REGIONAL ENVIRONMENTAL EDUCATION PROGRAMME

This report presents the key findings, conclusions and recommendations of a study that was conducted to assess the capacities of the Southern African Development Community (SADC) and its Member States (Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe) to implement international environment, sustainable development and education agreements. The purpose of the report is to inform and increase the relevance, effectiveness and impact of capacity building for policy implementation.

In partnership with

FUTURE CAPACITY BUILDING

Capacity Assessment for Environmental Policy Implementation

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ACRONYMS

ACDF	African Capacity Development Foundation
ADEA	Association for Development of Education in Africa
AIDS	Acquired Immune Deficiency Syndrome
AMCEN	African Ministerial Conference on the Environment
ANAFE	African Network for Agriculture, Agro-forestry and Natural Resources Management Education
AU	African Union
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resources Management
CCARDESA	Centre for the Coordination of Agricultural Research for Development in Southern Africa
CCD	Convention to Combat Desertification
CDM	Clean Development Mechanism
CFC	Chlorofluorocarbons
CoP	Conference of Parties
CSOs	Civil Society Organisations
DEA	Department of Environment
DRC	Democratic Republic of Congo
EAP	Environment Action Plan
EEASA	Environmental Education Association of Southern Africa
EMA	Environment Management Authority
EMPs	Environment Management Plans
EMPS	Environment Management Plans of Seychelles
ESD	Education for Sustainable Development
FANR	Food Agriculture and Natural Resources
FCCC	Framework Convention on Climate Change
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHGs	Green House Gases
GIS	Geographical Information Systems
GMOs	Genetically Modified Organisms
HIV	Human Immuno-deficiency Virus
ICT	Information Communication Technologies
IES	Institute of Environmental Studies
IMF	International Monetary Fund
IUCN	International Union for the Conservation of Nature and Natural Resources of Fauna and Flora/ World Conservation Union
MDG	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MEPD	Ministry of Economic Planning and Development
MESA	Mainstreaming Environment and Sustainability in African Universities and Colleges
MICOA	Ministry for the Coordination of Environmental Actions
MoE & NDU	Ministry of Environment and National Development Unit
MoF & ED	Ministry of Finance and Economic Development
MPD	Ministry of Planning and Development

NCSAs	National Capacity Self Assessment
NEPAD	New Partnership for Africa's Development
NGOs	Non Governmental Organisations
NRM	Natural Resource Management
OECD	Organisation of Economic Cooperation and Development
POPs	Persistent Organic Pollutants
RCEs	Regional Centres of Expertise
REEP	Regional Environmental Education Programme
RISDP	Regional Indicative Strategic Development Plan
SADC	Southern African Development Community
SARDC	Southern African Research and Documentation Centre
SCARDA	Strengthening Capacity for Agricultural Research for Development in Africa
SETA	Sector Education and Training Authority
Sida	Swedish International Development Cooperation Agency
SIDS	Small Islands Development States
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WB	World Bank
WESSA	Wildlife and Environment Society of South Africa

EXECUTIVE SUMMARY

This report discusses the key findings, conclusions and recommendations of a study that was conducted to assess the capacities of the Southern African Development Community (SADC) and its 15 Member States (Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe) to implement international environment, sustainable development and education agreements. The capacity assessment study was commissioned by SADC Regional Education Environmental Programme (REEP) and was conducted over a period of six months (May – October 2011).

SADC REEP is a project of SADC whose mandate is aligned with SADC Regional Indicative Strategic Development Plan (RISDP) intervention area number 7 (Environment and Sustainable Development). The Wildlife and Environment Society of South Africa (WESSA) was chosen by SADC to manage the implementation of REEP since its inception in 1996 (SADC REEP, 2010). SADC REEP is mandated to support Member States to implement environment, sustainable development and education policy; and one of its major intervention strategies is to facilitate capacity development.

The purpose of the study was to increase the relevance, effectiveness and impact of SADC REEP and related capacity building organisations in the region to support Member States to implement the Multilateral Environmental Agreements (MEAs). The specific **objectives** of the study were to:

Identify capacity needs of the SADC region to implement regional and global environmental and sustainable development and education policy and associated national policies;

Identify constraints and enablers of implementing regional and international policy on environment, sustainable development and education policy and associated national policies;

Identify priority sectors and capacities in the SADC region; and

Make recommendations on how environment and capacity building institutions in the region should help address priority capacity needs.

The report is organised into five sections: the **Introduction** which gives the background, purpose and framing of the study; the **Methodology** that discusses how the assessment was conducted; the **Findings** which provides information on capacity issues and needs in the region; the **Conclusion** that pulls out key issues; and the **Recommendations** for environment

and sustainable development capacity building institutions (including SADC REEP).

The assessment was conducted within the broader environmental policy context in which SADC environment, sustainable development and Education for Sustainable Development (ESD) initiatives operate: the African Union's (AU) Action Plan for the Environment Initiative of 2003. The SADC RISDP is the region's framework for integration and development and defines the environment and sustainable development targets, which include the implementation of MEAs. The capacity assessment study recognised and built on National Capacity Self Assessments (NCSAs) that were conducted under the Global Environment Facility (GEF) of the United Nations Development Programme (UNDP) covering the three Rio Conventions on climate change, biological diversity and combating desertification. The study assessed capacities at systemic, institutional and human capacity levels at SADC and Member State levels. It worked with a definition of international convention implementation which covers (a) 'Translation' of MEAs into regional policies and protocols; (b) 'Domestication' of regional policies and protocols; (c) Development of associated partnerships, structures and systems; strategies, action plans and programmes; (d) Carrying out of activities; and (e) Monitoring, evaluation and lesson-learning, reporting and feeding back into international agreements. The study focused on the following ten environmental sectors: Air Quality; Waste and Pollution; Hazardous Chemicals Management; Energy; Climate Change; Biodiversity and Natural Heritage; Sustainable Land Management; Forestry; Marine and Inland Water Resources; and Education and Training.

The capacity assessment was participatory and iterative involving a range of stakeholders from selected countries. The following research methods were used: document analysis; key informant and semi-structured interviews; focus group discussions; regional workshop of SADC Directors of Wildlife, Tourism and Forestry; national data generation workshops; and a regional feedback workshop. Over 210 people (see Annex 1) from 14 SADC Member States have contributed to the study.[1]

[1] We could not get direct input from Madagascar because it was suspended from SADC membership during the study.

Research participants included SADC Members State policy makers, policy implementers and capacity builders/developers. Employing various methods of data collation and iterative processes enabled research rigour, cross-checking and validation of the data. Primary data was collected from countries that were purposively sampled. Seven countries (Malawi, Zimbabwe, Democratic Republic of Congo, Swaziland, Botswana, Tanzania and Seychelles) were visited for primary data collection. Although South Africa and Namibia were among the initial list of selected countries, they were not visited because they had recently conducted similar assessments in 2010 and 2011 respectively. The main study limitations were gaining access in time and inadequate representation of certain environment sectors by participants.

The study established the main **systemic capacity issues** in SADC as:

Poverty and the relatively high population dependence on direct use of natural resources;

Relatively low priority given to environment and sustainable development education in SADC and most SADC Member States;

Low national incomes (Gross Domestic Product) and prevalence of poverty leading to over-dependence on natural resources;

Poor alignment between donor priorities and those of SADC and SADC Member States;

High dependence on donor funding for the implementation of MEAs in the region;

HIV/AIDS, which has eroded human capacities;

Social and military instability (current and recent), which compromises environmental governance and triggers rural-urban migration; and

Proneness to the negative effects of climate change due to geographical location (e.g. small island states).

The main **institutional capacity needs** identified are summarised in the following table:

Sector	Reasons	Human Capacity Needs
Climate change	Affects virtually all sectors. Affects food production systems.	Climate change modeling, climate change adaptation; Clean technology development, absorption and use; Risk and opportunity assessment; Space science; atmospheric sciences.
Land management	Most economies are agrarian. Majority of the region's people dependent on land resources including soil, forests and woodlands.	Agro-ecological planning and management; Integrated land use planning and management; Extension and knowledge sharing; Adaptive and integrated land planning and management.
Inland and marine water resources	High population dependence on these resources. Important economy driver.	Earth sciences; Aquatic biology; Oceanic sciences; Fisheries and aquaculture; Watershed management.
Biodiversity	High diversity and endemism; Important contributor to national incomes. Ecosystems as carbon sinks basis for sustainable development.	Biological sciences; Environmental economics; Intellectual property rights; Taxonomy; Law enforcement; Biosystematics; Bio-prospecting; Bio-safety; Community based natural resources management; Biodiversity managers.
Waste and pollution	Danger to human health.	Environmental health and protection; Waste management researchers; Rural and urban planners; Environmental engineers; Toxicologists; Landfill designers; Clean technology development.

The mainstreaming of ESD into environment, sustainable development and education theory, policy and practice was identified as a key cross-cutting issue that is essential for the development of the necessary human capacities. More specific **cross-cutting capacity needs** were identified as:

Integrative skills that allow individuals to work with other sectors and other stakeholders in a participatory and symbiotic manner;

Environmental leadership skills that enable individuals to move beyond their disciplines and mobilise distributed knowledge, skills and attitudes to address complex environment, sustainable development and education needs;

Resource mobilisation and accountability skills which enables individuals to identify and tap into international and local funds available for supporting fair and sustainable development;

Policy development and review skills that both enable individuals to mainstream new developments in a coherent and holistic manner; and provide a framework for different sectors to work together effectively;

Knowledge and values generation and brokering skills that enable individuals to draw on different ways of knowledge to address issues of technology development, environmental ethics, social and economic justice;

Risk management skills that enable the determination and management of risks in a proactive and strategic manner; and

Monitoring, evaluation and insight generation skills that allow for continuous learning and improvements that result in the improvement of practices, theories and methodologies, policies and operating contexts, including feeding into Conference of Parties (CoPs).

The study recommendations are addressed to environment and sustainable development capacity building institutions in SADC, which include SADC REEP. The

key recommendations are that the capacity building institutions should:

Strategically contribute to SADC's policy development and review processes;

Directly take part in the translation of regional policies and protocols into implementable plans;

Give more emphasis to institutional capacity development of relevant institutions of Member States, especially national environmental education centres and programmes;

Review their own organisational and institutional development, given the dynamic nature of the issues to which they must respond over years; and

Conduct periodic capacity assessments of implementation of MEAs and associated human and institutional capacity needs.

01 INTRODUCTION

Capacity profiling and capacity needs assessments are upstream activities that countries should conduct to inform the development and implementation of projects and programmes intended to develop capacity.

— African Capacity Development Foundation, ACDF, 2011, p. 11

PURPOSE OF THE STUDY

This report discusses emerging findings and recommendations of a study that was conducted to assess the capacities of the Southern African Development Community (SADC) and SADC Member States to implement international environment, sustainable development and education agreements. The purpose of the study was to increase the relevance and effectiveness of SADC Regional Environmental Education Programme (REEP) and related capacity building institutions of the region to support Member States to implement the Multilateral Environmental Agreements (MEAs). The specific objectives of the study were to:

Identify capacity needs of SADC region to implement regional and global environmental and sustainable development and education policy and associated national policies;

Identify constraints and enablers of implementing regional and international policy on environment, sustainable development and education policy and associated national policies;

Identify priority sectors and capacities in the SADC region; and

Make recommendations on how priority capacity needs should be addressed.

CONTEXT OF THE STUDY

The study was commissioned by the SADC Regional Environmental Education Programme (REEP) which was initiated in 1993 to support Member States to implement environment, sustainable development and education policy, using capacity development as one of its major intervention strategies. The provisions of the SADC Protocol on Education and Training, the New Partnership for Africa's Development (NEPAD) Action Plan on the Environment, and various natural resources and agriculture SADC Protocols and Declarations stress the importance of capacity building for ensuring effective implementation of international conventions and agreements (NEPAD, 2003; SADC RISDP, 2004). It was against this background that this study was commissioned.

The assessment covered SADC, which is made up of 15 countries: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar (suspended during the time of the study), Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe.

The broader environmental policy context within which SADC environment and Education for Sustainable Development (ESD) initiatives operates is the African Union's (AU) Action Plan for the Environment Initiative (EAP) of 2003 which was adopted by the United Nations (UN) General Assembly. According to UNEP's fourth Global Environmental Outlook report, "The EAP seeks to address Africa's environmental challenges, while combating poverty, and promoting socio-economic development". It was prepared by the African Ministerial Conference on Environment (AMCEN), a pan-African forum for Ministers of Environment that was established in 1985. The forum provides a framework for Africa's environmental policy orientation, while at the same time defending Africa's interests at the international stage. In a sense, therefore, the EAP and the AMCEN help define Africa's and, subsequently, SADC's relations with the international community in matters of environment and sustainable development. According to the second Africa Environment Outlook report (UNEP, 2006), Africa's environmental approach (which covers SADC) developed in the context of a Renaissance for the Environment and is guided by the thinking that:

Environmental policies need to be complemented by policies and programmes that address issues of poverty and equity, technology, research and development, trade and investment, and infrastructure development;

Environmental, economic and political interdependence calls for regional cooperation, building on and sharing resources for the common good, and not putting the interests of one nation against another;

People – the focus of development – need to be seen not as a homogenous bundle but as specific groups and individuals, and policy needs to address their specific needs; and

Mainstreaming natural resource management issues in all development initiatives to facilitate effective, efficient and equitable use, and proper valuation of their contribution to sustainable development.

The SADC Regional Indicative Strategic Development Plan (RISDP) is the region's framework for integration and development. It sets priorities, policies and strategies for achieving the long-term development of SADC. The framework defines environment and sustainable development targets, which include the implementation of MEAs. Some of the targets for the RISDP, which are relevant to this study are:

Principles of sustainable development integrated into country policies and programmes and reverse the loss of environmental degradation by 2015;

Legal instrument for regional cooperation in environment and natural resources finalised by 2006;

Environmental standards and guidelines developed and being implemented by 2008;

Strategy and programme for the management of the Brown Environment in southern Africa finalised and being implemented in 2005; and

Adoption of environment-responsive planning and implementation processes, regular environment and sustainable development capacity building and training programmes in compliance with MEAs by 2007.

The purpose and targets of SADC's RISDP as discussed above provided an important rationale for conducting of the capacity assessment that SADC REEP commissioned.

FRAMING OF THE STUDY

Freshwater and coastal ecosystems, including fisheries and wetlands, are especially important in small islands ... The initial guidance material for conducting the NCSAs focused in a thematic assessment for each of the three ratified Rio Conventions (CBD, CCD, and FCCC). As the NCSA process evolved over the years, countries were encouraged to look into other environmental focal areas, particularly those that are related to the global environmental agenda ... Other key environmental priorities highlighted in the NCSAs include: air pollution: urban air quality; pollution in the urban environment; toxic wastes; hazardous chemicals; food security; disaster preparedness.

— UNDP, 2010, pp. 33-34

The study recognised and built on National Capacity Self Assessments (NCSAs) that were conducted under the Global Environment Facility (GEF) of United Nations Development Programme (UNDP) covering the three Rio Conventions (UNDP, 2010). Its framing

was largely guided by the notions of capacity and implementation. The study drew on UNDP and Organisation of Economic Cooperation and Development (OECD) definitions of capacity. According to the OECD, capacity refers to "the ability of people, organisations, and society as a whole to manage their affairs successfully". The UNDP (2010) defines capacity as:

Capacity is the sum of a series of conditions, intangible assets, and relationships: all parts of an organisation or a system being distributed at multiple levels. Individuals have personal abilities and attributes, or competencies that contribute to the performance of the system. Organisations and larger systems have a broad range of collective attributes, skills, abilities, and expertise, collectively termed capabilities. Capabilities can be both technical (e.g. policy analysis, natural resources assessment, financial resource management) and social-relational (e.g. mobilising and engaging actors to collaborate towards a shared purpose across institutional boundaries, creating collective meaning and identity, managing the tensions between collaboration and competition). Finally, capacity refers to the overall ability of a system to perform and sustain itself. (p. 20)

In this study we assessed three types of capacity: individual, institutional and systemic. Individual capacity is concerned with a person's ability to perform tasks and is determined by one's knowledge, skills and attitudes; institutional capacity refers to "overall performance and functioning capability, such as developing mandates, tools, guidelines, and management information systems to facilitate and catalyse institutional change"; and systemic capacity is concerned with the operating environment, that is "overall policy, economic, regulatory and accountability frameworks, within which individuals and organisations operate"[2].

