences – Kerkrade, Netherlands, 2011, and Barcelona, Spain, 2010; and in a regional meeting of the RCE network of the Americas in Peru in 2013. I also had the privilege to be invited to present at a special RCE seminar session during the 5th Tokyo International Conference on African Development (TICAD V) at UNU in Japan in 2013. These engagements made me an avid supporter of the network. I believe in its vision, its knowledge and learning mandate, and its multistakeholder membership in the context of doing development better.

We all know that business-as-usual has not been a sustainable pathway for development. The traditional economic planning framework has been shortsighted. A progressive sustainable economic development framework from which to monitor or evaluate sustainable development is the Inclusive Wealth (IW) framework. IW's expanded vision rests on the premise that development is sustainable if the value of its capital assets does not decline (Clark, 2014). The IW framework includes five capitals which hold risks inherent to overall global progress, productivity and livelihoods: 1) natural capital, 2) human capital, 3) manufactured capital, 4) knowledge capital, and 5) social capital. The framework factors in the major development concerns, which include environmental externalities, knowledge, human and social equity, capacities and capital.

I view the work of RCEs through this progressive sustainable development framework. The RCE network is more than a network for development. It has a membership that includes like-minded persons and a constituency that puts a premium on knowledge capital in development. Knowledge in development as a concept was born in the mid-20th century. In the 1950s, UNESCO coined the phrase "infor-

mation famine" in reference to the gap between the information rich (developed countries) and the information poor (developing and third world countries); during the 1970s and 80s, the same problem was leveraged as the "global digital divide" (Hamelink, 2002). These concepts are linked to the ability of economies or countries to *invest in research and learning opportunities, including applied work, with universities for development planning* – an ability which requires access to resources, an infrastructure to create new knowledge or research, and the understanding of this evidence base to effectively apply and utilize it. A related concept is knowledge management which, simply expressed, means "managing (and learning) through the effective application of knowledge". Systems for managing knowledge effectively for development are called "learning systems". Based on more than 20 years of work experience on sustainable development with the UN and its partners, I believe the key to sustainable development for all is access to knowledge and the ability to use it effectively. It is about knowledge management and knowledge facilitation to build human and social capital.

The consideration of knowledge inputs, needs and gaps is inherent in all sustainable development, but this consideration alone is not enough. The work of sustainable development must also be inclusive, with a representative mix of people who represent and provide knowledge inputs from all of society: civil society, private sector, science, policy, different cultures and groups, youth, women and children. There must be a quality assurance system in place for inclusive and sustainable development planning. There must be a science and evidence base, and also the right mix for ascertaining the important baselines for measuring local results, namely, participation, environment, social and political inputs for better design, monitoring and development management, and adaptive livelihoods initiatives. When evidence-based knowledge and systemic learning for change are considered from this perspective (as inputs or capitals in terms of our productive base), it adds an instrumental value of including "knowledge (traditional and science based) and learning and a learning-systems approach" in all development planning and interventions.

RCEs fulfill a missing piece of the SD puzzle for sustainability – local ownership of issues and facilitation of learning and action. It is the essential component for dynamic environmental and ecosystems management and towards a longer-term sustainable development objective. The RCE network puts a premium on local knowledge, knowledge capture, knowledge-sharing and local learning, which in turn promote local empowerment, stronger evidence-based development decisions and positive collaborative actions.

The evolution of the RCE network is a timely global movement with a multistakeholder membership uniquely led, in most cases, by education institutions. With education and knowledge at the core of its learning, capacity-building and sustainable development approach, the network's orientation is the right mix needed for transformative change. At the forefront of an RCE's unique mandate is its work on capacity strengthening at three levels – individual, organizational and systemic. It is also about promoting local leadership for empowering action through knowledge and learning.

The RCEs have a non-hierarchical multistakeholder membership with local, regional and global nodes equally supported by institutions of learning and local governments. While all nodes are important for information dissemination and building new knowledge and collaboration, the local level nodes are most powerful for leveraging bottom-up change in development practices, as they promote collaboration and are knowledge brokers. They seek out the local knowledge owners – civil society and youth in particular. For youth the network plays a special role, filling a huge global void. Universities, which form a sizable portion of RCE membership, are the places where youth live, convene and organize. RCE networks globally are providing a platform for youth to organize around sustainability issues through multistakeholder engagement. RCEs bring in the right mix for local planning and actions around sustainable development. The key is engaging the leadership from the institutions of learning that in turn empower government departments and other local stakeholders to work collaboratively on sustainability issues. And no matter what the local challenges are, tapping the knowledge power of the capacity-strengthening network that facilitates partnerships is what is needed to support sustainable development, and that is at the core of the RCE network's mandate.

The network promotes the still necessary triangular and south-south cooperation. It also promotes regional and global technology transfer, facilitates and bridges unconventional partnerships, and includes universities and youth in development planning. It highlights the importance of the inclusion of local and traditional knowledge, supports diversity and youth empowerment and organization, and promotes smarter development choices. RCEs are the local centres for knowledge, teaching, ideas and action on sustainable development; building local capacities for long-term sustainable development management; and creating a unique multistakeholder partnership that enables people to get involved in solving problems and developing systems for what promises to be a dynamic and more sustainable future.

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RCEs: The IAU Perspective

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The RCE network, launched in Nagoya at the start of the DESD, was a bold and forward-looking initiative. The brainchild of UNU-IAS, the RCE network quickly gained acceptance internationally as evidenced by the numbers of RCEs established – from a mere seven pioneering RCEs at the beginning of the Decade in 2005 to nearly 130 in 2014. This has enabled ESD to be recognized globally as the cornerstone of education of the future. The RCEs, of which several stakeholders are active members of the International Association of Universities (IAU), have demonstrated their relevance as well as flexibility to be inclusive in pursuing the goals of sustainable development.

