



# Climate Change Education, Awareness & Training

Seychelles Second National Communications to the UNFCCC



*Illustration done by Seychellois children in August 2008 as part of an arts-based project to promote sustainable living in Seychelles  
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## EXECUTIVE SUMMARY

This report forms part of Seychelles Second National Communication (SNC) on climate change to the United Nations Framework Convention on Climate Change (UNFCCC). The objective of this report is to carry out an overall assessment of the current levels of awareness in the Seychelles regarding climate change issues, assess existing or proposed programmes for education and awareness raising on this issue, and provide clear recommendations on how to strengthen education and awareness related to climate change in the future.

As a small island developing state, Seychelles is extremely vulnerable to the impacts of climate change. Although on a global scale Seychelles contributes only a tiny proportion of greenhouse gases, our contributions per capita are significant and increasing. It is critical now that the population of Seychelles becomes more aware and pro-active in terms of how they can both mitigate and adapt to the effects of climate change. One of the key strategies the country can use to achieve this is through education, awareness and training.

This report is organized into several parts.

Part I provides a review of climate change content in the formal education system, including primary, secondary and tertiary education, as well as teacher education. Generally, the formal education system demonstrates support for environmental education initiatives at all levels of the system. A wide range of environmental topics are included in the primary and secondary curriculum, as well as the curricula followed by many post-secondary schools, and these touch on climate related issues such as water conservation, energy conservation, coastal erosion and rehabilitation, coral bleaching etc. Several competitions, workshops and theme days have focused on climate change. However, climate change as a topic in itself still needs to be incorporated into the curriculum at different levels, and, perhaps even more importantly, there is an urgent need to produce a set of basic teaching/learning resources on climate change that would allow teachers from all levels and subject areas to design their own lessons (i.e. a short film, a booklet, books, posters, etc.).

Part II looks at the numerous initiatives undertaken by both government and non-governmental actors to promote public awareness of environmental issues. The media, including television, radio and print, has been a key player in many events and campaigns, working in close collaboration with government ministries, parastatals and NGOs. Many national campaigns and events have been initiated by the Ministry of Environment, Natural Resources and Transport, led by their Education, Information and Communication Section, but parastatals, NGOs and the private sector also initiate their own public awareness campaigns and events. All of these stakeholders came together in a workshop in June, 2008 to devise a national strategic plan for public environmental awareness and education, which is still being finalized, and within which climate change should feature as a key issue. Climate change has occasionally been the focus of media programmes or special events, but has not really been dealt with in any great depth in terms of helping the public to understand how it will affect us in Seychelles, what we can do to mitigate it, and most importantly what we need to do to adapt to climate change.

Part III provides an overview of the programmes and policies which address climate change education and awareness in the Seychelles. The authors of the report found that several programmes and policies address climate change education and awareness (e.g. Environment Management Plan of Seychelles; Fisheries; wetlands management plans; programmes for coastal erosion and flooding under the UNFCCC; and disaster management and early warning). However, more effort is required to have a coordinated approach within the sectors themselves (e.g. agriculture). Furthermore, it is felt that education and awareness on climate change should be further enhanced in other sectors (the Human Resources Development Plan; the National Wetlands Policy; development, land use policy and decision making processes; and the health, forestry, tourism and land transport sectors). The new Energy Policy and Water Supply Development Plan being developed should also integrate climate change education and awareness.

The new EMPS and the SNC should provide the framework and mechanism for this integration and development.

In Part IV, the authors provide a review of efforts to promote information sharing and networking at the national, regional and global level. Efforts exist both at the national and international level to promote information sharing and networking on issues of climate change libraries, documentation centres, websites and databases. There are in fact, a wide range of institutions, both governmental and NGO, who are engaged in climate related monitoring and some of these have initiated strategies for sharing their information with researchers, technicians and the public. However there is a need to establish a mechanism for better coordination and access to information and the role of the National Climate Change Committee (NCCC) and the EMPS Steering Committee will need to be reviewed in that line. Climate change related information should be consolidated and made more accessible through the establishment of a website which would be of benefit to educators, the media, researchers, students, etc.