The study assessed capacities at four levels: human resources capacities at national level; institutional capacities of national organisations that are tasked with implementing environment, sustainable development and education policy; and country capacities to provide enabling environments. The fourth level of capacity assessed was pitched at the collective SADC. Since there were bound to be many capacity needs, the study focused on priority capacity needs – the urgent and important capacities required for implementing MEAs (South African Department of Environmental Affairs (DEA) report, 2010). Therefore the study sought to identify:

Individual capacity: human capacities for each priority environmental, sustainable development and education sectors as linked to MEAs;

Institutional capacity: regional and country institutions that are mandated to translate and implement the conventions and agreements, their individual and inter-agency strengths and weaknesses, institutional policies and mandates, equipment and related capacities; and

Systemic capacity: regional and country enablers and constraints covering infrastructure, economy, funding, political environment, over-arching policies and relations with other countries and regions.

The study also identified the following main international agreements ('Rio Conventions' and related MEAs) to which SADC Member States are signatories and whose implementation was assessed (SADC, 2008):

The Convention on Biological Diversity (CBD);

The United Nations Framework Convention on Climate Change (UNFCCC);

The United Nations Convention to Combat Desertification (UNCCD);

The Basel/Bamako Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal;

The Convention on Persistent Organic Pollutants;

The United Nations Convention on the Law of the Non-Navigational International Water Courses (1997); and

Declaration on Education for Sustainable Development.

The common theme that runs through all the conventions and MEAs and which underpins their essence is

[2] These capacity levels and definitions are based on the United Nations Development Programme (UNDP) as used in National Capacity Self-Assessments (NCSAs).

sustainability, the 'triple bottom line of development', taking into account the planet, people and prosperity simultaneously. According to Pretty (1995), sustainability implies persistence and the capacity of something to continue for a long time, resilience and the capacity to bounce back after unexpected difficulties. The Millennium Development Goals (MDGs) of the United Nations acknowledged the importance of sustainability in development by making it one of the eight development goals. Increasingly, the principle of prosperity is being associated with the growing of green economies, while the people dimension is concerned with matters of social justice and a better distribution of environmental benefits and risks. The goal of the ESD is to integrate values, principles and practices of sustainable development into all aspects of education and learning towards environmental integrity, economic viability and a socially just society for the present and future generations (UNESCO, 2005).

The concept of implementation can be inferred from obligations of signatories of Rio Convention as discussed by a UNDP report (Mugabe, Maya, Tata & Imbamba, 2000): (a) National domestication, which involves formulation or reform of policies, laws, and institutions and establishment of programmes at national levels; (b) Reporting progress to the Conference of Parties; and (c) Participating in the further elaboration and enrichment of key policy issues and achievement of consensus on matters that are still unresolved. Consistent with UNDP thinking and in line with the kinds of capacities discussed above, the study viewed implementation as residing at both SADC and national levels. In the capacity assessment study, implementation included:

'Translation' of MEAs into SADC protocols;

Domestication of SADC protocols into national policies, law and regulations;

Development of associated partnerships, capacities, structures and systems;

Development of strategies, action plans and programmes;

Funding planning, implementation, monitoring and evaluation;

Carrying out of activities on the ground; and

Associated monitoring, evaluation, lesson learning and improvement.

Since the study was not merely interpretative (seeking to understand) but was actually concerned with the taking of action (interventionist), it is also important to discuss the concept of capacity development. The study includes how capacity development can be used to address challenges and gaps. The study worked with UNEP's (2002) concept of capacity development:

A holistic enterprise, encompassing a multitude of activities [that include] building abilities, relationships and values that will enable organisations, groups and individuals to improve their performance and achieve their development objectives.

However, as one respondent pointed out, "We don't need more capacity development if it is not based on sound human capacity development principles. Neither do we need the forms of technicist capacity development that have been popular throughout the region." One of the important principles is responsiveness to the complex and changing social, environmental and economic contexts within which participants live and work (Lotz, 1999).

STRUCTURE OF THIS REPORT

The report is organised into five main sections:

Introduction, which sets the scene by defining the purpose and scope of the study;

Methodology, that discusses how the study was conducted;

Findings, which focuses on the information on capacity issues and needs in the region;

Conclusion, which synthesises findings in relation to the purpose of the study; and

Recommendations on what capacity building institutions such as SADC REEP should do to address the human and institutional capacity needs identified by the study.

02 METHODOLOGY

RESEARCH ORIENTATION

The capacity assessment was participatory in that it involved a range of stakeholders from several selected countries who assessed their capacity needs. It also involved SADC decision makers, who attended an Environment and Natural Resources Protocol workshop in Johannesburg, South Africa, 9 - 11 May 2011. The study was iterative in that it provided for cross-checking of data generated which helped validate and improve the results. Rigour was also ensured through the use of various sources of information, notably document analysis, interviews, national workshops and a regional feedback workshop.

Stratified random sampling was used to select the countries to conduct national workshops and interviews, which is consistent with qualitative research. The criteria for sampling countries to visit included the following considerations:

Recent history of social and military instability (DRC);

Small island states (Seychelles);

Small inland states with high population densities and relatively high poverty (Malawi);

Middle income states (Swaziland);

Large semi-arid countries with small populations that are sparsely distributed (Botswana and Namibia – Namibia was not visited because it conducted a similar study in 2011);

Inland countries with high dependence on land resources (Zimbabwe);

Highly urbanised and industrialised countries (South Africa – not visited because it conducted a similar assessment in 2010); and

States with large coastal areas and marine resources (Tanzania).

Another important consideration was to have representation of French speaking (DRC) and Portuguese speaking countries (Mozambique).

RESEARCH METHODS

Over 210[3] people took part in the study through participating in interviews, workshops and responding to questionnaires (Annex 1). Most of the participants were involved through national and sub-regional workshops. Policy makers, policy implementers and capacity building people comprise the majority of those who participated in the capacity assessment.

Document analysis: The main documents that were analysed include: relevant international conventions, agreements and protocols that SADC and its Members States have signed or ratified; relevant SADC regional protocols; Environmental Outlook reports; Country National Capacity Self Assessment reports; MDG reports; UNDP and UNEP global and sub-regional reports; other relevant regional and national Capacity Assessment Reports; and SADC strategic reports, assessments and plans. In addition to forming part of this report, data generated from document analysis was used to sharpen the tools used for generating primary data (interviews, focus group discussions in national workshops).

Semi-structured interviews: This research method was used to generate data from environment experts and decision makers from the seven countries visited (Swaziland, Botswana, Malawi, Democratic Republic of Congo, Lesotho, Zimbabwe, Seychelles and Tanzania), as well as the SADC Secretariat and SADC REEP staff. An average of seven people per country were interviewed, giving a total of 49 interviewees. In addition, two SADC REEP staff; four SADC REEP National Representatives; two SADC Food Agriculture and Natural Resources (FANR) Senior Programme Officers; three consultants of the SADC FANR and one from the African Network for Agriculture, Agro-forestry as well as the Natural Resources Management Education (ANAFE) southern African Chairman were interviewed. The total number of interviewees was 60. Some of the people who were interviewed also took part in the national data generation workshops.

National data generation workshops: This method was used in six of the countries that were visited (see previous paragraph). The main purpose was to generate primary data from selected Member States in a manner that allowed for some form of consensus, especially on capacity priority sectors. Each workshop lasted between two to four hours. Within each workshop, focus group discussions, feedback sessions, ranking and scoring were used. About 150 people were involved in national workshops in Botswana, DRC, Malawi, Swaziland, Zimbabwe and Tanzania. In addition, 25 Directors of Environment, Wildlife and Natural Resources Management and environmental lawyers from 11 Member States provided insights in some of the regional level challenges of capacity building.

Regional feedback workshop: A draft of this report was sent to all the 15 SADC REEP National Representatives and REEP staff for their input. It was also presented to 13 of them, four SADC REEP staff, an attachment at SADC REEP and the Environmental Education Director of WESSA for regional collective feedback at a workshop that was held in Maseru, Lesotho on 2 October 2011. The total number of participants at the workshop was 19. Most of the National Representatives had already taken part in prior data generation processes.

STUDY LIMITATIONS

The main limitation was linked to obtaining the input of all key decision makers and experts in the environment, sustainable development and education sectors in the region. In particular, the study was unable to generate much primary data from countries that were not visited because of limited time and resources. Even in the countries that hosted interviews and workshops, it was difficult to ensure representation from all sectors, especially those from Non Governmental Organisations (NGOs) and the private sector. However, in the case of one country – Namibia, first-hand and recent information on capacity needs was obtained through a similar study that was conducted by Kisaka and others in 2011, and regarding South Africa, the study benefited from a Department of Environmental Affairs 2010 study.

[3] Please note that a number of the people took part in the study more than once and therefore this figure differs from the figures in Annex 1.

03 FINDINGS

PURPOSE OF THIS SECTION

This section discusses findings of the study in relation to its objectives. The information is largely organised at regional and country levels. At the level of SADC, the focus is on identifying the main drivers of capacity needs at individual (people employed at the SADC secretariat in the unit responsible for the environment), institutional (the structures and systems that SADC has to translate international MEAs into regional protocols, strategies, and action plans) and systemic (the context that SADC is able to create, foster or sustain for the effective implementation of MEAs). At a country level, discussions of capacity also focus at these three levels as discussed earlier, outlining the notable strengths, systemic issues, institutional capacity needs, individual capacity needs, and priority sectors.

SADC'S MAJOR CAPACITY DRIVERS

Several factors drive southern Africa's capacity needs: some global, others local. The growing global realisation that the earth is a finite resource and that human beings may be exceeding its capacity to meet present consumption patterns, appears to be the primary causal explanation for capacity needs in SADC and elsewhere. This realisation has resulted in international events and MEAs that define a shared object towards sustainability, which is concerned with creatively working with meeting economic needs without compromising the environmental and social. MEAs are also underpinned by the intentions to link the local to the global, interconnect people and places while at the same time valuing their individual peculiarities. Inter-disciplinary and multi-disciplinary approaches as well as specialisation are also underlined in MEAs. The drivers for capacity needs in southern Africa can be clustered around three areas: meta-policy, ecological, and educational/technological (DEA, 2010). These are briefly discussed below.

Multilateral Environmental Agreements (MEAs): SADC and its Members States are signatories to several international environmental and sustainable development agreements which create obligations that have implications for human, institutional and systemic capacities for them. For example, being a signatory to the Convention on Biological Diversity means that SADC has to develop regional protocols and policies, ensure that these are domesticated, as well as report on biological diversity and commitments made towards conserving it. It also means developing capacities and acquiring the necessary tools for measuring biodiversity. Mainstreaming is one of the main features of domesticating environment and sustainable development agreements. This calls for integrative,

socio-relational and partnership skills at individual levels. At a systemic level, this calls for a culture of participation and mutual accountability.

Ecological drivers: Land degradation, pollution of the atmosphere and climate change are some of the key drivers of capacity needs in southern Africa and elsewhere. In SADC, land is especially important because 35% of its Gross Domestic Product (GDP) comes from agriculture, and 70% of the region's population depends on agriculture for food, income and employment (Ashton & Ramasar, 2001). Environmental degradation, for example, requires that sustainable land use concepts and practices are developed and socialised. It also calls for the establishment of learning and practice networks across countries to develop and spread innovations. Pollution and climate change on the other hand require the development of capacities to develop concepts, tools, technologies and practices that reduce greenhouse gas emissions that cause global warming and reduce the emission of chlorofluorocarbons (CFCs) that cause the depletion of the ozone layer. Since both environmental degradation and climate change have effects beyond national boundaries, there is often an imperative to collaborate with other nation states thus putting a demand on institutional and systemic capacities. In the case of biodiversity loss, many of the capacity challenges that have arisen include: information and knowledge on the status and trends of biodiversity; understanding, assessing and monitoring impacts of biodiversity loss; and poor understanding of economic uses and values of biodiversity (Mugabe et al., 2000). The need for better ways of sharing ecological "goods and bads" are of special interest at a systemic level and require global cooperation. For example, DEA (2010) noted:

Addressing water scarcity, poor water quality, and equitable access to water, climate risk and opportunity, human vulnerability to increased ecological degradation and loss of resources, loss of biodiversity and ecosystem functioning, lack of capacity to absorb waste and pollution; inadequate clean energy and equitable access to clean energy and land degradation and loss of soil productivity requires new skills. (p. 14)

Learning, research, science and innovation: Some of the drivers of capacity needs are that the taught curricula in many countries are inadequately designed and implemented to 'produce' graduates that have the required capacities to handle the complexities of present day and future challenges. This is where the tension between specialisation and trans-disciplinary approaches to curricula development and implementation arises, and where working creatively with contradictions becomes imperative. Southern Africa's institutes of higher education in many cases do not have the necessary equipment and qualified personnel to build the capacities of under-graduates and graduates to meet these sustainability challenges. At institutional and systemic levels, there is inadequate intentioned interaction between industry, learning institutions, government and civil society organisations and lack of funds, especially 'patient capital'[4], to support the desired kind of education, research and innovation.

SADC RESPONSES TO META-POLICY CAPACITY DRIVERS

SADC has responded to these capacity drivers in a number of ways, which include taking part in Pan-African initiatives aimed at addressing environment, sustainable development and education matters. One such initiative is the Environment Action Plan (EAP) which has an associated Strategic Plan for Capacity Building. The other major response is the setting up of regional mechanisms that facilitate the translation of the MEAs into regional protocols and action plans; and the third strategy has been the development of such protocols and associated strategic and action plans to support their implementation by Member States.

At SADC level the institutions that are responsible for translating international environment, sustainable development and environment policies are:

A Commission, which is established to ensure the development and implementation of a protocol. It is made up of: a Committee of Relevant Ministers; a Committee of Senior Officers (Permanent Secretaries and Directors from Member States); and a Technical Unit (composed of experts on the subject); and

The SADC Secretariat in the form of the Directorate

[4] The African Capacity Development Foundation (ACDF) (2011, p. 15) noted, "Capacity development requires 'patient capital' because the outcomes in investments in capacity … tend to come to fruition over the medium to long term".

of FANR under which the Environment and Natural Resource Management Unit falls. The SADC REEP is a programme of FANR Directorate of the SADC Secretariat whose mandate includes promoting and supporting environment and education policy development and capacity development.

SADC has developed and signed protocols and frameworks on: Education and Training, Forestry, Energy, Fisheries, Wildlife, Trans-boundary conservation and management of natural resources, Trans-frontier Conservation Framework; Shared Water Course Systems; and the Maputo Declaration on Prevention and Control of Regional and in Southern Africa and its Likely Trans-boundary Effects.

Another important response that SADC has made is the identification and utilisation of centres of excellence. These include and are not limited to Centres of Excellence for the provision of human capacity related to the UNCCD are: the Desert Research Foundation of Namibia; Tanzania's Commission on Science and Technology for sustainable rural energy development; University of South Africa in Environmental Law; University of Zimbabwe, Faculty of Agriculture in rangeland management; Farmer Support Group in appropriate technology and indigenous technology development (SADC, 2008). SADC, in partnership with other organisations such as Southern Africa Research and Documentation Centre (SARDC) and UNEP also produce an Environment Outlook Report once every four years.