This is indeed a very fundamental change from the current approach in education that is stifled by siloed thinking, resulting in fragmented and compartmentalized actions, if at all. This approach fails to capture the essentials of sustainable development that is all all-encompassing and cross-sectoral in nature. The RCE is potentially an alternative institution that is more conducive to being the platform that recognizes multistakeholder partnerships allowing for the adoption of a more systematic transdisciplinary thinking in the quest for a comprehensive understanding of the issues at hand. The solutions to be arrived at need to allow for the interlinking of different entities at various levels – local, national, regional and global on the one hand, and people, planet, prosperity and politics on the other. The new approach is about complementarity rather than competition; about the whole, rather than the particular; and about the well-being of community as opposed to that of an individual or a select few. Ultimately, it is about convergence of knowledge and know-how.

In the case of RCEs, the convergence is achieved through interlinkages among varied knowledge entities. Interlinking can be operationalized in at least three very different ways, namely: vertically, between different levels of formal educational and knowledge-based institutions; horizontally, between formal educational and/or knowledge-based organizations of the same level; and laterally or diagonally, involving other types of organizations (including educational and knowledge-based) that advocate ESD in more non-formal or informal ways. The resultant of

the interlinkages can lay a firm ground for the emergence of sustainability-led institutions and communities as alternatives for the new millennium in the attempt to change the status quo. Stepwise, this can lead to the clustering of RCEs (forming Regional Clusters of Expertise) based on common themes and knowledge, and not confined to just locale.

Understood and shaped this way, the RCE is transformational in its mission and futuristic in its orientation. Ushered in on transdisciplinary modalities, it helps to create new and innovative vistas for a more proficient higher education system in the age of sustainability. Institutions are no longer ivory towers, but engaged in improving the quality of life by centring on human dignity based on humanitarian values. In other words, education is no longer confined only to measuring tangibles for ascertaining its real worth, but also the intangibles which are complementary to the former in ensuring that values basic to building positive relationships and partnerships (for example, trust) are not compromised. It has been highlighted that unless the relationships between human beings and nature, and the partnerships among fellow humans are solidly rooted, sustainable development can be an uphill task.

In many respects, the RCE experiment resonates strongly with organizations like the IAU. Founded in 1950 under the auspices of UNESCO as the leading global association of HEIs, IAU aspires to build a worldwide higher education community where the state of relationships and partner-ships are pivotal. In fact, IAU believes in strengthening academic solidarity among HEIs by promoting cooperation and collaboration instead of competition. Secondly, because IAU members come from diverse regions (more than 130 countries), actions on common priorities are vital to strongly reflect genuine inclusiveness and sensitivities in voicing the needs of a globalized higher education and articulating issues of shared interest and concerns. Notable among these are upholding the values of academic freedom and institutional autonomy while promoting greater accountability, and having sustainable development as the overarching goal of education in the 21st century and beyond.

Finally, as IAU is values-based, among its aims is to promote, through teaching and research, the principles of freedom and social justice, of human dignity and solidarity. IAU contributes to these principles by strengthening international cooperation among universities and through partnerships between key HEIs and other stakeholders. Indeed, it encourages institutions to develop their own policies and strategies based on guidelines developed by IAU following widespread consultations, including on ESD (see http://www.iau-aiu.net/content/sustainable-development, especially the IAU ESD Portal).

More specifically, in line with the ideals of RCEs, IAU (a) upholds the fundamental principles for which every university should stand, namely, the right to pursue knowledge for its own sake, and to promote and uphold the tolerance of divergent opinion as well as freedom from political interference; (b) promotes equitable access, success and equal opportunities for students, researchers, faculty and staff; (c) contributes to the development of knowledge, higher education and research in public interest; (d) encourages the pursuit of diversity and quality while respecting cultural differences, and (e) strengthens academic solidarity among HEIs while promoting cooperation rather than competition. In short, IAU complements the four main thrusts of ESD that are embedded in the operations of RCEs, namely, to (1) improve access to quality education, (2) re-orient existing education to address sustainable development, (3) develop public understanding and awareness, and (4) provide training programs for all sectors of society, private and public alike.

In the final analysis, IAU shares the aspiration to co-create a Global Learning Space (which overlaps with IAU's vision of "building a worldwide higher education community") for Sustainable Development as spelled out in the UNU-IAS (2005) document *Mobilising for Education for Sustainable Development: Towards a Global Learning Space based on Regional Centres of Expertise*. Indeed, Hans van Ginkel, then Rector of UNU (who is also a former IAU President) wrote, "RCEs together and their mutual relations would form the Global Learning Space for Sustainable Development – the major outcome of DESD"; more so with the impending formation of RCEs as clusters rather than centres as the next step. As stated in the document, higher education plays a vital role in shaping the future by educating the professionals of tomorrow. Given the emerging challenges such as globalization that have the potential to undo what has been achieved so far by the RCEs, higher education must address issues inherent in the quest for a sustainable future if the Global Learning Space is to be a reality.

This is where the thrust to transform and re-orient education towards ESD is imperative by purveying the "right" knowledge, principles, skills and values that subscribe to the sustainability worldview. In order to live sustainably, the vital elements of moderation and balance (as in all organic systems) must be the guiding principles of sustainable livelihoods. This can be traced back to the sustainable societies of yesteryears anchored in indigenous wisdom that respects relationships and partnerships in adopting sustainability as a way of life. In no uncertain terms, relationships and partnerships are regarded as part of the sacred, violating which will result in dire consequences, as we see and experience today. In modern times this can only be possible if the same respect for relationships is accorded among the various knowledge-based entities and disciplines by making them whole once again in a convergence that gives deeper meaning to sustainability as a major tenet for 21st century living.

Through successful initiatives like the RCEs, the time has come to reclaim the ethos of education that regards people as valued members of the global community, and is anchored to values to nourish humanity as its core responsibility and purpose in the 21st century. This can be the first step to transcend the current marketplace logic and practices that distort education as no more than a cog in a dysfunctional, mechanized world dictated by unsustainable modes of thinking. For instance, the trend to corporatize and commoditize education by subscribing to the hallmark of so-called competitive benchmarking, ranking and marketability has demeaned the authority and deep-seated purpose of education to such an extent that university education, in particular, has been rendered unsustainable as it is drawn into the web of the "education-industry complex" – an analogy similar to Eisenhower's "military-industrial complex". The consequences too are equally devastating on a global scale, as clearly demonstrated by many longstanding, almost intractable global divides, disparities and cultural insensitivities giving rise to a myriad of potential conflicts and tensions that could threaten the Global Learning Space as an outcome of the DESD.