Part V lists possible sources of funding for climate change education, awareness and training. While there certainly are a number of local, regional and international funding sources that could contribute, these are very competitive and not focused specifically on the issue of climate change, in particular for education and awareness. Since education and awareness is considered important enough by the UNFCCC to be part of the SNC, it is clearly worthy of funding support. Seychelles National Climate Change Committee, the United Nations Development Programme (UNDP) Project Coordinating Unit (PCU) and the EMPS must coordinate this initiative and inform all stakeholders of funding opportunities as they arise.

In Part VI, information from Parts I, II, III and IV and V and the results of the stakeholders workshop held on October 31<sup>st</sup>, 2008 is compiled into a strategy for the further development of climate change education, awareness and training in Seychelles. The strategy is based on the following goals:

- *Increasing knowledge about climate change, the causes, impacts, and what people can do to help reduce it or adapt the changes in store.*
- *Helping people develop attitudes of caring for each other and the environment (engage emotions)*
- *Helping people adopt and practice changes in behaviour in response to climate change*

**The following general recommendations are made:**

1. Use this report as a policy document for climate change education and awareness, and provide support to integrate climate change education into all sectoral policies and strategies, i.e. Energy Policy, Agriculture Policy, Education Policy, and National Environmental Education & Awareness Strategy, etc.
2. Implement specific strategies and action plans for climate change education/ awareness and training focusing on specific target groups and ensuring that all sectors of society are included, as established in this study with input from stakeholders.
3. Promote ongoing stakeholder/community involvement in decision making regarding climate change education, awareness & training at national and district levels. Stakeholders would include NGOs, private sector, government agencies, community groups, youth, etc.
4. Establish and nurture a common approach and mechanism for networking, partnership and information sharing among stakeholders, within the framework of the NCCC and the EMPS,
5. Establish a system of sustainable financing for climate change education, awareness and training programmes.
6. Use local case studies showing how Seychellois can help mitigate climate change and adapt to its impact.

In order to implement these recommendations, the following actions must be taken by climate change education, awareness and training stakeholders:

1. Develop education and awareness materials on climate change and sustainable living for schools/public/stakeholders.

2. Empower/use leaders, educators and mentors to share their knowledge, values and experience with different target audiences. Provide training for teachers, lecturers and environmental representatives in schools.
3. Sensitise policy makers on the importance of addressing climate change.
4. Integrate climate change education into all sectoral policies and strategies, i.e. Energy Policy, Agriculture Policy, Education Policy, etc.
5. Establish a mechanism for information sharing and networking focusing of the role of the NCCC in education and awareness.
6. Provide opportunities for training in climate change and related issues for media and other professionals involved in climate change issues.
7. Seek funding sources locally and internationally to support environmental education, awareness and training programmes.
8. Create opportunities for young people to learn more about climate change.

This list of actions has been further elaborated into an Action Plan for Climate Change Education, Awareness and Training (2009-2014), as detailed in Part VI (Conclusions & Recommendations).

# TABLE OF CONTENTS

<b>Acknowledgments</b>	<b>Page 5</b>
<b>Abbreviations</b>	<b>Page 6</b>
<b>Introduction Project Background Information</b>	<b>Page 8</b>
<b>Part I: Climate change education, awareness and training programmes in the formal education system</b>	<b>Page 9</b>
<b>Part II: Public Awareness Initiatives on climate change</b>	<b>Page 17</b>
<b>Part III: Climate change education and awareness programmes at institutional and policy level</b>	<b>Page 25</b>
<b>Part IV: Efforts to promote information sharing and networking at the national, regional and global level</b>	<b>Part 31</b>
<b>Part V: Potential national and international funding and technical resources that have and could support climate change education and awareness in Seychelles</b>	<b>Page 36</b>
<b>Part VI: Conclusions and Recommendations</b>	<b>Page 39</b>
<b>Action Plan for Climate Change Education and Awareness and Training 2009-2014</b>	<b>Page 42</b>
<b>Bibliography</b>	<b>Page 44</b>
<b>Annexes</b>	<b>Page 46</b>
<b>Annexe 1: Types of data holdings that exist in Seychelles</b>	<b>Page 46</b>
<b>Annexe 2: List of Stakeholders involved in Climate Change Awareness, Education and Training</b>	<b>Page 48</b>
<b>Annexe 3: Recommendations from the workshop</b>	<b>Page 50</b>
<b><u>List of Figures:</u></b>	
<b>Figure 1: Summary of climate change content presently included in formal education</b>	<b>Page 16</b>
<b>Figure 2: Summary of climate change content in public awareness programmes and campaigns</b>	<b>Page 24</b>
<b>Figure 3: Direct programmes/policies addressing climate change, education and awareness</b>	<b>Page 30</b>