The Wildlife and Environment Society of South Africa (WESSA) is one of SADC's centres of excellence in environment, sustainable development and education. It was for this reason that WESSA was assigned to host the SADC REEP by a Conference of SADC ministers. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) identified SADC REEP as a centre of excellence in facilitating ESD, while the United Nations University Institute of Advanced Studies conferred the status of Regional Centre of Expertise on ESD on SADC REEP and its local partners. SADC REEP is good at facilitating the capacity development of practitioners and policy makers through conducting short-term training regional courses, the International Training Programme on ESD that it implements with a Swedish partner, materials development, facilitating cross-regional networking, developing communities of practice and linking practitioners with policy and policy makers (Pesanayi, 2011). It enhances the capacity of policy makers through holding high level seminars and meetings, through supporting the development and popularisation of regional protocols and through producing policy briefs. SADC REEP supports institutional capacity development through decentralising its historical functions and through facilitating the development and implementation of Change Projects in organisations and institutions, and supporting the establishment of Regional Centres of Expertise (RCEs), which are implemented by multiple organisations. It has played a leading role, alongside UNEP in the preliminary efforts at Mainstreaming Environment and Sustainability in African Universities and Colleges (MESA) (Ketlhoilwe, 2011).

SADC CAPACITY NEEDS

SADC has the capacity to translate MEAs into regional policies and programmes largely because its Member States use their collective capacities in the form of experts and policy makers (the Commission). However, there is inadequate capacity at the Secretariat level because only two officers employed by FANR are responsible for environment and sustainable development issues. Of the 54 staff employed by SADC FANR Directorate, only 10 are core staff – the rest are project staff (SADC REEP is considered as a project). Core members of staff are so few largely because SADC has a policy to pay them from Member States' contributions which are not high enough to sustain a bigger and more appropriate staff complement. The study established that the main systemic capacity needs faced by SADC are relatively low budgets for implementation of MEAs as a result of low prioritisation of environment in regional and most national agendas (meaning low political commitment).

During the Joint Technical Committee Meeting of Directors of Environment, Forestry and Wildlife that was held in Johannesburg in May 2011, the following institutional capacity needs were identified at SADC level:

Environment and natural resources management is not treated as a priority in SADC. As a result when donors are prepared to invest in the environmental sector, they are directed to other sectors, resulting in them either keeping their money or redirecting it to official regional priorities;

The Ministers of Environment do not have the clout to make decisions with budgetary implications at SADC, because such power resides in the Ministers of Foreign Affairs, and of Finance; and

The staffing levels of the Environment and Natural Resource Management (NRM) units at the SADC secretariat are very low, with only two professionals. At the same time, the Environment and NRM units are subsumed under the Food, Agriculture and Natural Resources Directorate, where the budget is skewed towards agriculture. Consequently, SADC Secretariat capacity to serve Member States in the areas of environment and sustainable development has diminished. This in turn has resulted in a kind of 'regression' as evidenced by:

- The stature of SADC and its capacity to persuade the international community at negotiation declined and SADC positions have become hard to sell;
- Lost funding opportunities such as for the management of the Limpopo Trans-frontier project as there was no capacity to develop a quality proposal in the given time; and
- The Secretariat has been unable to timeously communicate to Member States efficiently and on time, or support the drafting of protocols, programmes and action plans.

In addition, Mugabe et al. (2000) identified two capacity limitations that are commonly found in Africa (and therefore in SADC as well), which are to do with weak relational agency between environmental institutions and low coherence between the environmental policies (people, institutional and conceptual relationships):

Second, all African countries seem to have limitations associated with configuring their overall and sectoral agencies in such a way as to ensure that they articulate together and effectively and efficiently mobilize and utilise human, financial and informational capitals that are in short supply … Third, the formulation and implementation of systemic environmental policies (policies that explicitly recognize and are founded on understanding of interconnectedness of various environmental facets – air, land, water, biological diversity, etc.) form another major limitation of most if not all African countries … Some of the natural resources policies run counter to the provisions of overall environmental policies. (p. 15)

Similarly, the AU's Action Plan for the Environment Initiative (EAP) of 2003 identified several institutional capacity needs faced by SADC and other African sub-regional groups. These include:

Capacity to develop policy frameworks for the effective implementation of international and regional conventions;

Preparation and implementation of comprehensive legislation to address the complexity of issues covered in international conventions;

Institutional mechanisms that allow for adequate implementation; and

Regional and sub-regional cooperation in transboundary resource matters.

Matiza-Chiuta, Sanyanga and Nyatsanza (2010) also identified another set of institutional capacity gaps, which are specific to SADC. These include capacity gaps to develop:

Land tenure systems that give incentives to communities and the private sector to conserve forests and other natural resources;

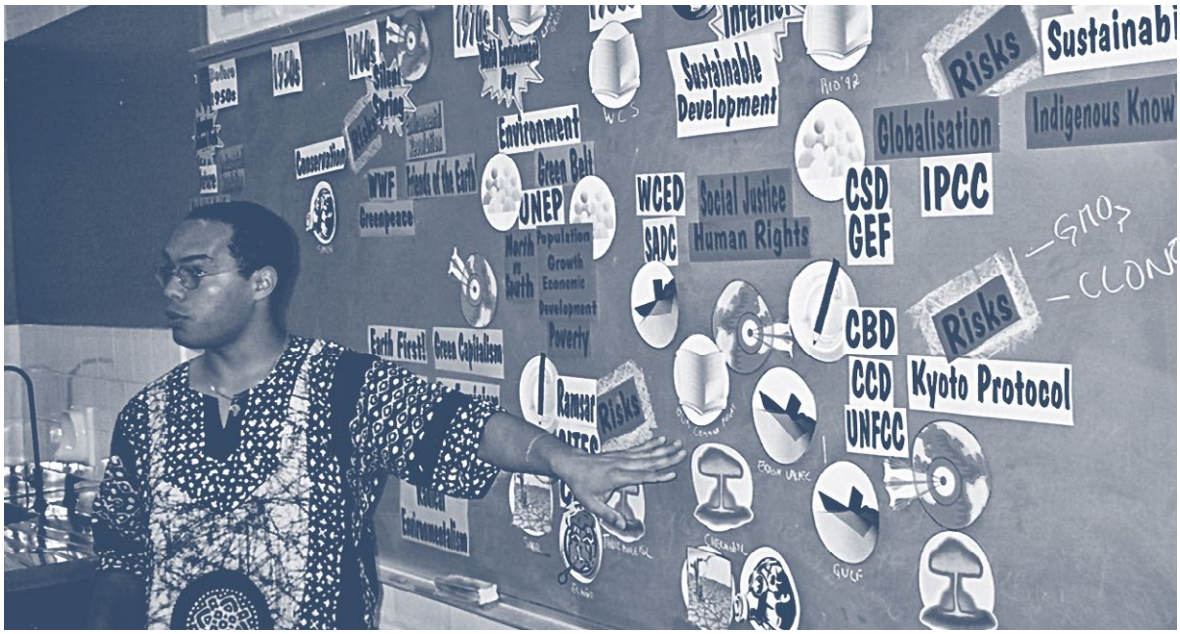
Mechanisms to regulate, the ownership, access to, and sharing of benefits from trade in international trade in genetic resources;

Mechanisms, tools and skills for the correct valuing of biological resources;

Incentives for biodiversity conservation and its sustainable use; and

Ways to efficiently acquire, absorb and use sound and clean technologies that support sustainable development and forecasting.

From capacity limitations identified in the above paragraph, it appears that SADC is not getting optimum benefits from its natural resources and is missing out on proper and adequate use of green technologies that may be available on the market. These institutional capacity gaps are therefore impinging on SADC's systemic capacity issue of economic and budgetary support for environment and sustainable



development initiatives. The potential contributions of correcting this gap appear so high that it is an area worth prioritising.

SADC REEP CAPACITY GAPS

The assessment study identified several capacity gaps in SADC REEP which have implications for broader capacity building in relation to the findings of this study. These can be clustered around curricula, focus of capacity building, profile and visibility. The study noted that curricula of SADC REEP courses have tended to focus mainly on educational applications within the education, agriculture, natural resources management, water and forestry sectors with less emphasis on the areas such as climate change and waste and pollution. This focus is, however, related to its location under the SADC Food, Agriculture and Natural Resources Directorate. Climate change has become a key focus of activities in the SADC REEP in the most recent three-year funding cycle, as it has also been emphasised at SADC FANR level and by Sida in recent policy discussions. The initial focus of capacity building has over-emphasised capacity building at practitioner level and this has limited potential impact due to institutional constraints. To address this and broaden the level and focus of capacity development will require a higher level budget framework than that allocated to the SADC REEP over the years. A specific concern raised in the study was that SADC REEP was not supporting the development of national environmental education centres as was originally planned by those who formed it. However, change projects and RCEs are intended to address this gap. SADC REEP has tended to work with and through middle management in member countries (national representatives), not through the heads of institutions such as the Permanent Secretaries[5] and this appears to be limiting its profile and visibility. In some cases this is worsened by lack of a diplomatic status, which is often accorded to SADC Secretariat. Support from core FANR staff in building an appropriate profile and visibility is sometimes compromised by inadequate communication, which in turn is attributable to understaffing at FANR, and the 'off site' location of the SADC REEP (it is not located at SADC headquarters in Botswana).

COUNTRY CAPACITY NEEDS

This sub-section focuses on the capacity needs that were identified in each SADC Member State. For each country, the report discusses systemic, institutional and individual capacity needs as identified by this study and other previous associated studies. It also discusses the main suppliers of human capacity development as well as the priority sectors for capacity development.

[5] However, it is worth noting that invitations of National Network Representatives to meetings and facilitation of national Policy Seminars are done through Permanent Secretaries.

ANGOLA

Angola has a strong culture of cross-ministry programme and project implementation in the environment and sustainable development sectors (e.g. in the fight against sea pollution). It has collected and ex situ preserved 33 000 varieties of agricultural species (Republic of Angola, Ministry of Environment, 2009). The subject of environment introduced in the basic level education curriculum and reinforcement of ideas on environment and natural resources into different sciences of nature (Republic of Angola, Ministry of Fisheries & Environment, 2002). The government of Angola is consolidating democracy, revising and developing policies and legislation based on people participation (ibid.). This has led to the development of a new Constitution in 2010. But the effects of military and political instability are still present.

The systemic capacity issues that Angola faces arise largely from its military war and political instability which lasted for about three decades and resulted in infrastructural damage, undermined environmental governance and severely diminished human capacity to manage biodiversity and related resources. Consequently, Angola has poor and inadequate sewerage facilities, solid waste removal and treatment, water supply systems and vandalism of water supply systems in cities (Government of Angola & UNDP, 2005). This is worsened by an influx of rural populations into towns and unplanned settlements in protected areas and ecologically sensitive habitats. High population direct dependence on natural resources linked to low levels of industrial development creates systemic capacity issues, with 80% of the population using biomass energy (Government of Angola & UNDP, 2005); and the associated consumption of about 5 million m^3 and 7.2 million m^3 of firewood and charcoal respectively (Republic of Angola, Ministry of Environment, 2009). Angola has high biodiversity levels and a significant number of endangered species that need capacity and mechanisms for protection. Funds allocated for implementing environment, sustainable development and education policies are low, especially given the wide range of associated challenges, the vast size of the country and the marine resources under its jurisdiction.

Angola has several institutional capacity needs. These include the capacity to develop and enforce mechanisms for the control of oil mining and transportation and for controlling and preventing damages likely to be caused by hazardous chemicals. At the same time, it lacks mechanisms and strategies for reforestation in a country where deforestation rates are high. In addition, Angola does not have adequate capacity to supply the needed specialisation and trans-disciplinary human capacity needs that are necessary for the country to implement the commitments under review (Republic of Angola, Ministry of Environment, 2009). Industrial capacity to develop and supply clean technology is low and the information management systems in government institutions are inadequate. In the area of biodiversity management, the main institutional capacity needs are associated with inadequate data collection structures and systems; inadequate supply of graduates with biological sciences; limited facilities to monitor and control biodiversity, timber exploitation and use of mangroves, coastal areas and fish resources. Angola's limited monitoring control capacities are evident in lack of bio-safety structures and systems, and limited government capacity to control settlements on coastal areas, and mining of sand near cities (ibid.). Mugabe et al. (2000) noted that Angola lacked capacity to assess land degradation. Other important institutional capacity needs are associated with climate change. These include: facilities for monitoring and predicting long term weather patterns, mechanisms for enabling climate change mitigation and adaptation, and government capacity to tap into international mechanism that support mitigation and adaptation (UNDP, 2011). ESD is partly undermined by a lack of funds to translate relevant literature into local languages – Umbundu, Kikongo, Tchokwe and Kimbundu (Republic of Angola, Ministry of Environment, 2009).

The human capacity needs of Angola range from basic to complex skills. Angola needs technical capacities to be able to enforce its legislation, and this limitation is pronounced in terms of number of people to

implement. It also needs technicians and professionals in the areas of biological sciences, environmental health, environmental law, environmental economics, land managers, information managers, curriculum developers, extension workers, climatologists, and technologists. In addition, it requires people who have integrative skills that allow for trans-disciplinary thinking and action. The main cross-cutting capacity needs are associated with environmental governance; information management; and monitoring and evaluation.

The four priority sectors for Angola appear to be Waste and Pollution Management; Biodiversity Management; Forestry, Marine and Inland and Water Resources.

BOTSWANA

Botswana is a vast country with a relatively low population. A good part of the country is semi-arid. Although Botswana produces several Green House Gases (GHGs), its ecosystems absorb more gases that it produces (Government of Botswana, 2007). The country stopped the use of Persistent Organic Pollutants (ibid.). On the energy front, Botswana introduced the Renewable Energy Based Rural Electrification Programme (Government of Botswana, 2010). It is one of the few countries whose private sector contributes significant funds to natural resources management.

The systemic capacity issues faced by Botswana are ecological, socio-political and economic. Botswana's economy is heavily dependent on mining, which produces toxic waste. At the same time, there are high transactional costs of trans-boundary agreements and differences in capacities and commitments between nations. In terms of energy use and deforestation, 23% of the urban population and 77% of the rural population is dependent on fuel wood for energy. Politically, environment is low on the country's development agenda (Government of Botswana, 2007), while socially, the high level of HIV and AIDS is killing skilled personnel and the low levels of environmental awareness among the public and the media undermine effective implementation of MEAs (Government of Botswana & UNDP, 2010). Ecologically, the harsh agro-ecological conditions, coupled with animal overpopulation, high incidence of bush fires, and proneness to negative climate change impact make Botswana a difficult place to adequately implement MEAs. In addition, Botswana is a vast country with a low population that is spread across much of the country, which leads to high infrastructural development costs per person.

The main institutional capacity needs of Botswana are associated with alignment and coordination of ministries and departments that deal with biodiversity management, range resources and forestry; the management of conflict between wildlife and livestock; and information management systems on biodiversity. Botswana lacks facilities for disposal of toxic waste (such waste is exported to South Africa for safe disposal) (Government of Botswana, 2007) and has no national inventory of unused Persistent Organic Pollutants (POPs) stocks. It has inadequate mechanisms for the devolution of tenure and user rights to communities and lacks guidelines for trans-boundary natural resources management (ibid.). In addition, the country has no specific legislation to regulate GMOs (Government of Botswana & UNDP, 2010). The country also needs facilities and systems for climate change monitoring and prediction and dependable early warning systems (Government of Botswana, 2007). The supply of climate change specialists is very low. This study established that environmental protection law is fragmented while local government and the border posts are insufficiently staffed to implement environmental health regulations.