To conclude, while it is vital to recognize the achievements of the RCEs in pushing the agenda for change through ESD, the full impact of it all will not be felt until the global demands of being more equitable, inclusive and balanced is achieved with the Global Learning Space for Sustainable Development. This is where IAU can be a strong partner, taking RCEs to the next level.

RCEs: From a Dream to Reality

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Dreams

In 2000, while we were preparing for the World Summit on Sustainable Development, the idea of the RCEs seemed like an unrealistic dream, maybe something for a very distant future. The idea grew out of many thoughts and processes including the Lüneburg Declaration (2001) where the idea of regional centres was launched for the first time. Now, 15 years later, no less than 129 officially acknowledged and active RCEs in 50 countries have become a reality, proving that dreams can come true when they are systematically pursued in concrete, realistic steps and with the support and hard work of many dedicated initiators all around the world. Dreams, visions, ideas, creativity are all based on diverse and challenging experiences. They are rooted in a strong sense of belonging, of responsibility, in a strong belief that the future can be different and better. But that can happen only when we make it different and when we are able to motivate others as well to contribute – their ideas, convictions, creativity and willingness to achieve a better world and a more sustainable future.

Experiences

I was lucky to have many diverse opportunities to gain valuable experiences in a range of functions and positions in my active working life. I started as a young teacher of geography and history in a secondary school. Then I became, at Utrecht University, a teacher trainer as well as an author of school curricula and examination programs. Being heavily involved in all these activities I realized that all school subjects were developed independently, without giving any attention to the ways in which they were related and could support each other. Even in the same subject area there was very little awareness of what happens in other school types or at other school levels. I became more and more convinced that it is crucial to link the programs with each other in different subject areas, in different school types and at different levels. It is obvious that much improvement is possible and necessary to make education, as we know it, a much more useful learning experience.

In my research and in field work with students I gained other experiences. In the valleys of the Alps in Austria, cities in the socialist countries of Central and East-ern Europe and Southeast Asia, and suburbs in the peat and clay areas in the

Randstad Holland, it became clear to me that environment, development, society and, therefore, sustainability are very different topics and ideas in different places and regions, raising very different issues and challenges and presenting very different opportunities to address these. Because of my interest in planning and development issues, I also became increasingly involved in administrative issues and was invited to chair the meetings of the City of Utrecht, 12 smaller municipalities, the province and the relevant national ministries on physical planning for the central part of the country. That is how I became convinced that universities must contribute their expertise and knowledge actively to the development of their own city and region.

The logical next step in my professional life was to get involved in university administration. In fact, in part this came in parallel to my activities for the city and region. In line with my interests and orientation, I soon became responsible for the international cooperation activities of Utrecht University, then of the European Universities, and then also of the International Association of Universities. Just by chance I discovered that the preparatory meeting for the founding of the IAU (Nice, 1950) had been held at Utrecht University in 1948 and immediately I felt committed. I then had the good luck of being picked in 1987 by Prof. Giuseppe Caputo (1936-91), vice-rector of the University of Bologna, to be a member of the team of authors of the *Magna Charta Universitatum* released at the 900th anniversary of the University in 1988.

A Breakthrough

The Magna Charta is, to my knowledge, the first document that clearly hints at issues that we regard now as the basis of education for sustainable development. It was also the most successful of all declarations: it was signed in 1988 by 430 university rectors and presidents, and by now has been signed by 756 from 80 different countries. In the preamble, the Magna Charta (1988) already states that:

> *... the universities' task of spreading knowledge among the younger generation implies that, in today's world, they must also serve society as a whole, and that the cultural, social and economic future of society requires, in particular, a considerable investment in continuing education ... universities must give future generations education and training that will teach them, and through them others, to respect the great harmonies of their natural environment and of life itself.*

Also in 1987 and 1988 the concerns of the member universities in Poland, the Baltic and the Danube regions induced the Conference of European Rectors (CRE, now European University Association (EUA)) to develop a program comparable to the Erasmus Programme, to enhance international cooperation and student mobility that would be open to universities and students in Central and Eastern Europe and be focused on topics related to environment, pollution and sustainable development. The name chosen was Copernicus (COoperation Programme in Europe for Research on Nature and Industry through Coordinated University Studies), after the Polish astronomer Nicolaus Copernicus. The Copernicus Programme was quite successful in the 1990s, thanks partly to a substantial financial contribution of the Swedish government. It focused on specific activities of importance, in particular, for the universities in the former socialist countries. For instance, new university-level handbooks were prepared on some very new topics

in a post-socialist reality, namely, *environmental law* and *environmental economics*. For a number of years Copernicus also organized summer courses in Budapest on these issues. Many universities in Europe also began to improve their programs with regard to environmental issues. At Utrecht we developed what is now the leading institute in the Netherlands on energy and sustainability – the Copernicus Institute. Copernicus was very active, but late, with developing its charter. This was only presented in 1993, in fact challenged by the International Chamber of Commerce (also located in Geneva, like the Conference of European Rectors) that presented its charter in 1991. At present, Copernicus works as an effective network organization (Copernicus Alliance). It also gave rise to the Baltic University Program; again with significant support from the Swedish government.

In the university world the first major declaration, the Talloires Declaration, came from Tufts University in 1990. This was soon followed by others such as Swansea, Halifax, IAU's Kyoto Declaration and the Copernicus Charter (for an overview of these declarations see the IAU website). The years leading up to Johannesburg (WSSD 2002) experienced an upsurge of renewed activity in the world of higher education. For the first time the higher education community from around the world came together at the Copernicus meeting in Lüneburg to jointly prepare a clear input to the WSSD. Two crucial decisions were taken by the participants representing the Global Higher Education for Sustainability Partnership (IAU, Copernicus, University Leaders for a Sustainable Future, UNESCO, UNU). The first was to team up with all other organizations representing education and science. For this reason in Johannesburg the Ubuntu Alliance was formed, and the Ubuntu Declaration adopted. The second decision was to change the focus from environmental education, sustainability or sustainable development education, to "(all) education for sustainable development". The idea was to focus on *mainstreaming sustainable development* in education so that it would get due attention in the framework of all relevant subjects. So, the math teacher could address global warming while explaining the role, value and functioning of mathematical models, the chemistry teacher could focus on emissions and air pollution and the economics teacher could pay attention to green budgeting. In this way education for sustainable development became the other side of the same coin of "(*quality*) education for all". A breakthrough, indeed!