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## ABBREVIATIONS

<b>ADS</b>	Agricultural Development Strategy (2007-2011)
<b>AEIN</b>	African Environment Information Network
<b>AFTN</b>	Aeronautical Fixed Telecommunication Network
<b>AIACC</b>	Assessment of Impacts and Adaptations to Climate Change
<b>CBD</b>	Convention on Biodiversity
<b>CHM</b>	Clearing-House Mechanism
<b>COP</b>	Conference of Parties
<b>CORDIO</b>	Coral Reef Degradation in the Indian Ocean
<b>DOE</b>	Department of Environment
<b>DNR</b>	Department of National Resources
<b>EAB</b>	Energy Affairs Bureau
<b>EE</b>	Environmental Education
<b>EES</b>	Environmental Engineering Section
<b>EHO</b>	Environmental Health Officer
<b>EIA</b>	Environment Impact Assessment
<b>EIC</b>	Education, Information & Communication (Section)
<b>EMPS</b>	Environment Management Plan of Seychelles (2000-2010)
<b>EMS</b>	Environmental Management Systems
<b>EP EIA</b>	Environment Protection Impact Assessment Regulations
<b>EPA</b>	Environment Protection Act, 1994
<b>FAO</b>	Food and Agriculture Organisation of the United Nations
<b>GAW</b>	Global Atmospheric Watch
<b>GCOS</b>	Global Climate Observation System
<b>GCRMN</b>	Global Coral Reef Monitoring Network
<b>GEF</b>	Global Environment Facility
<b>GIS</b>	Geographical Information System
<b>GOOS</b>	Global Ocean Observing System
<b>GSN</b>	GCOS Surface Network
<b>GUAN</b>	COS Upper Air Network
<b>HRDP</b>	Human Resources Development Plan of Seychelles
<b>IAS</b>	Invasive Alien Species
<b>ICS</b>	Island Conservation Society
<b>ICZM</b>	Integrated Coastal Zone Management
<b>IOC</b>	Indian Ocean Commission
<b>IO-GOOS</b>	GOOS project for the Indian Ocean
<b>ISO</b>	International Standards Organisation
<b>MCSS</b>	Marine Conservation Society of Seychelles
<b>MENRT</b>	Ministry of Environment, Natural Resources and Transport
<b>MoE</b>	Ministry of Education
<b>NCCC</b>	National Climate Change Committee
<b>NGO</b>	Non governmental Organisations
<b>NIE</b>	National Institute of Education
<b>NMS</b>	National Meteorological Services
<b>NIHSS</b>	National Institute for Health and Social Services

<b>ODINA</b>	Ocean Data and Information Network for Africa
<b>PCA</b>	Plant Conservation Action Group
<b>PPS</b>	Policy and Planning Section (DOE)
<b>PUC</b>	Public Utilities Corporation
<b>ReCoMaP</b>	Regional Coastal Management Programme
<b>S4S</b>	Sustainability for Seychelles
<b>SACVAP</b>	Seychelles Awareness, Communication and Visibility Action Plan
<b>SAHTC</b>	Seychelles Agricultural and Horticultural Training Centre
<b>SBC</b>	Seychelles Broadcasting Corporation
<b>SBS</b>	Seychelles Bureau of Standards
<b>SCMRT-MPA</b>	Seychelles Centre for Marine Research and Technology – Marine Parks Authority
<b>SEYMEMP</b>	Seychelles Marine Ecosystem Management Project
<b>SEYPEC</b>	Seychelles Petroleum Company. Ltd.
<b>SFA</b>	Seychelles Fishing Authority
<b>SIB</b>	Seychelles Investment Bureau
<b>SIDA</b>	Swedish International Development Agency
<b>SIM</b>	Seychelles Institute of Management
<b>SINC</b>	Seychelles’ Initial National Communication
<b>SIT</b>	Seychelles Institute of Technology
<b>SLRF</b>	Sea Level Rise Foundation
<b>SNOC</b>	Seychelles National Oil Company
<b>SST</b>	Sea Surface Temperature
<b>STA</b>	Seychelles Tourism Academy
<b>STB</b>	Seychelles Tourism Board
<b>SUBIOS</b>	Sub-Indian Ocean Seychelles (Annual Marine Festival)
<b>TCPA</b>	Town and Country Planning Act, 1972
<b>UHSLC</b>	University of Hawaii Sea Level Centre
<b>UNEP</b>	United Nations Environment Programme
<b>UNESCO</b>	United Nations Educational, Scientific, and Cultural Organisation
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WCS</b>	Wildlife Clubs of Seychelles
<b>WIOMAP</b>	Western Indian Ocean Marine Application Programme