The identified human capacity needs range from law enforcers and bio-safety technicians to system managers and conflict management facilitators to environmental lawyers (who also specialise in Intellectual

Property Rights), biological scientists, climate change modellers, climate change adaptation specialists and reviewers of environmental impact assessments (Government of Botswana, 2007). This study identified the need for environment health specialists who currently have no PhD holders among them. The specific cross-cutting capacity needs that can be inferred from the findings are capacity to: collect, manage and exchange information; define the role of sub-national and local governance structures in environmental management; negotiate at the Conference of Parties; coordinate multiple sectors; plan and carry out monitoring activities. This study established that Botswana is generally still grappling with the concept of ESD. The University of Botswana is the only institution that offers environmental education. Lack of environmental education was identified as a major constraint to be addressed in the National Conservation Strategy (SADC REEP, 2010).

The priority sectors for Botswana appear to be Climate Change; Sustainable Land Use Management and Biodiversity.

DEMOCRATIC REPUBLIC OF CONGO (DRC)

The DRC has made strides in the implementation of MEAs but its recent history of armed conflict and political instability holds back progress in some areas. Some of the noteworthy achievements made by the DRC are the development and implementation of the 2002 Forest Code that sets the framework for more equitable and balanced forest management including protection of the forest and indigenous peoples' interests (University of Gothenburg, Department of Economics, 2008); the implementation of "Sanitised villages and schools university" coordinated by the UNICEF is an initiative that aims to develop local technical know-how to help ensure long-term maintenance of water infrastructure (UNEP, 2011); and the strengthening of the Congolese Nature Conservation Institute with funds from external donors (IMF, 2010). DRC has the highest animal biodiversity in Africa, with 415 mammal species out of 756 in Africa but 38 of them are threatened, and 1096 known bird species, 26 of which are threatened (GEF, Government of DRC & UNDP, 2007). It also has about 15% of its land designated as protected area.

The systemic capacity issues faced by the DRC are similar to those of Angola. Armed conflicts contributed to environmental degradation and the breakdown of legal and institutional frameworks, which are critical to environmental management (DRC Ministry of Environment Conservation of Nature and Tourism, 2010). Poverty coupled with unclear property rights (85% of court cases deal with land disputes according to a UNESCO & UNEP report of 2005) make it difficult for the population to invest in sustainable land use management and land degradation is worsened by unplanned settlements in fragile areas such as coastal areas and cultivation of river banks and lake shores which cause sedimentation and disturb fish habitat (DRC Ministry of Environment Conservation of Nature and Tourism, 2010). Mining rights take precedence over farming and forestry (UNEP & UNESCO, 2005). Sewage infrastructure in Kinshasa is inadequate and is worsened by conflict-driven urban influx (UNEP, 2011). Siltation of major dams that generate hydro-power (Inga, Ruzizi and Lutshurukuru dams) is a major problem (ibid.). However, improvement of water and sanitation is a top government priority. The problem is that a good part of the funding for environment related projects comes from donor funds. For example, the water and sanitation sector is largely supported by donors such as Belgium, France, the World Bank, and the African Development Bank (University of Gothenburg, Department of Economics, 2008). But there is weak alignment between donor and country priorities (IMF, 2010). High levels of poverty, especially among women, drive the population to over-dependence on natural resources. For example, wood and charcoal provide 80% of all domestic energy consumed in the DRC. Ecologically, the periodic droughts in the south and seasonal flooding in the east cause natural hazards (University of Gothenburg, Department of Economics, 2008) while low yields

due to poor land husbandry and depletion of agro-genetic potential result in low coping mechanisms among rural populations (GEF, 2009).

DRC's institutional capacity needs are strongly linked to its systemic needs implied in the above paragraph. It needs capacity for legal and institutional reform. Government departments need capacities to implement their mandate and ensure adequate regulatory oversight. DRC also needs capacity to manage corruption and criminality around high value natural resources of the country partly because it lacks capacity to complete and enforce forestry legislation (DRC Ministry of Environment Conservation of Nature and Tourism, 2010). At the same time the country needs equipment and infrastructure for adding value to timber and other forest products (ibid.). DRC needs mechanisms and facilities for measuring and storing air pollution data as well as for monitoring the movement of hazardous chemicals (University of Gothenburg, Department of Economics, 2008). Ministries and organisations involved in the water and sanitation sector lack capacity to implement their mandates and ensure regulatory oversight (UNEP, 2011). This is partly because there is no Water and Sanitation Development Strategy, and could be worsened by lack of mechanisms to determine how the large pool of retiring water professionals will be replaced. Government lacks capacity to enforce its environmental legislation, including that which prohibits cultivation of ecologically fragile areas such as lake shores and river banks (ibid.). Similarly, government needs capacity to develop, manage, and monitor land projects and programmes, and to effectively coordinate the work of ministries and departments that are involved in the management of natural resources (GEF, Government of the Democratic Republic of Congo & UNDP, 2007). There are similar challenges concerned with biodiver-

sity management as national, provincial and local government structures, community and NGOs' capacity to manage biodiversity partly because of low funding and the country's low capacity to develop human capacity in conservation management (UNESCO & UNEP, 2005). Sustainable land use management is undermined by under-resourced agricultural extension institutions that lack basic means to deliver services to farmers locally, and this contributes to the limited capacities for adaptation among farmers (GEF, 2009).

In terms of human capacity needs, DRC needs environmental health technicians, law enforcers, agricultural extension staff and natural resources managers; systems managers, rural and urban planners; and environmental health scientists, chemical engineers, water engineers, biological scientists (terrestrial and aquatic). DRC also has a short supply of environmental economists (and entrepreneurs), environmental lawyers (including those specialising in property rights), rural planners, agricultural experts; and meteorologists as well as climate change adaptation analysts.

The priority sectors for the DRC appear to be Forestry; Marine and Inland Water Resources; and Sustainable Land Use Management.

LESOTHO

Environmental management has been part of Lesotho's legal system for a long time, as stated in the Laws of Lerotholi, which were based mostly on cultural norms to guide environmental management, range resources and land (Government of Lesotho, NES, 2000). Among other strategic plans and programmes that arise from MEAs, Lesotho has developed the National Biodiversity Action Plan and the Wetlands Management Programme. Groundwater quality is generally good in most parts of the country (Government of Lesotho, 2003). The significance of Lesotho's strengths in environmental management can be traced back to its environment and land management sector management responsibility within SADC before the secretariat was centralised.

The main systemic capacity issues in Lesotho are poverty which results in the overexploitation of biological resources (Government of Lesotho, 2007). For example, Lesotho has a high population dependence on biomass energy (www.undp.orgls/Energy_Environment/index.htm). HIV and AIDS is another systemic issue which erodes human capacity in the environment and other sectors (Government of Lesotho, 2007). Furthermore, Lesotho depends on South Africa and other countries for the supply of a range of environmental human capacity skills. Ecologically, Lesotho's topography and soils make it prone to soil erosion, which causes siltation of water bodies (Mosenene, 2002) while its geographical location makes it prone to climate change. Budget allocation for the environment sectors under review is generally low and this results in relatively low institutional capacities to deliver on mandates (Government of Lesotho, 2007).

Lesotho has inadequate infrastructure for water distribution, lacks capacity in the monitoring of agro chemical run-off and in the management of surface water pollution caused by the release of industrial effluents (Government of Lesotho, MDG Report, 2003). At the same time, it needs information management systems on hazardous waste as well as chemical storage and disposal facilities (Makhiba, 2006). Nature conservation legislation and a regulatory framework for trade in biological resources needs strengthening, so does the link between biological conservation and sustainable nature-based income generating activities. Monitoring, assessment and rehabilitation of ecosystems, including wetlands is weak and this is partly explained by a low levels of capacity in research, monitoring, data collection and analysis, which in turn is attributed to low government staffing levels (Government of Lesotho, 2007). Communal land tenure system is not aligned with sustainable use of land and range resources. Policy makers and the public

are not sufficiently aware of the provisions of major environmental conventions. Lesotho does not have a national policy or legal framework on climate change (ibid.).

The human capacity needs of Lesotho include range managers, foresters, environmental educators and trainers, agricultural extension workers and agro-ecological specialists. Lesotho also needs environmental health technicians and inspectors, environmental engineers in the water and sanitation sector. Other specialists required are biological scientists, environmental lawyers, information managers, systems thinkers, meteorologists and climate change adaptation scientists. The main cross-cutting capacity needs are concerned with technology development and transfer, incorporation of convention objectives into national policy and legislation, and planning and managing monitoring and evaluation processes.

The priority sectors for Lesotho appear to be Sustainable Land Management; Inland Water Resources; and Forestry.

MADAGASCAR

Madagascar is endowed with a wide range of biological diversity and high rate of endemic species – of the more than 200 000 known species found in the country, about 150 000 are endemic (www.madagascar.org). Fisheries and aquaculture are pillars of the economy. But invasive fish species have outcompeted some of the inland and freshwater fish species.

The current main systemic issue is the legitimacy of the present government, which was unconstitutionally established in 2009. This resulted in the suspension of Madagascar from SADC and withdrawal of donors such as USAID from funding certain environmental and developmental projects. High population dependence on biomass fuel has been worsened by increases in the price of oil and fuel. Fire destroys about 1% of Madagascar's remaining forest annually and forest destruction has been exacerbated by the government decision to allow export of endangered rosewood in January 2010 (www.madagascar.org). Because of topography, Madagascar has high levels of soil erosion in the central highlands.

Madagascar's institutional capacity needs include communication and collaboration between government sectors as well as between them and other players such as civil society organisations and the private sector, mechanisms and personnel to monitor and control the over-exploitation of its natural resources such as timber and fish. It lacks mechanisms and personnel to control fires, which destroy forests annually. The state's capacity to replace deforested vegetation is low. The average age of public buses in Madagascar is 11 years and this is because the country lacks capacity to import new ones. This results in high levels of pollution from traffic (www.myclimate.org).

Madagascar needs human capacities in the form of foresters, forestry extension workers and law enforcers; agricultural extension workers and agricultural specialists such as agronomists. The other groups of specialists needed are terrestrial and aquatic biological scientists and ocean scientists; environmental lawyers and environmental economists; meteorologists, climate change modelling specialists and adaptation specialists. The country's cross-cutting capacity needs are strong in the areas of negotiating at Conference of Parties, coordination of multiple sectors and actors, developing and enforcing policy, legislation and regulation, planning, monitoring and evaluation processes.

The priority sectors for Madagascar appear to be Marine and Inland Water Resources; Forestry; and Climate Change.

MALAWI

Malawi is the only country in the region that has a college dedicated to freshwater fisheries training. It also excels in the area of increased funding for the environment sector (Government of Malawi, 2007), and in increasing the area under sustainable land use management (Yaron et al., 2011). Malawi increased its population's access to basic sanitation in rural areas from 81% in 2006 to 93% in 2009 (Government of Malawi, 2009).

Malawi's systemic capacity issues are shaped by its high direct dependence on natural resources due to chronic poverty and low levels of industrialisation – leading to deforestation for fuel wood, overfishing for food and income. Population increase and population density has resulted in declining land holding sizes (Government of Malawi, 2007). The resultant deforestation has contributed to increased flash floods, sedimentation of rivers and fish habitat, higher nutrient loads and rapid growth of water weeds (Yoran et al., 2011). For example, between 1990 and 2005, the proportion of land area covered by forest declined by 5% (from 41% to 36%) because of high population dependence on fuel wood for tobacco curing and for cooking (Government of Malawi, Ministry of Development Planning and Cooperation, 2010). Siltation in the catchment area of the Shire River and its tributaries undermines hydro-power generation (Government of Malawi, 2007). There is no integrated climate change consideration in the National Development Policy and no specialised training offered in tertiary institutions in Malawi relating to climate change. Meteorologists have to be trained in Kenya and elsewhere, which is expensive (Government of Malawi, 2007). This study also established that the relatively high levels of poverty, coupled with low GDP make it difficult for Malawi to fund its environment and sustainable development capacity needs. This has been worsened by the recent (2011) donor withdrawal and associated national governance challenges.

Malawi's institutional capacity needs are varied. According to the NCSA report (Government of Malawi, 2007), it lacks capacity to implement its Clean Air Act, to establish and control air quality standards. This is partly because it does not have the necessary tools and equipment. Manda (2008) notes that municipalities need capacities for solid waste collection and for involving urban dwellers in addressing pollution and waste matters. Malawi's capacity to develop clean technology or use available alternative materials such as agricultural waste is low (UNDP, 2008a). In general the country needs strengthening in institutional coordination and accountability, coherence and consistence in the legal framework and in linking policy and research. It needs to develop appropriate biodiversity and forest resource management regulations. Similarly, there is inadequate joint communication between employers and training institutions. Staffing levels and retention of professional staff is a major challenge for the government (Government of Malawi, 2007; UNDP, 2008). Property rights over water and water resources are weak (Yoran et al., 2011) and so is general capacity for environmental law enforcement. Malawi does not have a policy on climate change and lacks capacity to tap into the Clean Development Mechanisms. It also needs equipment and facilities for meteorological services. This study established that the Department of Environmental Affairs is severely under-staffed, with a vacancy rate of 45%.

The 30 environmental experts and decision makers who participated in the capacity assessment study being reported here identified several human capacity needs in Malawi: environmental educators, environmental lawyers, environmental economists, environmental reporters, biological scientists, foresters, law enforcers, sustainable land use managers and extension workers, foresters and fish ecologists, air quality modelers, clean technology developers, climate change modeling and adaptation specialists. Its cross-cutting capacity needs include: building individual skills and motivation to address environmental and sustainable development issues; developing and transferring technology, planning and managing

monitoring and evaluation processes; collecting, managing and exchanging information and coordinating multiple actors (government, private sector, NGOs).

The 30 research participants in Malawi identified Forestry, Energy, Biodiversity and Natural Heritage, Waste and Pollution as well as ESD as priority sectors in the country. Their criteria for prioritisation were sectors that 'overlapped' into other sectors; the degree of threat to human quality of life and the extent to which the population is dependent on the resources in a sector. For example, Biodiversity and Natural Heritage was seen as a cross-cutting sector, encompassing forestry, fisheries, land use management, climate change and water – so was ESD. The sectors that were prioritised for their threat to quality of human life are Waste and Pollution as there is a high level of unregulated waste disposal, some of which ends up in drinking water. Deforestation to meet energy, construction and boat making needs was seen as threatening quality of life by causing erosion, siltation, flash floods, global warming and a decreasing capacity for families to meet household energy needs. The high dependence of Malawians on fuel wood, which leads to deforestation and contributes to climate change, resulted in the Energy Sector being rated as a priority sector. This high human dependence on biomass energy underlined the need for developing clean technology.

CHALLENGES ASSOCIATED WITH ESD IN MALAWI

Although the country is considered to have a considerable number of environmental education experts, the general population has limited knowledge about how everyday activities may be negatively impacting on the environment. There is no environmental education policy in Malawi. Education for Sustainable Development is not mainstreamed in the school curriculum. In addition, there is no proper packaging of learning materials to assist people in understanding ESD/SD concepts. There are very few ESD/SD documents on Malawi. There are no comprehensive capacity building programmes to address capacities in key institutions such as universities; teacher's training colleges and government departments. However, there are some efforts to sensitise teachers, teacher's training lecturers, supervisors and directors on ESD. Malawi's Chancellor College hosts the LEAD Eastern and Southern Africa programme which develops sustainable development capacities of managers and workers from the region. In general, universities are seen as responding slowly to emerging sustainable development issues. Qualified personnel from these institutions are seen as not delivering.

MAURITIUS

Mauritius is one of the few SADC countries that has enjoyed decades of political and social stability. Its concern for environment and natural resources has been demonstrated by the high priority that it accords to sustainable land use management (Republic of Mauritius, 2004), the development of an Integrated Coastal Zone and Beach Management Plan, the development of a Geospatial Information System for mapping marine habitat and the ecological richness of the south-eastern coastal zone and the amendment of laws to increase fish poaching penalties (Republic of Mauritius, 2005). Mauritius has also increased the capacity of coast guards to enforce laws and augmented this effort by setting up and running environmental awareness campaigns (ibid.).