RCEs and the Global Learning Space

We are once again on the threshold of a challenging new phase; soon the DESD will be concluded and we are discussing the Global Action Programme for 2015 and beyond. Next year the MDG phase too will end. Since Rio+20 we have been discussing what will be next, and we are preparing the *Sustainable Development Goals (SDGs)*. This name already indicates a sea change compared to the situation in 2000. At the beginning of this century and millennium it was difficult to find general approval to include "*sustaining the future*" in the MDGs. Now, it is clear that sustainable development is at the core of the future SDGs and this is clearly reflected in the *Outcome Document* of the *Open Working Group on Sustainable Development Goals*. It seems likely that the envisaged SDGs will give ample space for the further development of programs and activities with regard to education for sustainable development, as proposed by UNESCO in its Global Action Programme. This will enable us to continue and re-invigorate the activities we started in the Decade, and to look to the possibilities to start new activities as appropriate.

For the time being, however, we can still refer ourselves and our activities to UNESCO's *Framework* and *Implementation Scheme* for the DESD. These were prepared with major institutions and organizations active in the field of ESD and they still provide ample opportunities for innovative and effective activities. In the post-DESD phase the overarching goal of ESD will continue to be to:

> *... integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all....DESD is aiming to promote a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation (UNESCO, 2006).*

To achieve this, education should, among others, be: (1) *locally relevant*, addressing local as well as global issues; (2) applicable, offering learning experiences integrated in day-to-day personal and professional life; (3) strengthen the capacity for critical thinking and problem solving, as well as for participatory decisionmaking; and (4) interdisciplinary, holistic, values-driven and multi-method.

It is good to realize that environment, development, and society, and therefore sustainable development, are *different from place to place*, for each formal (historical) region such as Catalunya or the Pantanal, and for each functional region such as the Ruhr area or the Pearl River Delta. It is crucial to start at this scale, as these regional entities are characterized by their common characteristics, challenges and opportunities. Only there will it be possible to offer learning experiences that are locally relevant and contextual, and offer opportunities for participatory decision-making. This was the reason why the Ubuntu Alliance (2002) decided to focus its activities, as indicated by the last paragraph of its Declaration:

> *To achieve these challenges and objectives, we are resolved to work towards a new global learning space on education and sustainability that promotes cooperation and exchange between institutions at all levels and in all sectors of education around the world. The space must be developed on the basis of international networks of institutions and the creation of regional centres of expertise, which bring together universities, polytechnics, and institutions of secondary education and primary schools. We invite all other responsible stakeholders to join us in this endeavour.*

Of course, the participants could only speak for themselves, but the last line clearly indicates that they envisaged their RCEs to really become multistakeholder networks of learning, uniquely positioned, for instance, to experiment with new practices and ideas with regard to sustainable development issues and mainstream them into existing systems and curricula, and to open up spaces for the non-engaged to participate and contribute. Multistakeholder networks of learning are what the 129 RCEs really are. Of course the RCEs and the Global Learning Space that will be created by their cooperation in regional and thematic or issue-based ways, do provide the best opportunity to bring the ideals of ESD as formulated in UNESCO's *Framework and Implementation Scheme* to fruition. Thanks to their multistakeholder character, RCEs are also well equipped to play pragmatic, supportive roles in promoting and strengthening sustainable development in their respective regions.

In 2002 the initiators of the Ubuntu Alliance and the RCE program expected their initiative to be one of the most innovative and promising to generate worldwide activity and support for ESD. They estimated that by the end of the Decade there could be at least 100 RCEs, distributed over all continents. The potential of these RCEs to mobilize institutions and people for ESD cannot easily be over-estimated. At present there are 129 officially acknowledged, functioning RCEs. Just imagine that each of these has on average seven active institutions and each institution has seven active people (though a gross under-estimation). It means that this program has mobilized more than 6,000 people at least (129 RCEs x 7 active institutions x 7 active people). As they are all directly involved in education, just imagine what this means in terms of involved learners! When each of the participating institutions takes on the responsibility for just one project, there will be more than 900 projects ongoing (129 RCEs x 7 active institutions x 1 active project). Such is the *mobilizing potential* of the RCE system. The Global Learning Space, too, is stepwise becoming a reality, with already a great number of functioning regional, thematic and issue-based networks of RCEs. "Think global, act local" will be made possible thanks to the development of the RCEs. However, the opposite, "think local, act global" is equally true. The real challenge in trying to achieve a better world and a more sustainable future lies in the need to *link our actions at the different levels* – from local to global and the other way around. The twin concepts, RCEs and the Global Learning Space (GLS), offer the opportunity to continuously work on the appropriate and efficient linking between our ambitions and actions on the different levels of geographical scale.

A Look Ahead

Looking forward to 2015 and beyond some thoughts, however, should be developed about the future of the RCE/GLS system. The Ubuntu Committee of Peers might promote some activities, here, together with the Global RCE Service Centre:

1. Much attention should continuously be given to the further growth of the *number and programs* of the RCEs.

2. The efforts to create the Global Learning Space for ESD should be enhanced and given a higher priority. Taking into account the developments during the Decade, it seems that networking of RCEs at different geographical scales takes place almost naturally. This is so partly because of the impact of geographical proximity and partly because RCEs that are not too far away also function under more comparable circumstances and cope with more recognizable issues. Learning from each other, in particular from RCEs working *under quite different conditions* and confronted with quite different sustainable development situations and issues, however, is crucial for a better *global understanding*. Therefore, it is important for the post-DESD era to systematically develop more and stronger thematic and issue-based international RCE networks. Some themes and issues are already selected but others *need to be strategically chosen and, where possible, linked to themes and issues that have already been prioritized by UNESCO and other agencies or international processes.*

3. It will be important to continue monitoring, while improving assessment practices, the functioning and activities of the already acknowledged RCEs and networks of RCEs, without infringing upon the freedom of individual RCEs

to develop in an optimal way within their specific conditions and taking into account the specific expertise and capabilities of the institutions and people directly involved. One way to do this is to have regular reporting on the number of projects the RCEs are working on, which is already happening. The Global RCE Service Centre and the Committee of Peers may then analyze these projects in relation to the themes and priorities of the UNESCO ESD program. In this way it would be possible to organize targeted contributions to that program. Also, it would become possible to identify critical topics, such as the eradication of poverty and hunger to achieve sustainable development, which form the work of the RCEs but are not present in UNESCO's programs.