# INTRODUCTION

## Project Background Information

Preparation of the Seychelles Initial National Communication (SINC) on climate change was the initial step toward implementation of the United Nations Framework Convention on Climate Change (UNFCCC) obligations at national level. The leading role in the implementation of the convention on climate change falls within the competence of the Ministry of Environment and Natural Resources, in cooperation with other ministries. The project for preparation of the Second National Communication on climate change is a logical step towards further implementation of the UNFCCC at a national level. Its main objective is preparing a comprehensive report on the climate change related issues. The analysis conducted within the SINC will be upgraded and extended, which will result in preparation of an extended national report. Furthermore, it will work towards ensuring that climate change issues are not considered as separate to national and local environmental concerns by integrating objectives into national and local strategic planning processes.

The objective of this report is to carry out an overall assessment of the current levels of awareness in the Seychelles regarding climate change issues, assess existing or proposed programmes for education and awareness raising on this issue, and provide clear recommendations on how to strengthen education and awareness related to climate change in the future. In doing this the involvement and participation of local communities (especially among young people) organisations, civil society and government bodies was sought.

The tasks carried out in preparing this report were as follows:

1. Evaluate current public knowledge/awareness of climate change issues, and make an inventory of existing climate change education and awareness programmes;
2. Provide information on steps already taken to integrate climate change education into socio-economic and environmental policies and programmes in Seychelles;
3. Report on existing efforts to promote information sharing and networking among and within the country and region;
4. Assess potential national and international funding and technical resources that have and could support climate change education and awareness in Seychelles;
5. Develop priority list of actions to raise public awareness and promote education related to climate change issues.

## PART I: CLIMATE CHANGE EDUCATION, AWARENESS AND TRAINING PROGRAMMES IN THE FORMAL EDUCATION SYSTEM

As a small island state, Seychelles is acutely aware of its ecological and economic vulnerability and has since independence in 1976 actively promoted a policy of development that aims to integrate social, economic and ecological sustainability (although the term “sustainability” was not always employed). Seychelles’ national development policy has always been closely tied to formal education, as illustrated by a comment made by the Special Advisor to the Minister for education: *“After independence Seychelles had to look at what they had to market in terms of the economy, and they realized it was the environment, for tourism, fisheries etc. So environmental conservation has always been tied in with our national development goals, and education has also been a large part of our national development plans since independence, so it fits in that formal education must include environmental education.”* (Dora, pers.comm., 2006)

### Education Policy

After independence Seychelles produced its first education policy in 1984, which covered all stages of formal education, including primary, secondary, post-secondary, and continuing education. This policy set the stage for the recognition of the key role formal education should play in sustainable development. This policy specifically describes appropriate development in the Seychelles context as that which is, *“good for man [sic] and good for his environment and fully comprehends the necessity of inter-relating human and environmental needs within a complete ecosystem”*<sup>1</sup>. Education was identified as one of the principal means of achieving this kind of development and was in fact viewed as the first priority within the national development programme.

In the year 2000, the Seychelles’ Ministry of Education published “Education for a Learning Society”, a new policy statement which continues to provide direction for all stages of the formal education system today. This policy defines seven guiding principles for education: equity, quality, accountability, education for empowerment, productivity, social cohesion, and global participation. Infused within many of these principles is a commitment to the role of education in building and maintaining a peaceful, democratic and socio-ecologically sustainable society. For example, the principle of education for global participation emphasises that, *“Seychelles’ contribution to the realization of two of mankind’s (sic) most cherished aspirations, namely, the twin achievements of world peace and sustainable development will be enhanced through an education which promotes our tradition as a society sensitive to environmental issues and committed to policies emphasizing the social / human aspects of development.”*<sup>2</sup>

While this document makes no specific mention of integrating climate change education into school programmes, its acknowledgment of environmental problems and emphasis on civic responsibility certainly makes space for climate change initiatives within the formal education system.