Mauritius' systemic capacity issues are largely socio-economic and ecological. It commits a relatively low percentage of its national budget to environment and natural resources management (low priority) (Republic of Mauritius, 2005). This low prioritisation is also manifested in the setting aside of a small proportion of land for biodiversity conservation. Where biodiversity is found on private land, government does not have the power to protect it. The low absolute figures for environment and NRM budget can be partly explained by the fact that Mauritius' main export commodity (sugar), faces unfair competition on the European market where sugar is subsidised, thus undermining profitability of agricultural produce (Republic of Mauritius, 2004). Other systemic capacity constraints arise from acute land pressure due to urbanisation, intensive agricultural practices, deforestation and overgrazing (Republic of Mauritius, 2004). The big size of the Mauritian Exclusive Economic Zone greatly limits effective surveillance (Republic of Mauritius, MoF & ED & MoE & NDU, 2005). Ecologically, and as a small island state, the country is vulnerable to effects of climate change, especially to sea level rise and cyclones. And yet climate change is generally regarded as a low priority in the country (ibid.).

Mauritius has inadequate infrastructure for sewerage management and water-borne disease management, control of effluent and agro-chemical discharge into water. It lacks technology and resources to manage intrusion of salt water into coastal aquifers. Clean technology development is another area of institutional capacity need. For example, there is need for energy research and development for economical fuel switching and for coordinating future energy research initiatives. This needs to be supported by incentives to shift from private to public transport services, the development of capacity to assess and evaluate the effectiveness of alternative energy technologies and mechanisms for incorporation of energy efficiency and conservation aspects in designs and construction (Republic of Mauritius, MoF & ED & MoE & NDU, 2005). Mauritius also lacks legislation to regulate entry of invasive alien species and further needs capacity to enforce a range of environmental legislation and regulations. It needs to be strengthened in biodiversity research and in the setting up of mechanisms and structures for biodiversity and agro-biodiversity regulation and germplasm exchange. Institutional responsibilities are not adequately articulated, linked and separated. For example, there is need for an integrated sustainable national water policy to address sedimentation, eutrophication and related issues affecting lagoons, rivers and coastal areas. The exposure of the island state to vagaries of climate change makes it imperative for the provision of human and financial resources for climate change and adaptation research. This should be informed by a research strategy, which is not in place. The cross-cutting capacity issues include integrated governance, policy planning and review, bureaucracy and under-staffing in many relevant Ministries (Republic of Mauritius, 2011).

The human capacity needs of Mauritius range from those who have legal knowledge, to those with ecological and biological know-how, to those with predictive climate and air quality knowledge to those with integrative and systems skills for causing effective implementation of the conventions under discussion.

More specifically, Mauritius needs environmental lawyers, environmental economists, environmental educators, international negotiators, land use planners, marine and terrestrial ecologists, agro-ecological specialists, air quality modellers, climatologists and adaptation specialists, green technology developers and adapters, monitors and law enforcers.

According to the Mauritius Green Paper[6] of April 2011, the emerging priority sectors for the country include: Biodiversity; Marine and Inland Water Resources; Waste and Pollution; and ESD.

MOZAMBIQUE

Some of the striking features about Mozambique and its implementation of MEAs is that the government national university (the Eduardo Mondlane University) is actively involved in research and implementation of Rio Conventions (Republic of Mozambique, MICOA, 2008). The rights of communities over the land and natural resources are recognised and this serves as an incentive for the communities to look after their resources (ibid.). However, this law tends to be abused by those in authority and with this legal knowledge. Mozambique recently embarked on an ambitious reforestation project for carbon sequestration and industrial purposes. In 2009 alone, 13 900 hectares were reforested, mostly by the private sector (Government of Mozambique, MPD, 2010). Furthermore, the country has increased the percentage of protected areas from 11% to 16% with the creation of new national parks and reserves, including marine and coastal environments (ibid.). A decent proportion of the curriculum in primary schools in Mozambique is localised, which gives opportunities for integrating ESD.

Mozambique has systemic capacity issues, many of which can be linked to its political instability in the 1970s to the 1990s. This diverted resources away from natural resources conservation. Now there is a strong need for infrastructural development in protected, rural and urban areas. The rural-urban migration creates a need for water and sanitation infrastructure (Government of Mozambique, MICOA, 2008). The other systemic capacity issue is that the government depends on donors for the implementation of international conventions. This may be partly linked to the high level of poverty in the country where over half of the population is poor and depends heavily on the exploitation of natural resources (small-scale farming, livestock grazing, fishing, hunting, fuel wood, harvest of medicinal plants, etc.) for subsistence export (Government of Mozambique, MICOA, 2008). Ecologically, Mozambicans are vulnerable to climate change, especially to sea level rise because 60% of the population lives near coastal areas (Government of Mozambique, MPD, 2010). The geographical location of the country makes it vulnerable to climate extreme events, particularly floods, droughts and tropical cyclones. Cyclical floods make it difficult to use low lying areas (Government of Mozambique, 2005). In terms of ESD, the high level of illiteracy limits the opportunities for the dissemination of information, national legislation, conventions and public awareness about environmental issues, particularly in the rural areas (Government of Mozambique, MICOA, 2008). Mozambique is relatively weak in terms of technology development and financial resources (Government of Mozambique, MPD, 2010).

Mozambique needs institutional capacities in terms of role separation and clarification between different actors in the environment and sustainable development sector. Similarly, it needs capacity for coordination

[6] A Green Paper is a government report regarding the formulation of a policy but it is not a policy in itself. It usually leads to the development of a policy after a series of consultative processes. A Green Paper becomes a White Paper before becoming Policy.

of participating government departments and between them and the private sector and civil society organisations. In this regard, the Government of Mozambique report (2010) recommended the setting up of an environmental technical unit for Rio Conventions with scientific and technical autonomy to support partner institutions in the implementation of the conventions. Associated institutional capacity needs are related to research capacity and facilities; data collection, input and management; monitoring and surveillance as well as strategic assessment of coastal areas. Mozambique has inadequate early warning systems. It lacks facilities and incentives for clean technology development as well as the ability to access the Clean Development Mechanism (CDM). Its capacity to enforce environmental legislation is low. Until recently, Mozambique had one university only and this resulted in Mozambicans having low access to postgraduate courses relevant to the implementation of environmental conventions. At an international level, Mozambique's participation is constrained because international conventions and agreements are not in Portuguese (Republic of Mozambique, MICOA, 2008).

Mozambique has identified human skills capacity needs (Republic of Mozambique, MICOA, 2008) and these range from meteorologists, air pollution modelling specialists, climate change adaptation specialists to atmospheric chemistry scientists. It also identified the need for toxicologists, freshwater and marine biologists; natural resource economists, environmental scientists, environmental lawyers and auditors, biological scientists (ecologists, zoologists, taxonomists and botanists); land use planners, community based natural resources managers, extension workers, and agricultural scientists; sociologists and environmental educators. ICT and GIS have also been identified as areas needing attention and so is clean energy development. The country's cross-cutting capacity needs include capacity to: negotiate at the Conference of Parties; raise public awareness and environmental education; develop institutional mandates, structures and frameworks; coordinate multiple sectors; and plan and manage monitoring and evaluation processes.

The priority sectors for Mozambique appear to be Climate Change; Marine and Inland Water Resources and Biodiversity.

NAMIBIA

Namibia has a strong research and conservation history and has recently implemented Community Based Natural Resources Management (CBNRM) programmes (Government of Namibia, NCSA Report, 2005). By 2005 the area under CBNRM covered over 8 million ha and generated at least N$15 million annually (ibid.). Similarly, Namibia's marine fisheries management policies have been commended internationally for their effectiveness and efficiency. Implementation of scientifically established fishing quotas have helped to promote the integrity of marine resources and enhance recovery of certain fish stocks after decades of overexploitation (Government of Namibia & UNDP, 2002). Worth noting is the fact that environmental protection is enshrined in the Constitution and sustainable development is a cornerstone of Vision 2030 (Government of Namibia MDG Report, 2004). The education system has begun to include environmental issues in the curriculum, and various resource materials have been produced locally for schools and higher institutions (Tarr, 2003).

Namibia's systemic capacity issues are influenced by it being a vast and largely semi-arid country with a low thinly distributed population. It is often not economically viable to connect small, widely dispersed rural communities to the national grid (Government of Namibia & UNDP, 2002). About 60% of the Namibian population is dependent on biomass fuel for energy (Government of Namibia, 2001) but it does not contribute significant amounts of greenhouse gases to global emissions although it uses electricity from South Africa that is largely generated by fossil fuels (Mfune, 2009). The Government of Namibia (Government of Namibia, 2007) considers reforming the energy sector as a priority in order to mitigate climate change. The recently initiated German-supported solar energy project is a step in this direction. Another systemic capacity issue faced by the country is the inequitable distribution of land (Namibia NCSA Report, 2005; Kisaka, Manyati, Tjingaete & Chiduwa, 2011), which can be traced back to the apartheid period which lasted for about a century. Namibia is endowed with productive marine resources requiring the country not only to tap into the resources but to look after them. One of the most important systemic issues is that Namibia has inadequate financial and other resources to implement conventions adequately (UNDP, 2008b; Kisaka et al., 2011). Kisaka et al. (2011) identified other important systemic capacity issues as: fragmented and out of date policies; unsatisfactory relations between government and CSOs; lack of legal mechanisms for country and community access to and benefit from its genetic materials (e.g. devil's claw, water melon and monkey orange); and the impact of HIV and AIDS.

The institutional capacities that Namibia needs include capacity for inter-departmental and inter-ministerial linkages and coordination, vertical linkages within departments (from national to local), and capacity for joint monitoring of trans-boundary conservation areas. The regional officers of line ministries lack funds and infrastructure to perform their duties adequately. In spite of its long history in biodiversity and related research, Namibia lacks research capacity and capacity to negotiate at Conference of Parties (Government of Namibia, 2007; Kisaka et al., 2011). Its Environmental Economics Unit needs strengthening (Government of Namibia, 2005). Namibia needs a national strategy to enhance synergies amongst various climate-change sensitive sectors, mainstreaming climate change into national policies and plans, and capacity for climate change management and reporting; land use change and forestry management for carbon sinking (Mfune & Ndombo, 2005; Harts & Smith, 2008; Mfune, 2009). At the same time, Namibia lacks capacity to absorb clean technologies from outside (Mfune, 2009; Kisaka et al., 2011) and to harness vast solar energy available to the country (Desert Research Foundation of Namibia, 2001). It needs robust procedures for conflict resolution regarding water use and management (Government of Namibia MDG Report, 2004). Local and regional authorities' capacity in land use planning and management is low, so are extension services and infrastructure, and farmer environmental management structures (Government of Namibia, 2005). The country lacks incentives based schemes to improve waste management and

pollution. Other constraints include limited policy capacity development; low incentives for staff retention; lack of tools and equipment; too much dependence on donor funding which is declining; and limited budget for programme and plan implementation (Kisaka et al., 2011).

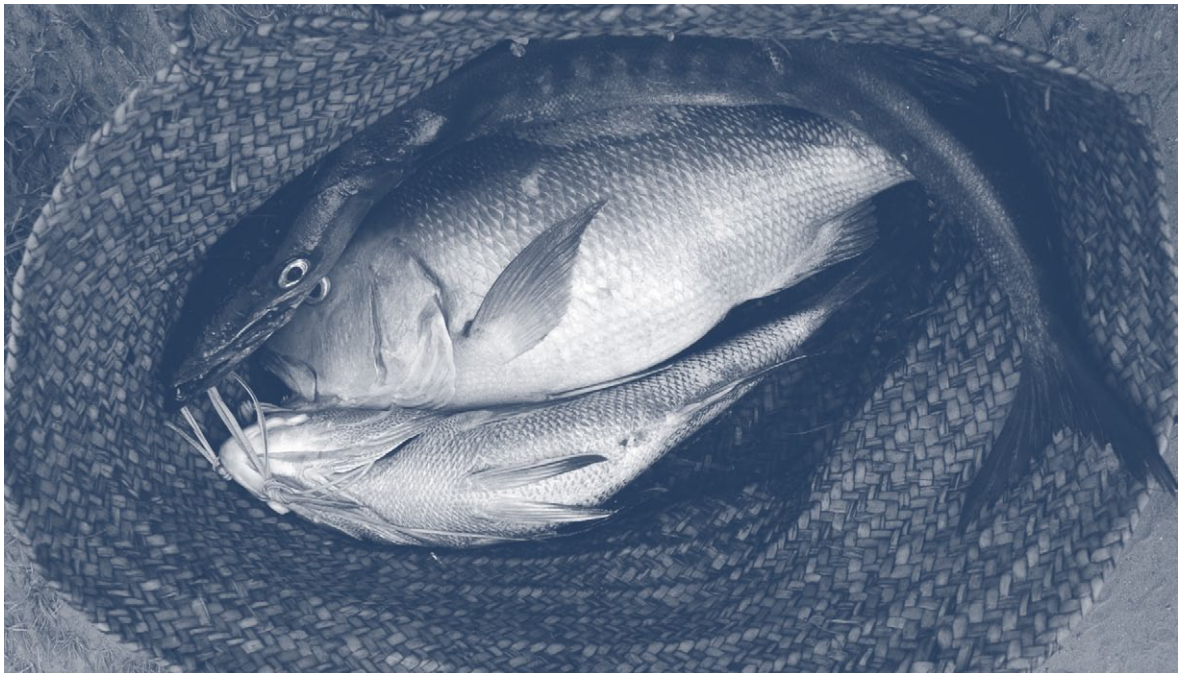
According to the Government of Namibia's NCSA report of 2005 and Kisaka et al. (2011), some of its important human capacity needs lie in the areas of clean and renewable energy development: taxonomy, geology, geo-hydrology and surface water hydrology, biosystematics, ecology, environmental economics and environmental law, land use planning, biostatistics, cleaner production and environmental management. The other areas in which human capacity is needed are to do with climate change modelling and reporting, climate change mitigation and adaptation. Integrative skills are needed for managing complex environmental issues and competing stakeholder interests, especially in the areas of water resources, sustainable land use management and natural resources management. Skills development is also needed in the areas of forestry, sustainable agriculture, agricultural extension and environmental education. Policy makers are required to provide the necessary incentives for environmentally friendly practices (ibid.). The cross-cutting capacities needed include talent management and retention (leadership), negotiation skills at COP, environmental governance, stakeholder engagement, multiple actor and sector coordination, information management and use, technology transfer, planning and managing monitoring and evaluation (Kisaka et al., 2011).

The priority sectors of Namibia appear to be Marine and Inland Water Resources; Sustainable Land Use Management and Forestry.

SEYCHELLES

Seychelles is active in international negotiations in the African regional group and as a small island state. One of its major strengths resides in its high human capacity development index (Government of Seychelles, 2005). However, this is constrained by the absolute numbers of the people on the island state (total population is about 87 000 people). Seychelles has demonstrated good practice in the area of biodiversity management and has provided modules for other countries especially Small Island States in the areas of rehabilitation of small island ecosystems and species recovery (ibid.). It has two World Heritage sites (Vallee de Mai and Aldabra Atoll) and its economy is heavily dependent on ecotourism. The Government of Seychelles recognises the importance of sustainable environmental management and the conservation of biodiversity as the basis of its socio-economic development (Government of Seychelles, UNDP & GEF, 2011). Seychelles is one of the few countries in SADC that has established an International Convention Unit, which collaborates with other agencies to develop, clarify, coordinate and implement mandates. A cross-section of organisations (NGOs, government and quasi-government departments and international) working in the environment, sustainable development and education for sustainable development, represented by 18 individuals, were interviewed during the capacity assessment study.