4. Much more specific attention should be given to the activities of RCEs in relation to the sustainable development of the region of which they are part and thus serve. RCEs as multistakeholder networks of learning should learn from others in the region, but they should also participate and contribute to the region, and to the institutions and people that form the region. The Global RCE Service Centre and the Peer Group should further heighten the prestige of the awards given for such activities at the annual Global Conference. They could develop additional strategies to increase the number of valuable projects and potential candidates for this award. Jacques Delors pointed out in his report, *Learning: The Treasure from Within*, that the highest forms of learning are "to learn to do" and "to learn to live together". The extent to which the RCEs are successful in these two aspects will be decisive for their success.

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Chapter 11

Looking Ahead[1]

Zinaida Fadeeva and Unnikrishnan Payyappallimana

Learning towards Sustainability Change: Role of multistakeholder initiatives

The question this book explores relates to the role of multistakeholder, cross-sectoral, regional initiatives such as RCEs in pursuing sustainability through learning and innovation. What could RCEs do when a significant number of people move from subsistence production systems to more centralized and globalized forms of lifestyles in relation to food, energy, health care or housing? What could these constellations of partners do in conditions of rapidly accelerated changes underlying financial, economic and ecosystem crises and an array of challenges that transcend generations, are futuristic and not fully predictable in nature? Most importantly, what would be the potential of networks of sustainability learning and practice in a situation where global governance systems for sustainable development are still evolving? What would be their role when challenges related to sustainable production and consumption, biodiversity and ecosystems, cultural diversity, health, human rights, peace and security, urbanization, poverty, inequality and increasing geographical, locational or technological disparities are at a stage where significant progress in terms of conceptualization, commitment and actions is required?

[1] This section draws, in part, on the earlier ideas shared in Fadeeva & Payyappallimana (2013). *Moving Forward: Upscaling and mainstreaming learning towards more sustainable systems of production and consumption and enhancing livelihood* and Payyappallimana & Fadeeva (2013). *Moving Forward: Mainstreaming and upscaling traditional knowledge and biodiversity practices*, both published as part of Learning Contributions of the Regional Centres of Expertise on Education for Sustainable Development by UNU-IAS.

These questions are especially critical now, when the global community is taking stock of the major sustainability processes related to Agenda 21 and the MDGs, and the focus is on the new journey towards the SDGs, an intergovernmental process launched at Rio+20.

The authors suggest that aspirations towards a more sustainable society based on principles of equity, well-being, ecosystems sustainability, resource efficiency, economic sufficiency, inclusive development and societal resilience cannot be completely realized solely through the aid of international frameworks or instruments. The critical component of developing more sustainable systems requires a focus on local action and learning that becomes a testing stone of national and international visions at the community level. Such initiatives become innovation and sustainable development nodes locally, and are also expected to be policy advocates and architects of the new regional, national and international sustainability regimes. Experiences of communities such as RCEs, in addition to demonstrating abilities to address the need for development locally, show opportunities for growth that would eventually become the elements of the distributed sustainability governance system.

Global Player in Furthering Sustainability

The multiplicity of contextualized development strategies through educational interventions makes the RCE network a unique place for showcasing how local multistakeholders valuing sustainability can synergize actions under a common umbrella for collective action. They also portray the relevance of a global space for concerted action and understanding of the significance of local actions, be it in the area of sustainability or education for sustainability.

Box 11.1
SDG Goal 4: Ensure inclusive and equitable quality education and promote life-long learning opportunities for all

4.7 By 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development

(Source: Introduction to the proposal of the open working group for sustainable development goals, http://sustainabledevelopment.un.org/focussdgs.html)

At the time of writing this chapter, the Open Working Group drafting the SDGs shared with the world goals and targets for the Post-2015 Development Agenda (UN, 2014). The document, which puts people at the centre of development, states as one of its overarching objectives, "Poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production and protecting and managing the natural resource base of economic and social development". Importantly, it recognizes the need for the vision and approaches that are "in accordance with its national circumstances and priorities" (paragraph 13); but the success of implementation will be supported by a global partnership for sustainable development (paragraph 14). This together with Goal 4, "Ensure inclusive and equitable quality education and promote life-long learning opportunities for all", make the RCE networks especially interesting for the sustainable development community.

Even with the SDGs being still at the stage of formulation and evolution, RCEs remain a powerful means of implementation of the sustainability agenda as inter-

preted by the regions. This is because the functions of the RCE network align perfectly with SDG Goal 17 (as per the proposal retrieved in early September; see Box 11.2), "Strengthen the means of implementation and revitalize the global partnership for sustainable development" (UN, 2014).

With learning and innovation at the heart of their activities, RCEs are not just able to respond to the problems of the region but are also able to develop and test ideas for the future of their regions while providing national and international processes with feedback on offered sustainability strategies.

Developing a Foundation for Sustainable Development through Learning

Over the last decade the RCEs have shown innovative results in areas where they face many barriers due to the complexity of issues that they address. The regional backdrop of an RCE's work often comprises the still dominant fragmentation of the development agenda with limited alliance among priorities and neglect of some issues, compartmentalized knowledge expertise, lack of coordination among the key stakeholders of development, divergence in strategic goals, non-alignment of operational practices, and varied geopolitical interests. Rectifying these realities is challenging as they are in the succession of practices that give legitimacy to only a few forms of knowledge and limit the definition of development to the notion of economic growth. Post-Johannesburg, sustainable development discourse called for radically different approaches that encourage learning and knowledge development by various stakeholders, including non-experts and lay experts. Though well recognized, these are still challenging undertakings.

Developing capacities of collective, problem-based and systemic approaches to learning and action is central to RCE work. On a practical note RCE projects demonstrate the interlinkages among the topics of sustainable development, e.g. biodiversity, climate, health, and local livelihood practices. RCEs emphasize the impact of various personal behaviours, policies, guiding concepts, and development approaches on sustainability aspects, as well as the complexity associated with a comprehensive approach to sustainability challenges.

Successes in developing the capacity of regions to address sustainability challenges were deemed possible because of the critical characteristics of the RCEs that enable them to look beyond conventional arrangements that foster fragmentation of the development agenda and isolate actions of regional stakeholders. The requirements of a long-term commitment to the agreed agenda aligned to regional priorities, strategies of developing sustainability competences through locally re-

Box 11.2
SDG Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

Multi-stakeholder partnerships

17.16 Enhance the global partnership for sustainable development complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technologies and financial resources to support the achievement of sustainable development goals in all countries, particularly developing countries

17.17 Encourage and promote effective public, public-private, and civil society partnerships, building on the experience and resourcing strategies of partnerships

(Source: Introduction to the proposal of the open working group for sustainable development goals, http://sustainabledevelopment.un.org/focussdgs.html)

levant actions and learning, and attention to value systems, lead to transformation of the regions from within, as demonstrated by previous chapters (see, for example, Chapters 2-4).

By engaging the knowledge and innovative potential of the regions, and by minimizing and distributing risks, RCEs create new, strategically-oriented opportunities for development. At the level of the communities, RCE initiatives provide a business case for the key themes of sustainability learning: working with innovative practices for a green economy; development of high quality TVET and engagement with the youth workforce; identifying critical nodes for livelihood improvement opportunities; appropriate technologies and local innovations; creating locally relevant consumer education processes; and pursuing opportunities for sustainable entrepreneurship, among others.

With their experience of addressing sustainability issues in various settings – rural, urban, mixed, developed and developing – and through participatory problem-oriented learning, the RCEs could provide models of co-engaged, cooperative learning in settings where alienation of the stakeholders from the issue is perpetuated by lack of knowledge and/or resources, or lack of direct experience with the problem. In the process of engagement with multistakeholder and multidisciplinary approaches, RCEs create specific regional capabilities to connect not only to local and regional learning networks but, through vertical linkages, with national and international processes as well. The experience of RCEs engaged in local projects while partnering with RCEs in other regions creates a platform for developing knowledge about different local-global systems leading to more sustainable societies. Such knowledge is being recorded, among other processes, in the course of the RCE assessment process that is conceptualized and piloted across RCE communities (Chapter 7). Connections are developed among RCEs in the course of joint projects, collective reflections and writing, and while strategizing for a greater common impact within and across different continents. These connections provide a critical global dimension necessary for addressing the challenges of SCP and sustainable livelihood in the future, by providing a deeper understanding of ongoing practices, systematic conceptualization of possible paths of development, fostering local and global policies conducive for developing sustainable societies, and forging deeper synergies among processes and programs that are focused on the issues. Of critical importance is the fact that by centring on sustainability challenges from the perspectives of developing and developed regions, the RCE community provides a unique opportunity to bring into focus the question of global justice in terms of understanding the complex responsibility of creating and mitigating problems of development.

RCEs present promising opportunities in their ambition to balance sustainable development priorities in communities and globally from different perspectives – global-local economic development, cultural issues, and questions of the supply chain. In the adoption of any perspective, relations that have already been established among the RCEs constitute a possibility of developing learning and research consortia that are required to address sustainability issues across regions. For example, a preference towards more sustainable practices that are based on the knowledge and appreciation of diversity in interpretation of the sustainability challenges along the supply chain would require significant systemic innova-

tions across countries and production sectors. Such more sustainable consumption-production systems seek new forms of incentives that secure a fair and just distribution of benefits for resource use among local and global stakeholders. A new culture of using and consuming in the professional or personal domain is necessary to create preferences that lead to sustenance and revitalization of ecosystems. Such, often radical, changes in priorities are a challenging task as implications for different choices have to be understood and negotiated for different groups, including the marginalized and the disadvantaged.

Developing and Unlocking the Potential of the RCE Community

Many of the examples presented in this book are still in the early stages of their implementation. However, up-scaling successful models needs immediate attention. Up-scaling here does not mean a simplistic replication of practices. Moreover, due to the contextual nature of such experiences they may not be amenable to abstraction, though the process learning elements can be promoted far and wide. A comprehensive strategy is needed to understand these models of local and regional networking and collective learning, to support them and enable them to make a deeper impact through engagement in relevant partnerships and policy processes.

In the final section of this chapter, and as a complementary view to the future vision of the RCE community expressed by the authors representing the RCE community (Chapter 9), some initial ideas on the position of the RCEs as a global force for sustainable development and thoughts on leveraging RCE actions and their impact are offered.

Developing Local Capabilities for Sustainability and Learning in Partnerships

Today, the RCE consortium and its stakeholders take stock of its 10-year history and plan for the future with visionary aspirations and strategies (Chapter 10). Based on its long engagement with the RCEs through development of concepts, strategies, support of actions and research, the ESD team of UNU-IAS highlights a number of priorities that help strengthen the RCE community and facilitate its input in a cohesive and effective sustainability process.

One of the challenges of initiating projects that are significant in scope, scale and innovative potential is the enhanced capacity of the regional networks to initiate ongoing learning in critical sustainability areas. *Developing capacities, through specifically designed and implemented change projects of the RCEs in action research and transformative learning* would help unlock the potential of the regions to address various challenges of development. Importantly, *more ambitious coordinating functions need to be developed in order to facilitate reflection, application and evaluation* of RCE learning experiences to enable meaningful development of long-term sustainability practices. Unlocking local capabilities for learning and innovation would not only unleash national processes, but would also address the often pinpointed social, environmental and economic conflicts that occur across the regions.