Seychelles' systemic capacity issues are shaped by its size and geographical location. It is vulnerable to threats from increased global warming and sea level rise. Its location exposes it to a high incidence of leakages from oil tankers. Monitoring of the environment is complicated by the fact that the nation consists of 115 islands distributed over a 1.3 million km^2 area (www.nationsencyclopedia.com/ Africa/Seychelles). HIV and AIDS also threaten its small population (www.un.intnet.mu/undp/downloads/seychelles). Little of the natural forest remains and coconut has become the main source of timber. The small size of the population makes it difficult to have a wide range of skills in the right quantities. As a result, Seychelles depends heavily on expatriates and external consultants creating a language and cultural barrier. Furthermore,



only one delegation is allowed to attend international convention meetings resulting in little continuity in representation and negotiation skills[7] (Government of Seychelles, NCSA, 2005). Pressure on land and its resources is being worsened by inadequate funds (ibid.), limited freshwater, rapid development of tourism and population growth, and increased urbanisation (UN country document for Seychelles, 2007-2010). The job freeze in civil service also further worsens the shortage of manpower across the various sectors.

Seychelles faces challenges in institutional capacities that include mainstreaming of global environmental objectives into the Environment Management Plans (EMPs) to address climate change, biodiversity and land degradation; and linkages within government, and between government and non-governmental organisations, limiting the effectiveness of the current EMPs operations (Government of Seychelles NCSA, 2005). It also lacks capacity to develop legislation, regulation and management frameworks to address invasive alien species. Even though Seychelles is exposed to natural disasters, including those linked to the environment, it does not have a national disaster management policy (UNEP, 2010). Disaster risk preparedness and emergency response ability is very limited especially in terms of flooding due to tsunami and rains. Most of the schools and hotels are in low-lying coastal land (3m above sea level). The Risk and Disaster Management Committee have limited skills in preparing materials for climate change adaptation and mitigation. In addition, environmental groups have inadequate skills in project management, monitoring and evaluation and consultancy (ibid.)

Other areas in which institutional capacity gaps have been identified are: capacity to link national programmes with international obligations, capacity to undertake studies on land degradation and capacity to foster public participation and regular information exchange (Government of Seychelles, NCSA, 2005). There is only one NGO fully staffed by volunteers that focuses on land degradation and soil erosion. Most bush fires occur in Praslin Island resulting in water shortages and causing soil erosion. Seychelles, with

[7] This applies to the whole range of international MEA meetings.

assistance of the UNDP, is currently assessing capacity of institutions to implement national development programmes, focusing on functional capacity (planning, implementation, monitoring and evaluation) in order to produce a Sustainable Development Strategy for Seychelles (ibid.) The cross-cutting capacity needs include ability to: negotiate at the Conference of Parties; raise public awareness and environmental education; develop and transfer technology; coordinate multiple actors; and plan and manage monitoring and evaluation processes.

Most government departments are operating at 30% staffing levels and the outreach department under Ministry of Environment has a 25% staffing level (ibid.). The human capacity gaps identified include those concerned with atmospheric and oceanic sciences. This includes human capacities in climate, climate change, and climate change adaptation and mitigation, air pollution and modelling as well as marine biologists and oceanographers. Teachers with specialist training in environmental education are also in short supply (www.nationsencyclopedia.com/Africa/Seychelles). Training in environment is inadequate. There are currently no institutions offering certificate/diploma on environment for workers in the sector. Advanced plans are currently underway to introduce an MSc in Environmental Science at the University of Seychelles in 2012 (ibid.). The interviewees commonly stated the need for environmental lawyers to develop legislation on invasive alien species and law enforcers are needed to implement the various pieces of legislation. They also noted the need for resource materials: on climate change; for community educators using popular education to shift towards sustainability; on self-organisation/self-mobilisation of communities which is a new approach; and on mainstreaming environment for district administrators. The interviewees underscored the inadequate collaboration among the various stakeholders especially government and civil society.

The most commonly noted important priority areas were Biodiversity and natural heritage (basis of eco-tourism); Climate Change; Marine and Inland Water Resources; and Education and Training.

SOUTH AFRICA

South Africa is currently the only southern African country with a Green Economy Plan and is also leading in terms of prevention-based waste pollution management (DEA, 2010). South Africa's GDP compares well with those of developed countries and it is therefore in a much stronger position to fund its own environment and sustainable development initiatives than other SADC Member States. In addition, South Africa gives priority to sustainable use of biodiversity. South Africa has almost reached world targets of 20% protected coastal areas by 2012 with 19 marine parks covering 19% of coastal areas (SADC, 2008). It has a greater number of Higher Education Institutes than other SADC Member States. It also has clear strategies and relatively well-funded science and technology development strategies, including in the areas of clean energy development (ibid.). It is the only SADC country with an institute for hazardous waste.

The systemic capacity issues of South Africa are linked to the emergence of a green economy against a background of high levels of urbanisation and industrial development, high dependence on coal for energy generation and high external input agriculture, which is dependent on coal generated electricity and its geographical location that exposes it to oil spills by ships en route from the Middle East to other parts of the world. Over 90% of South Africa's electricity is generated from the combustion of coal that contains approximately 1.2% sulphur and up to 45% ash and accounts for 38% of the total primary energy consumed in all of Africa (DEA, 2010). South Africa's commitment to achieve a 34% reduction of the country's 2010 emissions by 2025 has implications on the kinds of skills that will be required, many of which are concerned with clean and renewable energy development. Its "cradle to cradle approach" to

waste management has implications on the kind of engineering and technology development required. Ecologically South Africa's systemic capacity needs are shaped by high rates of biological diversity, the relatively high priority accorded to biodiversity, and the vast size of land allocated for biodiversity control on one hand and environmental and ecosystem degradation, biodiversity loss, and pollution on the other. Here ecological and economic systemic capacity issues arise demanding low carbon economies and their associated cultural, technological and behaviour shifts. One of the most critical natural resource needs in South Africa is fresh water. South Africa consumes 80% of the region's water yet possesses only 10% of the region's water (DEA, 2010). The main socio-political shaper of systemic needs is its apartheid legacy, whose features of separate development are yet to be overcome in the areas of education and development. The quality of science and environmental education in historically disadvantaged schools and colleges lags behind that of those that were privileged. One of the respondents put it thus:

Poor quality and expensive education in schools, colleges and some universities; lack of sound governance and political will; governance systems which do not foster inter-departmental cooperation; the poverty affecting the majority of citizens and the excessive wealth pursued by a minority as an entitlement.

South African challenges include inter- and intra-sector coordination and coordination between institutions in development decisions, biodiversity management, as well as corresponding additional responsibilities arising from new policies, legislation, strategies and programmes with financial and human resources. Many government departments do not comply with submitting and reporting requirements of Environmental Implementation Plans and Environmental Management Plans (Government of South Africa, NCSA, 2005). This may be partly attributed to low staffing levels which are a general problem in the sectors under review. Pollution is an area where public awareness and knowledge is low and where enforcement is poor. There are similar challenges associated with development of options for integrated hazardous chemical management and with enforcement of air pollution regulations. Research and development in renewable energy technologies has been slow. There is no sector education and training authority (SETA) dedicated to environmental education, nor is environmental education integrated in all SETAs. At the same time, South Africa has institutional capacity needs for mainstreaming environment into all government departments and into development planning (greening of skills). This probably explains why the Local Government SETA has recently dedicated a large budget to environmental education (EE) (and incidentally selected WESSA as one of a few facilitators of the EE training).

The 2010 study of South Africa's skills needs identified four main areas in which skills are in great demand. These are (a) leadership skill supply in public and public sectors where vacancy rates are over 25%, (b) skills for greening the economy, which include sustainable development planning, climate change and adaptation, risk assessment and management, (c) skills for mainstreaming the environment into different sectors, curricula and training, and (d) skills to develop and expand the sector and these are linked to research, education and training – that is capacity for human capacity development (DEA, 2010). Respondents identified South Africa's most important cross-cutting capacity needs as: involving national stakeholders in addressing environment and sustainable development issues; coordinating multiple sectors; building individual skills and motivation to address environmental and sustainable development issues; collecting, managing and exchanging information; and implementation of frameworks, policies and legislation.

The two people who responded to the assessment study rated Energy; Marine and Inland Water Resources; and Education and Training as the priority sectors: the first two because 'dire problems are already manifest in the sectors' and the last one because it can be used as a tool to address challenges being faced in the different sectors, i.e. has high potential for addressing challenges.

SWAZILAND

Swaziland has had a successful reforestation programme, which resulted in a 9% increase in forested areas within ten years, from 36% in 1990 to 45% by 1999 (Government of Swaziland, MEPD, 2010). The other areas in which Swaziland is strong are concerned with the active role of civil society structures and organisations. The coordinating committee of NGOs provides an important link, actively participates in relevant meetings, and raises awareness around the objectives of the Convention to Combat Desertification (CCD) among all NGOs, promoting the inclusion of practical elements of the CCD into project proposals and implementation.

The assessment workshop that was conducted during the study and attended by 35 decision makers and specialists in environment, sustainable development and education identified several systemic issues. It underlined the negative effects of 'settlement dynamics' which were influenced by lack of a comprehensive national land policy. In terms of policy frameworks, the main limitation was identified as the inadequate incorporation of environmental considerations in National Economic Plans. The main political constraints were identified as low political will, especially at parliament level, which is sometimes underpinned by low levels of environmental awareness among the policy makers. The international perception of governance in the country also undermined the flow of resources from donor countries. This is worsened by the classification of Swaziland as a middle income country which means that it cannot easily access certain donor funds, which are available to low income countries.

Poverty, population growth and HIV/AIDS increase the population's direct dependence on natural resources in rural areas while in urban areas this has resulted in informal settlements that do not have the necessary water, sanitation and waste infrastructure and facilities. About 75% of the rural population depends on biomass fuel for energy (Government of Swaziland, MEDP, 2010). Ecologically, the conversion of land for commercial forestry and irrigated commercial agriculture is leading to loss of habitat and biodiversity. This is worsened by the increased presence of alien invasive species (ibid.). Proneness to forest fires

is a big ecological and economic systemic issue in Swaziland where thousands of forest hectares are destroyed annually (ibid.). Government's low income levels undermines its ability to introduce incentive mechanisms and skills refreshment programmes to ensure that staff motivation is maintained, facilitate career progression and retain institutional memory (Government of Swaziland NSCA, 2004).

The national assessment workshop identified three main institutional capacity needs: cross-sector coordination, cohesion and collaboration, and funding. This resonates with the Swaziland Fourth National Report to the Convention on Biological Diversity (Swaziland Environment Authority, 2009). Swaziland has inadequate socio-economic incentives for sustainability. It generally lacks institutional frameworks, infrastructure and equipment for implementation, monitoring and evaluation to other obligations of the conventions (Government of of Swaziland NSCA, 2004). In this connection, it also needs comprehensive long-term frameworks for evaluating progress. Its infrastructure and facilities for water and pollution management are limited as it does not have the needed and associated information capturing and management systems. Nor does it have appropriate air pollution assessment models (Zunckel, Tshukudu, Chimphamba, Maure, Jackson, Mugara, & Chipundu, n.d). However, the levels of air pollution are still low and this is not a priority sector (Government of Swaziland, MEPD, 2010). It needs socio-economic incentives to facilitate biodiversity conservation, to retain staff and to involve private land owners in conservation (Government of Swaziland, 2004). Land tenure and access rights are inadequate to motivate the population to use resources sustainably. It needs to increase its capacity to monitor and control forest fires, especially in the context where it has given carbon emission control as a priority and given its recent National Multi-Sectoral Bushfire Contingency Plan (Government of Swaziland, MEPD, 2010). Meanwhile, there is need for developing public and private sector awareness and understanding commitments that are under the Convention and how they can contribute. Other institutional capacity needs are linked to the mobilisation of science and technology to support decision-making, appropriate deployment of available human resources, reporting on and participating in international negotiations, and information management systems, and monitoring and evaluation that feeds into decision making (Swaziland Environment Authority, 2009).

The human capacity skills needed in Swaziland are foresters, climate change and adaptation specialists, natural resource economists, environmental lawyers and environmental educators. According to the 2004 Swaziland NCSA report, the country needs soil chemists, micro-biologists, physicists and remote sensing, survey and land use planners. The cross-cutting capacity needs of Swaziland include capacity to: coordinate multiple actors; collect, manage and exchange information; develop and use economic instruments and sustainable financing mechanisms; develop and transfer technology; develop and enforce policy, legislation and regulations; and plan and manage monitoring and evaluation processes.

The assessment workshop of Swaziland identified Climate Change; Inland and Marine Water Resources; Sustainable Land Management; as priority sectors for capacity building. The criteria for selecting these sectors can be summarised as:

The potential risks associated with not addressing issues in that sector;

The degree of uncertainty about the effects of the sector;

Potential effects on production systems;

Vulnerability of the country to negative developments in the sector;

Proportion of the population that is currently affected;

Importance of the sector to the country (drivers);

Current state of the resource in question; and

Level of threat to human health and livelihoods, as well as to biological diversity.

The assessment study identified the following as the skills needed in the three priority sectors:

Climate Change	Inland Water Resources	Sustainable Land Management
Climate change educators	Hydrologists and hydro-geologists	Land use planning
Skilled negotiators	Water engineers	Land conservation
Evidence/statistics and other forms of reliable 'research'	Water treatment specialists	Land evaluation
Advocacy/awareness agents	Community water supply technicians	Geomorphology
Planners	Monitoring and Evaluation	Land management
Project developers	Water resource management and Economics	Monitoring and evaluation
Meteorologists/researchers	Sustainable Forestry management	Soil and water engineering
Monitoring and evaluation	Forestry/Ecology	GIS/remote sensing
Project proposal development	Natural resource education	Educators
	Project proposal development	Project proposal development

TANZANIA

Tanzania gives importance to environment and sustainable development matters as coordination of implementation of post-Rio Conventions placed under the Vice President's Office. Other structural and strategic efforts that show prioritisation of MEAs include the establishment of an Environmental Management Fund, a National Conventions Coordination Committee, a National Environmental Advisory Committee and the establishment of a Centre for Foreign Relations that develops negotiation skills. In order to curtail corruption, the country set up a portfolio on good governance and established the Prevention of Corruption Bureau. The environment management structures are replicated at local government level (United Republic of Tanzania, DoE, 2007). Three of Tanzania's universities teach air pollution and control courses and their graduates have sound knowledge on atmospheric modelling (Zunckel et al., n.d). The Department of Physics at the University of Dar-es-Salaam has more than 25 years experience in meteorological modeling (ibid.). Between 1990 and 2008, Tanzania reduced consumption of ozone-depleting substances by over 90%, from 280 tonnes to 26 tonnes (United Republic of Tanzania, DoE, 2007). It has Early Warning and Disaster Preparedness Systems that are linked to the international early warning and disaster preparedness networks. In the area of research and information dissemination, the country has local publications, scientific journals and newsletters on environmental issues (ibid.).

The national capacity assessment workshop was attended by 15 environmental practitioners from Tanzania, Botswana, Lesotho and Namibia. It was held at the National Environment Management Council (NEMC) in Dar es Salaam. The workshop highlighted the low level of environmental understanding and awareness among politicians who are ultimately the key decision makers. The main systemic need identified was the lack of political will and commitment to address environmental, sustainable development and education for sustainable development issues. Inadequate and fragmented incorporation of environmental issues across various sectors and the associated national strategic plans and programmes were identified as a main policy implementation constraint. The systemic capacity issues of Tanzania are largely ecological, budgetary and political. Although Tanzania's GHG per capita emission is very low, it suffers from the impacts of climate change (United Republic of Tanzania, MDGs: Report Midway Evaluation, 2000-2008). Sea-level rise affects its coastal areas and islands. Another ecological issue is that of invasive alien species in water and on land (United Republic of Tanzania, DoE, 2007). Tanzania has large areas of land that are protected and this demands corresponding high levels of human and other resources. Besides ecological limitations, Tanzania has inadequate funding to meet its implementation commitments and plans. This systemic issue is sometimes worsened by the conflict between donor priorities and the national priorities of implementing the conventions (ibid.). The armed and political conflicts in Central Africa, which have led to an influx of refugees, have also created challenges for Tanzania.