Development and Strengthening of Collaborative Adoptive Governance: Towards greater resilience of the regions

The RCE community is a unique partner in developing and testing sustainability governance where learning is important in order to shed the dominance of certain universal discourses and enable a multiplicity of models and voices. For example, through meaningful engagement with traditional communities, RCEs could offer a promising setting for preserving and growing the diversity of contemporarily-relevant traditional, generational and largely oral knowledge that, in many communities, is now limited to a few traditional knowledge holders and is at risk of disappearing. Through growing trust and community links at the levels of values, knowledge and practices, such learning could be strengthened through appropriate participatory learning and assessment methodologies, especially among youth through an intergenerational educational process both in formal as well as informal learning settings.

Strengthening collaborative adoptive distributed governance and coordination is also to be encouraged in the RCE networks in order to ensure continuity in RCE activities, especially in regions undergoing rapid changes. Coping with such changes and shaping them, which is critical, requires governance built on principles of collaboration, networking, learning, and innovation in response to the unfolding circumstances, dilemmas and surprises.

Purposefully increased attention to the adoptive collaborative governance would increase the potential of the RCEs to contribute to the resilience of the regions. This would, however, require more focused learning about systems of decisionmaking and the effect of nuances such as the selection of direction of actions when several directions are available, timing of making and implementing decisions, and synergies among projects on the overall results. This book demonstrates that RCEs possess all the values (attention to diversity, including biodiversity, equality, development from within, etc.), capabilities and understanding of research and learning (including appreciation of diversity of perspectives and frameworks that govern research), and established practices providing feedback to the stakeholders (including timing and frameworks of the assessment) that would make them capable of bringing together sustainability and resilience thinking.

Sustaining Continuity of RCE Actions

Many RCEs are initially led by strong facilitating organizations (and individuals within these organizations), have a purposeful and persistent distribution of responsibilities and are accompanied by capacity-building in partnerships development and coordination. This minimizes problems of agency, facilitates stronger collective knowledge development and actions and, generally, increases the vitality of RCE networks. One of the main strategic directions will now be to find new champions, connect them to regional and global processes, and engage them with project formulation and policy work.

At the global level, there is also a need to strengthen the process for identifying and supporting RCEs that struggle to sustain their existence. De-listing them for underperformance too soon would not be advisable as enormous effort and collective learning are necessary in the early stages for establishing a fully functioning RCE. Careful identification of the challenges of continuous collaborative work as

Participants at the 7th Global RCE Conference in Tongyeong, Republic of Korea

well as of supportive strategies, delivered from inside the region by the RCE community and the Global RCE Service Centre, would need to be carefully elaborated and further tested.

Consolidating Inter-RCE Actions

The RCE community looks to develop in its capability not only to address sustainability challenges but also to grow in number and outreach. A more strategic approach to coordination of actions among existing RCEs and to attracting the attention of territories with pressing sustainability issues, might assist in consolidation of the local, subnational partners in addressing sustainability challenges. These responses are seen as complementary to the already unfolding coordination among the RCEs on a continental basis and within thematic clusters. For example, India has 11 RCEs that are not only effective in finding local sustainability solutions but also in exploring coordination mechanisms among themselves and with other relevant networks. Other rapidly transitioning countries such as China, Russia, South Africa and Brazil have a much smaller presence of RCEs, an aspect that needs focused attention. Strikingly, in most countries RCEs are located in rapidly growing cities, which have a multitude of challenges of unsustainability. Such RCEs, especially those that are strongly networked with local governments and other public sector organizations, could play a critical role in advancing learning and sharing both within their own network as well as with potential entrants to the network. For example, whereas there are more than a few city networks aligning for advancing sustainable development in urbanization, an exclusive consortium focused on education and sustainable development can be envisaged through the RCE partners. Apart from addressing changes at the community level, the consortium could play a central role in redesigning development and educational policies.

Box 11.3
GAP Priority Action Areas

Local communities
Implementation:
12. Accelerate the search for sustainable development solutions at the local level through ESD. Effective and innovative solutions to sustainable development challenges are frequently developed at the local level. Multi-stakeholder dialogue and cooperation play a key role in this, for example, between local governments, non-governmental organizations, the private sector, media, education and research institutions, and individual citizens. ESD supports multi-stakeholder learning and community engagement, and links the local to the global. The full mobilization of education and learning for sustainable development calls for enhanced action at the local level. This requires in particular the following:

(a) Local networks that facilitate multi-stakeholder learning for sustainable development are developed, operationalized and enhanced. This includes the diversification and expansion of existing networks, so that new and more stakeholders are integrated, including indigenous communities.

(b) Local authorities and governments enhance their role in providing learning opportunities for sustainable development. This includes, as appropriate, supporting, at the local level, the integration of ESD in formal education, as well as the provision of, and support to, non-formal and informal learning opportunities in sustainable development for all members of the community.

Source: UNESCO, 2013.

Creating Synergies with Global Networks, Processes and Policies

Fulfilling the local, national and international objectives of ESD and the aspirations of developing sustainable practices requires thoughtful engagement of local, national and global processes. The consideration of justice and long-term consequences of unsustainable practices do require assessment of local action contributions to more environmentally balanced and dignified life and the effect of global policies on local quality of life. Such an ambitious task calls for the engagement of the RCE community with the practices of international networks and organizations that facilitate development of sustainability policy and practices in various areas of sustainable development. For example, in relation to more sustainable consumption and production and livelihood practices, a strong potential for collaboration might exist with National Cleaner Production Centres (NCPCs) facilitated by UNIDO and UNEP, Global Centres of UNDP, UNDP Equator Initiative network, network of ASEAN Centres, university networks such as MESA operating in Africa, ProSPER.Net in Asia-Pacific, or Copernicus Alliance in Europe.

Creation of synergies with like-minded initiatives would need to be complemented with policy engagement relevant to sustainable production and consumption and sustainable livelihoods. Established at Rio+20, the 10-Year Framework of Programmes on SCP – a global framework for cooperation to accelerate transition towards SCP and resource-efficient systems in developed and developing countries – is an example of the global policy processes that give an opportunity to align the actions of many partners. Critically, advancing the ESD agenda would require stronger engagement with the post-DESD agenda, alongside the UNESCO Global Action Programme and beyond. Cross-sectoral learning engagements of the RCEs within and across the regions provide an opportunity for the RCEs to contribute to all five priority areas of GAP (Chapter 8), with a key focus being to upscale learning at local communities as outlined in GAP (see Box 11.2). Moreover, it lends a chance to engage with these areas simultaneously (Chapter 9) linking them to other sustainability and learning processes.

To achieve the full potential of such partnerships in realizing broad goals of mobilizing and building expertise in delivering SCP and livelihood actions, there is a need to conduct a broad assessment of the expertise available in the respective networks, including the entire RCE community, and of the expertise required in

various countries. Such mapping would identify opportunities for South-South, North-South and triangular collaborations among RCE partners and partners of other networks. With collaborative projects in place, it would be important for collaborating networks and partners to develop channels to continuously respond to the existing gaps in expertise by identifying, developing and disseminating analytical tools, policies and best practices to support sustainability institutions and projects, while continuing to learn from these activities.

Engagement with the communities outside their own RCEs and developing collaborative clusters of learn-ing and action with other networks, organizations and processes pursuing goals of sustainability has to become a key strategic direction of the RCE community in developing clusters of actions. Experience developed by individual RCEs, their groups or the entire community, especially in the area of learning for change, becomes a valuable contribution to many communities of practice. Yet, such engagement would require careful facilitation and ground work that analyzes potential synergies in goals and actions.

Strengthening the capacity of RCEs to contribute to SD through broader regional and cluster engagements would need to be advanced through several means. These would include developing platforms for exchanging information, knowledge and practices; developing training modules for and with various groups; developing curricula for formal education, notably higher education institutions; and facilitating research for supporting knowledge and practices in the critical areas of development.

Conclusion

The DESD has facilitated a strategy – preliminary, yet profound – towards local-global networking in ESD. To empower these initiatives and get them moving beyond pilot models, serious efforts focused on knowledge coordination and new financing mechanisms are required, along with learning for innovative self-governance systems already in place.

Processes of innovation and collective-learning towards regional sustainability solutions would have to unfold synergistically with national and global policies and frameworks. RCEs have proven to be a dynamic consortium that can facilitate development of the required system.

Serving for many years as a resource and facilitating partner for the RCE community, UNU-IAS will continue facilitation of capacity-building, research and policy engagement functions among RCEs. These could be done also to facilitate advancement of the sustainability agenda in line with global processes such as the Convention on Biological Diversity, the UN Framework Convention on Climate Change (UNFCCC), the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), the 10-Year Framework Programmes on SCP (10YFP), FAO Youth engagement, etc. While many of these actions are still to be put in place in close consultation with RCE stakeholders, the direction of actions will be guided by the strategic directions discussed earlier and will aim at development of RCE governance systems, supporting continuity of RCE actions, consolidating collaborative alliances among RCEs, and between RCEs and other networks and

processes, while growing the number of RCEs especially in under-represented regions. This would require a systematic assessment of the needs of the regions and identification on where RCEs could make the largest impact. It would also require mobilization of the RCEs and their stakeholders in facilitating new RCE networks in these regions.

Sustaining the continuity of RCE actions would demand, in addition to a stronger emphasis on capacity development of the current champions, identification and empowerment of new leaders and undertaking action research to provide the network partners with evidence of RCE contributions to regional development. UNU-IAS believes that facilitating thematic and strategic clustering of joint inter-RCE programs as well as regional networks will require enhancement of the capacity of RCEs to engage, and of strengthening communication channels at local and international levels. It will take additional efforts to increase motivation and visibility by highlighting best practices through publications, recognition awards and so on.

Development and strengthening collaborative adoptive governance will require continuation of UNU-IAS networking with other UN and multilateral, regional and national agencies and networks, including through the UN interagency committees working with questions of ESD and sustainability. Such engagement could bring learning from other UN agencies and international processes to enhance the quality of RCE work.

Driven by the ambition of creating a functioning Global Learning Space for SD, which is still in its early stages, while promoting diverse and contextual development models on the ground, UNU-IAS will move forward resolutely post-2014 to engage with GAP as well as SDG commitments.

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List of Abbreviations

ABS	Access and Benefit Sharing
AAEAP	ASEAN Environmental Education Action Plans
ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
CEE	Centre for Environment Education
COP	Conference of Parties
CSD	UN Commission on Sustainable Development
CSP	Community Sustainability Partnership
CSR	Corporate Social Responsibility
DESD	United Nations Decade of Education for Sustainable Development
EA	Ecosystem Approach
EFA	Education for All
ESD	Education for Sustainable Development
GAP	Global Action Programme
GLS	Global Learning Space
HEI	Higher Education Institution
IAU	International Association of Universities
ICA	International Cooperative Alliance
ILO	International Labour Organization
IUCN	International Union for Conservation of Nature
MDGs	Millennium Development Goals
NGO	Non-governmental Organization
OECD	Organisation for Economic Co-operation and Development
OPEDUCA	Open Educational Areas
PISA	Program for International Student Achievement
ProSPER.Net	Promotion of Sustainability in Postgraduate Education and Research Network
RCE	Regional Centre of Expertise on Education for Sustainable Development
SADC	South African Development Community
SCP	Sustainable Consumption and Production
SD	Sustainable Development
SDGs	Sustainable Development Goals
SADC REEP	Southern African Development Community's Regional Environmental Education Programme
SME	Small and Medium Enterprises
TERI	The Energy and Resources Institute
TICAD	Tokyo International Conference on African Development
TK	Traditional Knowledge
TVET	Technical and Vocational Education and Training
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
UNU	United Nations University
UNU-IAS	United Nations University Institute for the Advanced Study of Sustainability, formerly the United Nations University Institute of Advanced Studies
UWS	University of Western Sydney
WCED	World Commission on Environment and Development
WHO	World Health Organization
WSSD	Word Summit on Sustainable Development
YUVA	Youth Unite for Voluntary Action

Participants at the 8th Global RCE Conference in Nairobi, Kenya


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