Many of Tanzania's institutional capacity needs are to do with policy and infrastructure. A key institutional gap that was identified was the lack of collaboration and harmonisation of the strategies, approaches and policies of the various ministries and other stakeholders involved in addressing environmental issues. These are needed in the areas of sewerage and waste water in urban areas an agricultural extension in rural areas (United Republic of Tanzania, DoE, 2007). Tanzania also lacks capacity to enforce laws, policies and by-laws relating to natural resources management (ibid.) and this may be partly explained by its relatively low capacity to fund enforcement. It does not have adequate capacity to collect, monitor, analyse and disseminate information on the conventions nor incentives to encourage private sector involvement in the implementation of conventions.

The workshop participants collectively ranked and identified the country's top three priority sectors (Sustainable Land Management, Education and Training and Climate Change) giving reasons for the selection.

The criteria are summarised below:

Key national priority as reflected in national budget;

Existence or absence of associated supportive policies for sector;

Contribution of sector to livelihoods;

Contribution of sector to national economy;

Impact of current problems in the sector on livelihoods;

Uncertainty of the risks and effects of sector; and

Cross-cutting extent and effects of sector on other environmental sectors.

The workshop identified the following associated human capacity gaps for the priority sectors:

Sustainable Land Management	Education and Training	Climate Change
Extension workers: inadequate numbers of extension workers coupled with poor administrative management makes land users lack access to adequate extension services; Farmers have inadequate knowledge and skills on proper land use management; Foresters at grassroots level; and Community environmental officers.	Qualified teachers in environment, EE/ESD; Agricultural extension staff at all levels; Medical personnel (environmental health); Politicians empowered with environmental information; Environmental journalists; Community environmental officers; and Environmental monitors and lawyers.	Education and awareness specialists since climate change is a relatively new sector; Climate change educators; Adaptation and mitigation specialists; and Monitoring and evaluation.

Although Tanzania is relatively advanced in terms of atmospheric modelling, it has not developed models that are appropriate to the region. It also lacks capacity for developing and assessing adaptation and mitigation options and capacity to access the Clean Development Mechanism. It has not yet mainstreamed climate change, biodiversity and desertification into school curricula. Like most SADC countries, Tanzania struggles to bring about collaboration and networking among relevant institutions within and outside the country (ibid.). Tanzania's cross-cutting capacity needs include the ability to coordinate multiple actors; enforce policy, legislation and regulations; develop and transfer technology; mainstream environmental sustainability into the development sector; collect, manage and exchange information; and plan and manage monitoring and evaluation processes.

The priority sectors for Tanzania were identified as Sustainable Land Management, Climate change and Education and Training.

ZAMBIA

One of the most striking features about Zambia is the involvement of Civil Society Organisations (CSOs) in pollution monitoring and control. For example, Citizen for a Better Environment focuses on reducing water pollution from mining and related activities by: lobbying for legislation change and community awareness and mobilisation in mining areas; undertaking environmental studies to determine the extent of ecological damage to streams and rivers due to mining activities in preparation for rehabilitation and restoration; and conducting water quality monitoring with respect to the Environmental Protection and Pollution Control Act. Zambia has integrated ESD into the Basic School Curriculum and in teacher training colleges (Government of Zambia MDG Report, 2008). Zambia is one of the few SADC countries that has a greater percentage of its population living in urban areas.

The systemic capacity issues that affect Zambia are mainly social and economic. Socially, the population is relatively poor and highly dependent on natural resources such as fuel wood and charcoal for energy. The Zambia MDG Report (2008) notes "High poverty levels and the lack of alternative sources of livelihoods in rural areas exert pressure on land and associated resources, which threaten rural and urban livelihoods from a changing environment". This social limitation is compounded by diseases such as malaria and HIV/AIDS. Zambia has a weak economy (Chiundama, 2008) not capable of supporting the budgetary needs for implementing the conventions and this is worsened by a lack of sustainable funding strategies (Government of Zambia, NCSA Report, 2007).

Zambia's institutional capacity needs are multi-layered. Effective environmental planning and management is one of the areas that needs capacity strengthening as the following statement notes "Inadequate data and weak to absent monitoring systems, related to forest inventories, animal populations, pollution and emissions data, present a major challenge for effective environmental planning and management" (Government of Zambia, MDG report, 2008). Systematic translation of MEAs into national programmes is another area where organisation capacity is lacking. Related capacity needs are to do with coordination and collaboration between ministries and departments. The Focal Points who are tasked with overseeing the implementation of Conventions serve in this role part-time (Government of Zambia, NCSA, 2007). Furthermore, in the area of Climate Change Zambia does not have a specific agency to implement relevant provisions. Zambia's information management systems are inadequate and this undermines data collection, storage and analysis. As a result of the several institutional capacity needs discussed in this paragraph, Zambia has only been able to slowly integrate provisions of the Conventions into its national policies and programmes. Infrastructure and facilities for measuring pollutants and for waste and pollution management is under-developed (Chiundama, 2008) and this is worsened by lack of skilled personnel in this sector. Although Zambia has vast forests and big national parks, it lacks capacity to value and price its natural resources and has no innovative funding mechanisms (Government of Zambia, 2007). Zambia lacks the necessary capacity to enforce its policies and regulations on environment and sustainable development conventions. Staff retention in the sector (in government) is low due to poor remuneration. In the area of research and education, Zambia needs capacity to develop proper research/scientific standards and protocols.

Zambia needs human capacity development in many areas but the new and emerging ones, are risk assessment, environmental law, environmental economics, advanced planning, climate change and adaptation, risk management, predictive skills and integration skills. It also has notable capacity gaps in atmospheric sciences (Chiundama, 2008). Zambia also lacks critical public awareness of climate change and its impact on their economic and social livelihoods and needs capacity to translate strategies into action plans at community level where impacts of climate change are felt most (Government of Zambia,

NCSA Report, 2007). Cross-cutting capacity needs for Zambia include the ability to build individual skills and motivation to address environmental and sustainable development issues; coordinate multiple actors; develop and enforce policy, legislation and regulations; collect, manage and exchange information; and plan and manage M & E processes.

The priority sectors for Zambia are Waste and Pollution; Biodiversity; Climate Change and Forestry.

ZIMBABWE

Zimbabwe is doing well in the area of environmental education where it has introduced sustainability in agricultural curricula of colleges; introduced environmental science and health education at all levels in primary and secondary schools; and begun post-graduate training in Forestry Management. Recently, the Ministry of Environment and Tourism has partnered with University of Zimbabwe and plans to offer a Bachelor of Science degree honours in Meteorology as it currently relies on external staff (Mhuka, 2011). It is also one of the few SADC countries that implements the 'polluter pays principle' with regard to effluent and solid waste management (Nhamo, 2003). It introduced carbon tax and energy levying in 2001 and countries like Swaziland who are interested in such levies can learn from Zimbabwe's experience. However, the extent to which these levies are used for environment and development appears limited. The country established a local training centre that offers Meteorological Diplomas and Post Graduate Diplomas. Metrological officers are being trained locally, to do observations and forecasting. The Institute of Environmental Studies (IES) conducts regional projects on policy frameworks on air pollution in SADC, and is also looking at emission inventories, health hazards and impact to crops. The National University of Science and Technology has begun offering a programme in Environmental Science and Health while Bindura University introduced a Masters in Forestry and Environmental Science.

Zimbabwe's systemic capacity issues are socio-political, economic and ecological. The socio-political environment of the country has been unstable for about ten years since the turn of the century. This challenge has resulted in declining economic activity which has caused high unemployment levels, low GDP and increased poverty. The net effect of these contextual developments has been an increase in direct dependence on natural resources (Government of Zimbabwe NCSA Report, 2006) and associated difficulties for environmental governance. It has also resulted in little funding and other resources being committed towards the implementation of MEAs. The Land Reform programme resulted in an increase in number of small-scale farmers who upon resettlement convert previously wooded areas into agricultural land (Government of Zimbabwe NCSA Report, 2006). This coupled with other land husbandry activities has exposed the land to increased erosion and sedimentation of water bodies. The major ecological constraint is recurrent droughts. Participants in the study identified three main systemic capacity constraints: politics and good governance; financial resources and political will and commitment. These resonate with secondary research findings discussed in this paragraph. Financial resource limitations have also impacted on CSO participation because many donors have withdrawn from funding NRM activities (because of national governance issues). The NGOs that have had to scale down because of low funding include Southern African Alliance for Natural Resources, Zimbabwe Environment Resources Organisation, IUCN and Communal Areas Management Programme for Indigenous Resources.

The institutional capacity needs of Zimbabwe range from policy analysis, coordination and collaboration, accountability (environmental governance), research, information management and monitoring systems, to infrastructure, equipment and facilities (Government of Zimbabwe, NCSA Report, 2006, Matiza & Viriri, 2007). Coordination between different ministries and sectors is relatively weak and accountability systems

regarding monitoring and enforcement of environmental legislation are inadequate. Security of tenure is another institutional capacity need in Zimbabwe. Land use planning in newly resettled areas is lacking and public access to information on land degradation, climate change and biodiversity loss is limited. Tarr (2003) notes that Zimbabwe has neither systems for accrediting Environmental Impact Assessment practitioners, nor the capacity to draw up terms of reference for them. The country has not yet developed an integrated climate change and adaptation policy for responding to the issue strategically and holistically. Matiza and Viriri (2007) note that Zimbabwe's capacity to collect, analyse, store and disseminate information of public interest is low, partly because of high staff turnover at the Central Statistics Office. In general, monitoring equipment and facilities are inadequate. In urban areas local authorities are ill-equipped to monitor air pollution while among law enforcers, there is lack of capacity to identify toxic substances. The main cross-cutting capacity needs appear to be to coordinate multiple actors; collect, manage and exchange information; develop and transfer technology; plan and manage monitoring and evaluation processes; and collect, manage and exchange information. Participants in the study identified territorialism as a key impediment to institutional development.

Zimbabwe's priority sectors were identified by 25 research participants, 15 of them in an assessment workshop and the remainder through semi-structured interviews. The priority sectors were identified as Sustainable Land Management; Inland Water Resources; Biodiversity and Natural Heritage and Waste and Pollution. The main criteria used were the extent to which sustainable use was being effectively implemented; and the significance of the problems being experienced in the sectors to economic development. For example, there was considerable soil erosion, bush fires and siltation of rivers, poaching of wildlife and relatively low returns in tourism, pollution of water bodies near towns and cities by effluent and industrial waste. Climate change and ESD were found difficult to score at the same level as the sectors because of their cross-cutting nature.

The human capacity needs in Zimbabwe were identified as environmental law, environmental economics, sustainable land managers, wetland managers, environmental reporters, foresters, environmental law enforcers, climate change specialists, adaptation specialists, remote sensing and GIS, atmospheric scientists, risk managers, clean technology developers, environmental policy makers and planners and environmental health technicians. The study identified the most important cross-cutting capacity issues as abilities to: involve national stakeholders in addressing environment and sustainable development issues; build individual skills and motivation to address environmental and sustainable development issues; raise public awareness and environmental education; define the role of sub-national and local governance structures in environmental management; mainstream environmental sustainability into the development sector; coordinate multiple sectors; plan and manage monitoring and evaluation processes; and utilise monitoring and evaluation lessons and insights.

04
KEY CONCLUSIONS

The key conclusions summarise the major systemic capacity issues, priority sectors and what shapes them, as well as commonly found institutional and human capacity needs. These are derived from the preceding chapters and paragraphs of this report and they inform the recommendations.

SYSTEMIC CAPACITY ISSUES

Commitment to environment and sustainable development is generally low as reflected in the low prioritisation of these sectors in government budgets. The budgets are insufficient to employ either adequate staff to do law enforcement or specialised staff to retain and develop them. Funding for the environment and sustainable development sectors is generally low in most Member States. Much of the funding comes from donors both at Member State and at SADC level and there have been cases of weak alignment between donors' and the region's priorities.

The generally high numbers or proportions of poor people in the southern African region means that there is a high dependence on natural resources, which then tend to get over-exploited. This has been worsened by HIV and AIDS which has caused the deaths of a good proportion of the skilled and able-bodied population across the entire region. At the same time, social and military instability has undermined environmental governance and the protection of natural resources. It has also resulted in infrastructural damage, rural urban migration and the relegation of environment and sustainable development matters to allow people to focus on the here and now.

The proneness of SADC Member States to climate change and its negative effects are generally high, because of geographical location (islands, large coastal areas) and the relatively low capacities of the governments and populations to adapt to climate change. Some countries have topography and soils that are

susceptible to soil erosion. Others are prone to natural and human induced fires, which cause plant and animal loss while at the same time contributing to GHG. At the same time, southern African countries have among the highest levels of biodiversity and endemic species, which must be looked after. This places considerable pressure on them to develop the necessary institutional and human capacity to do so.

PRIORITY SECTORS

Priority sectors were identified as those which: (a) affect several other sectors, that is, which have a cross-cutting effects, (b) pose threats and risks to the survival and livelihoods of human beings, (c) affect food production systems, (d) contribute significantly to people's livelihoods, (e) contribute significantly to the economies of member states, (f) affect a big proportion of the population, and (g) may not contribute significantly now, but have the potential to contribute to sustainable development.

The most commonly found priority sector is climate change, which is also a cross-cutting issue that affects coastal, inland and small island states in different but significant ways. The associated priorities are to do with climate change adaptation and mitigation across all sectors. The adaptation and mitigation challenges shape a range of institutional and human capacity needs in nearly all sectors: land management, forestry, energy production and use, inland and marine water resources, biodiversity and trans-boundary conservation. Education and Training in the different disciplines that are to do with ESD was seen as an important step towards addressing the challenges faced in all sectors, and especially in the priority sectors. Much of human capacity development, a cross-cutting issue, is concerned with education and training at different levels and by different methods.

Another commonly found priority sector is land use management because most SADC economies are agrarian based but the quality of the land is deteriorating while the population, on the other hand, is increasing. The relatively low levels of economic development in the region compel people to derive much of their livelihoods directly from land. The way land is managed affects rivers, forestry, biodiversity and climate change. Ecosystem, habitat and species biodiversity is another commonly found priority area in the region. It is a priority because of its potential to contribute to income generation for the region: through eco-tourism, carbon sinking in the protected ecosystems and habitats, and fair use of genetic resources to address human health problems – and also because it faces many threats.

Waste and pollution is becoming another priority sector for the region because of rapid urban growth which has often not been matched with appropriate infrastructure and human capacity development. The dangers posed by waste and pollution to human and animal health have made this sector one of the major areas of concern in cities within southern Africa.

Countries that have large coastal areas and island states identify marine resources as a priority area. Whole inland states generally find inland water resources a priority sector. This makes inland and marines resources a priority sector for the southern African region. Some of the key challenges associated with this sector are over-exploitation of the resources, difficulty to manage and enforce law and threats from human developments such as human settlement, agriculture, poaching and bio-piracy.

INSTITUTIONAL CAPACITY GAPS

The major institutional capacity gaps are associated with inter-sectoral and multi-stakeholder collaboration; management of the linkages in the chain of implementation; environmental governance; infrastructure, equipment and tools; as well as the mobilisation of science, knowledge, technology and education. These institutional capacity gaps are summarised in Table 1.

INDIVIDUAL/HUMAN CAPACITY NEEDS

There is a wide range of human capacity needs in southern Africa, but this report will limit discussions to those which are connected with the commonly found priority sectors and those that are concerned with institutional capacity needs. This way, it will be practical for capacity building institutions, including SADC REEP, to make focused responses to the region's capacity needs. The implied capacity needs from the above institutional gaps may be summarised as:

TABLE 1: SUMMARY OF INSTITUTIONAL CAPACITY GAPS IN SADC

Institutional	Some key elements
Inter-sectoral and multi-stakeholder collaboration	There is inadequate alignment of new and old policies and of policies, legislation and regulations that govern different sectors; low levels of cooperation between government, civil society organisations; inadequate inclusion of environmental considerations in the broad National (Economic) Plans; lack of mainstreaming of environment and sustainable development in institutional and institutional policies and programmes; poor communication and coordination between departments and ministries responsible for implementing the Conventions.
Linkages along the implementation chain	There are weak linkages between: planning, implementation and the human and financial resources for implementation; monitoring and evaluation, lesson learning and future strategic plans and activities; experiences on the ground and negotiations at the Conference of Parties; national and sub-national structures; policy, research and action; technology that is available on the market and capacity to absorb it; funds needed for implementing conventions and capacity to access internationally available funding for such interventions; staff responsibilities and the incentive systems.
Environmental governance	Inadequate community participation in policy and programme planning and reviews; inadequate power and capacity devolved to sub-national structures; limited tenure and user rights in communities; inequitable distribution of land; limited government regulatory oversight difficulties which results in excess utilisation of natural resources by companies at cheap prices; lack of mechanisms to foster fair and equitable use of local and national genetic resources; inadequate capacity to deal with corruption.
Infrastructure and equipment	Most countries lack the necessary infrastructure and equipment to manage environmental resources sustainably. These include roads and facilities for handling sewerage management, water and sanitation, and waste and hazardous materials. Anti-poaching tools and equipment are also limited. So are technological tools and equipment for monitoring and predicting developments in the sector, including information management systems and early warning systems.
Science, knowledge and technology development	Universities and colleges are not adequately mobilising science, indigenous knowledge and knowledge to address sustainability challenges. Their curricula, research work, and community engagement activities are not trans-disciplinary enough and generally do not mainstream education for sustainable development. At the same time, there is limited specialisation in areas where predictive and integrative skills are becoming increasingly important. Inter-university/college collaboration to tap into distributed 'expertise' is also lacking.

Integrative skills that allow individuals to work with other sectors and other stakeholders in a participatory and symbiotic manner;

Environmental leadership skills that enable individuals to move beyond their disciplines, conventional functions and responsibilities and mobilise distributed knowledge, skills and attitudes to address complex environment, sustainable development and education needs;

Resource mobilisation and accountability skills which enable individuals to identify and tap into international and local funds available for supporting fair and sustainable development;

Policy development and review skills that enable individuals to mainstream new developments in a coherent and holistic manner and that provides a framework for different sectors to work collaboratively;

Knowledge and values generation and brokering skills that enable individuals to draw on different ways of knowledge to address issues of technology development, environmental ethics, social and economic justice; and

Monitoring, evaluation and insight generation skills that allow for continuous learning and improvements that result in the improvement of practices, theories and methodologies, policies and operating contexts, including feeding into COPs.

The human skills that are needed in the priority sectors are summarised in Table 2.

CAPACITY GAPS OF CAPACITY BUILDING INSTITUTIONS

Although most counties in SADC have a growing number of environmental education/ESD experts, few countries have substantive, and well integrated environmental education policies and/or Education for Sustainable Development Strategies, and ESD is not mainstreamed into school curricula, technical and vocational education and training programmes, adult education programmes or university curricula to any great extent. In addition, countries lack robust guidelines or orientation systems for the integration of ESD into learning materials to assist citizens in understanding environmental/ESD/SD concepts; this is despite the fact that many excellent materials do exist for use in learning and teaching of ESD programmes. While a few universities in the region are beginning to run environmental education/ESD programmes, only two countries have established Masters Degree Programmes in environmental education/ESD (which is an indicator of strength of capacity of EE/ESD in the education and training system), even though many have established Environmental Science Departments. While regional level support exists throughout the SADC programme, there are, as yet few comprehensive capacity building programmes to address

TABLE 2: SUMMARY OF MAJOR HUMAN CAPACITY NEEDS IN SADC PRIORITY SECTORS

Priority sector	Key sector human capacity needs	Cross-cutting human capacity needs
Climate change	Atmospheric sciences; Climate change modelling, climate change adaptation; Clean technology development, absorption and use; Risk and opportunity assessment; Space science	Environmental reporting Policy planning and review Information, Communication and Technology Environmental law Law enforcement Human resources management and retention Mainstreaming into theory, policy and practice Risk management Curriculum development and implementation
Land management	Agro-ecological planning and management; Integrated land use planning and management; Extension and knowledge sharing; Adaptive and integrated land planning and management	
Biodiversity	Biological sciences; Environmental economics; Intellectual property rights; Taxonomy; Law enforcement; Biosystematics; Bio-prospecting; Bio-safety; Community based natural resources management; Biodiversity managers	
Waste and pollution	Environmental health and protection; Waste management researchers; Rural and urban planners; Environmental engineers; Toxicologists; Landfill designers; Clean technology development	
Inland and marine resources	Earth sciences; Aquatic biology; Oceanic sciences; Fisheries and aquaculture	

capacities in key institutions such as government departments, universities, teacher's training colleges and government departments. There are, however, some efforts to sensitise teachers, teacher's training lecturers, supervisors and directors on ESD but they are dependent on donor funding. This problem is further compounded by the failure of the environmental sector to respond comprehensively to specialised training needs. Universities on the other hand are seen as responding slowly to emerging sustainable development issues. Qualified personnel from these institutions are often seen as not delivering and they in turn are hampered by the numerous issues that beset higher education institutions in Africa following its low prioritisation during and after the structural adjustment period. Thus, while some progress has been made through the efforts of regional programmes such as the SADC REEP and associated initiatives, there is still much that needs to be done to strengthen ESD capacity at regional, and particularly at national levels. Such efforts need to be clearly and strategically directed to addressing the priority sectors for capacity identified in this report. For example, climate change is a priority issue and during the MESA workshop held in Botswana, capacity building organisations were encouraged to:

Produce more climate change knowledge by conducting research that seeks to understand climate change better;

Develop/revise curricula to take into account climate change implications on different subjects and disciplines;

Develop research programmes and tools to support climate change adaptation and mitigation;

Develop technologies and other innovations to address climate change adaptation and mitigation; and

Contribute to the development of policy frameworks for managing climate change challenges. (Mukute, 2011)

It should be noted here that this agenda is also being taken up by the Southern African Vice Chancellors Association who are producing a regional strategy for climate change research and curriculum innovation.

05 RECOMMENDATIONS

Although the study was commissioned by SADC REEP, the recommendations go beyond the Programme to include other key capacity development institutions and programmes in SADC as is consistent with the objectives of the study. The recommendations are organised into the following five areas: Translation and review of International Agreements; Domestication of Regional Policies; Human and Institutional Capacity Development; Monitoring, Assessment and Reporting; and Regional Environmental Education and Training/ ESD Institutional Development. The regional priority sectors have been identified as: Climate Change; Land Management; Marine and Inland Water Resources; Biodiversity; and Waste and Pollution. Environmental education and training as well as Education for Sustainable Development form a critical and cross-cutting priority for capacity development in southern Africa. This explains why the major thrust of our recommendations is on EE/ESD institutions in the region, most of which have collaborated with SADC REEP, with the shared object of improving capacity for implementing international and regional environmental agreements discussed in this study.

TRANSLATION AND REVIEW OF INTERNATIONAL AGREEMENTS

Regional capacity building/development institutions (including, but not limited to SADC REEP) should strategically contribute to SADC's policy development and review processes. They can do this by:

Providing expert input on ESD and how it can be mainstreamed into regional and national protocols and policy across the different sectors of environment and sustainable development, as well as into the education and training systems. This includes conducting the necessary reviews and assessments;

Participating in the harmonisation of regional policies and standards setting; and

Providing regional input into Pan African and international discourse on ESD and articulating SADC concerns and interests in relevant negotiations.

DOMESTICATION OF REGIONAL POLICIES

Regional capacity development institutions (including but not limited to SADC REEP) should directly take part in the translation of regional policies and protocols into strategic plans, action plans and concrete examples on the ground. This entails having to:

Facilitate and support the development of regional strategies and action plans and programmes that are concerned with the implementation of ESD and related policy;

Raise funds to support pilot programmes with potential to benefit several SADC Member States;

Raise funds towards the support of mainstreaming ESD in regional and national policies as well as for building capacity in ESD itself;

Continue supporting the development and implementation of change projects;

Involve policy makers in the development and implementation of change projects more strategically and directly; and

Continue supporting the development and utilisation of Regional Centres of Excellence which help illustrate how multi-stakeholder partnerships can be effectively used to address complex sustainable development issues.

HUMAN RESOURCES AND INSTITUTIONAL CAPACITY DEVELOPMENT

Regional capacity building institutions such as SADC REEP should continue to provide needs-driven multi-layered human and institutional capacity services to Member States, and put more emphasis on the latter. This means that they should:

Identify and document centres of excellence and best practice in the region in order to tap into them and scale them up (e.g. SADC REEP could scale out the environmental programme for young children between the age of 10-12 years in South Africa, Lesotho, Botswana and Swaziland);

Develop and update a register of environment, sustainable development and education experts and organisations in the region;

Support the development of national structures and systems that promote education for sustainable development (e.g. National Environmental Education Centres and Programmes) as part of a broader strategy for strengthening Members States and decentralisation;

Support the regular development and publication of SADC policy briefs and other kinds of learning materials in the three SADC official languages (English, Portuguese and French);

Support universities and colleges in the development of ESD courses and in the mainstreaming of ESD in their curricula, including support for the development of first degree courses in ESD, and guidelines in transdisciplinary approaches to curricula development and implementation;

Continue supporting short and long term training that is informed by needs of Member States, especially on climate change education green technology development and practices.

Facilitate the development of policy planning and review and leadership courses for policy and decision-makers and support the development of national centres of ESD; and

Organise periodic forums to address issues of ESD policy and practice and tap into the distributed wisdom of civil society, academia, government and business.

MONITORING, EVALUATION (M & E) AND CAPACITY ASSESSMENT

Regional capacity development institutions (including but not limited to SADC REEP) should conduct periodic monitoring and evaluation of priority sectors, human and institutional capacity needs, and of implementation of MEAs across environment sectors and advise key stakeholders on the outcomes of such M & E. This means that they should:

Develop monitoring and evaluation frameworks and tools to guide SADC to assess the extent to which its protocols and policies mainstream ESD;

Monitor and evaluate the implementation of ESD policies and action plans within the SADC region to generate and share lessons learnt and improve future action;

Monitor and evaluate the institutional arrangements of environment and sustainable development capacity building institutions in SADC to establish the most efficient and effective mode of operation; and

Document and socialise good policies, systems and practices for scaling out and up.

INSTITUTIONAL DEVELOPMENT OF CAPACITY BUILDING INSTITUTIONS

Regional capacity building organisations (including, but not limited to SADC REEP) who have key mandates for regional development of environmental education and ESD in the SADC region, should pay attention to their own institutional development, the evolving nature of engagement with SADC Secretariat, other regional and global organisations (such as UNESCO, UNEP, UNDP), SADC Member States and structures), and their visibility, role and potential for collaborative contributions. This means that they should:

Deliberately learn from other capacity development institutions in the region and beyond. In the case of SADC REEP, these would include but not be limited to the SADC Plant Genetic Resource Centre; and from the process of establishing a Centre for the Coordination of Agricultural Research for Development in Southern Africa (CCARDESA);

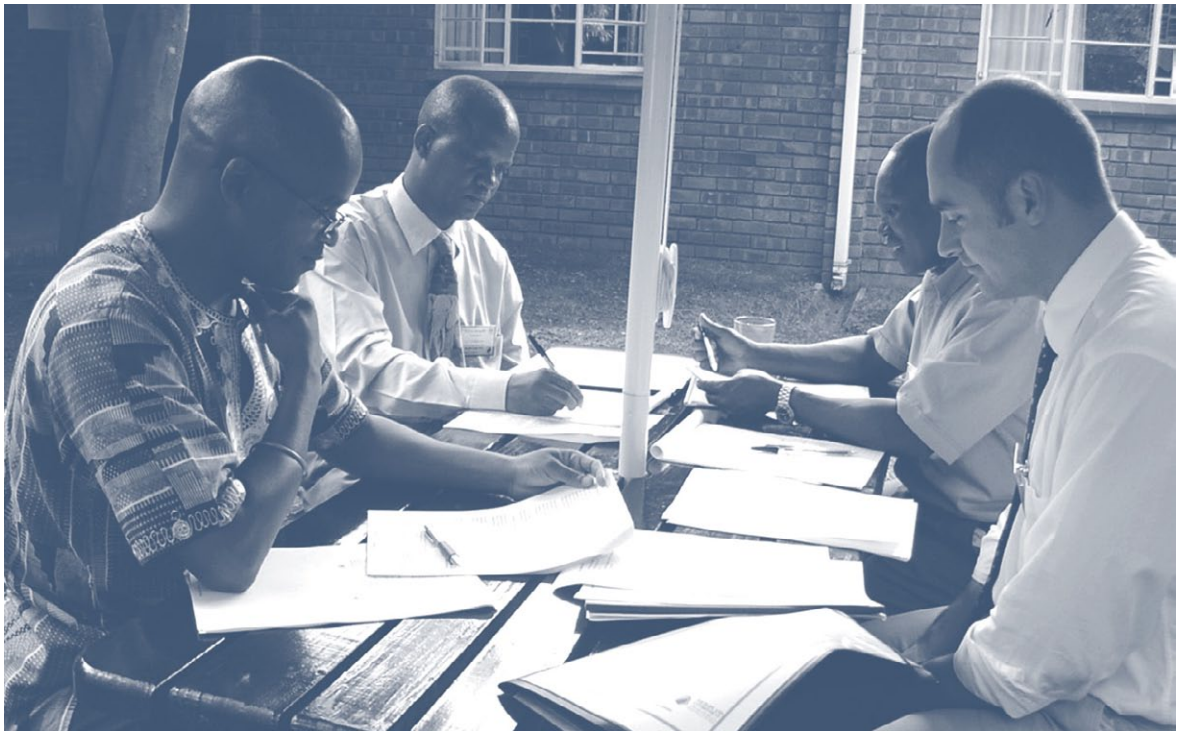
Establish strategic alliances with one another (e.g. between SADC REEP and Strengthening Capacity for Agricultural Research for Development in Africa – SCARDA, ANAFE and Association for Development of Education in Africa – ADEA). The SADC REEP already has a good track record of such forms of partnership;

Periodically review the manner in which they relate with SADC Secretariat and Member States so as to ensure that their profile and visibility enables them to carry out their mandate and associated strategic plans;

Strategically relate with SADC FANR Directorate and relevant ministries in Member States; and

Review their own human capacity needs in view of the evolving nature of its niche and thrusts (e.g. climate change has become an important social-ecological issues but it was not so 15 years ago).

Finally, SADC Secretariat should enhance a culture and practice of inter-directorate and inter-unit collaboration and co-implementation of complementary activities, EE/ESD projects and programmes. This should be accompanied by the establishment and implementation of clearer and more effective communication mechanisms and practices. At a higher level, this calls for the mainstreaming of EE/ESD in SADC's Education and Human Development policy.



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ANNEX 1

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30 Lisaka Idi	Radio RCMI
31 Georgette Mukwa	Radio Tomisa
32 Gabriel Mputu	Africa News
33 Badylon Kawanda	Prosperity
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36 Emmanuel Kapete	Soba/NGO
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40 Charles Kalangoso	Environmental Coordination
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44 Sandra Malu Kabong	Kimpangi newspaper
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47 Ambur Opey	Town Hall
48 Cyrille Kiyungu	Town Hall
49 Cyrille Muwata	ARPK/NGO
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51 Marc Midi	Paillasse/RNEE-RDC
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