It is worth mentioning that in 1997, the Ministry of Education produced an “Environmental Education Policy”, which states in the introduction that, *“It is the policy of the Ministry of Education and Culture to promote and support an understanding, valuing, respect and appreciation of the environment that is reflected in all of its activities. The implementation of this policy is the collective responsibility of all employees and students of the Ministry of Education and Culture.”* While the policy document itself is not widely known or acknowledged in the Ministry (Dora, pers.comm., 2006), it does reflect the Ministry of Education’s general approach to the integration of environmental concerns into the formal education system. Around the same time, the Curriculum Development Section produced an environmental

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<sup>1</sup> Ministry of Education and Information (1984) “Education for the new society” p.10.

<sup>2</sup> Ministry of Education (2000) “Education for a learning society”, p.5.

education curriculum guidelines document, which outlined fairly specific environmental knowledge, skills and attitudes to be integrated within various subjects of the curriculum. This document was implemented to a limited extent. To be useful now, it would need revision to include input from all stakeholders and to respond more to current pressing environmental issues such as climate change.

### **Primary and Secondary Education**

The **Seychelles National Curriculum Framework (2001)** defines the broad content, skills and attitudes to be learned by children in primary and secondary schools. One of the seven core principles of the National Curriculum is relevant to the integration of a complex topic such as climate change into schooling: *“Learning is more effective when students see the connections and relationships between ideas, people, events and processes, as in real life situations.”*

The national curriculum is broken down into different subject areas such as maths, science, Personal and Social Education, the Arts, etc. Teachers follow subject curriculum documents and programmes of study for each subject they teach. Some of these subject curriculum documents are currently being revised, and there may be opportunities for the inclusion of new content related to climate change.

Several of the subjects taught in schools are largely skills-based (such as languages and the arts). While the curriculum documents for these subjects do not specifically mention climate change, teachers who are interested can easily fit this topic into their lessons (and some do at times).

Other subjects are guided by more specific content, i.e. science, PSE, social studies (primary), and geography (secondary). Following is a brief review of topics related to climate change in these subject areas.

#### **Science:**

- The primary science curriculum does not specifically address climate change, but includes a number of topics indirectly related to climate change impacts and mitigation, such as energy conservation, water conservation.
- The situation is similar in the secondary science curriculum, which includes the following topics indirectly related to climate change: interdependence, human impact on the environment, ecosystems, water management and conservation, nuclear power, cycles in nature, energy sources and conservation, machines.
- The International General Certificate for Secondary Education (IGCSE) syllabus for physical science has almost no environmental content whatsoever, failing to make any sort of connection between chemistry, physics, and real life, let alone the impacts of human scientific activities on the environment.

#### **Social Studies & Geography**

- The curriculum for secondary level Geography does not include climate change as a specific topic; it is considered to be more of a cross-cutting theme. Several topics are indirectly related to climate change, including: industries and environmental impacts, weather and climate, population studies, urbanisation, power production and management, trends and impacts of tourism, coastal processes & erosion. There are no specific resources available to help Geography teachers integrate climate change more comprehensively into their lessons. Items such as a short local film on climate change, posters, and fact sheets would be useful.
- Approximately 250 students in Secondary 5 follow the IGCSE Geography syllabus each year. This syllabus deals directly with human impacts on the environment and mentions impacts on climate several times as an example topic to be covered.

- Given Seychelles' policy emphasis on environmental education and the fact that many secondary teachers have training in environmental education, the Ministry of Education should offer the IGCSE in Environmental Management for S5 students. The syllabus includes climate change as a topic.

### **Personal and Social Education**

- The PSE programme does not touch directly on the topic of climate change, but again includes some general environmental topics which provide openings for teaching about climate change, such as environmental health, caring for our environment, citizenship, etc. The secondary level PSE programme includes a topic on environmental health, risks and safety which could be used to link more directly to the topic of climate change.

### **Extra-curricular Activities and Special Projects in Schools**

In 2004, the Ministry of Environment initiated the Sandwatch programme in schools, which stemmed from a SIDSNet (Small Island Developing States network [www.sidsnet.org](http://www.sidsnet.org)) initiative.

For Environment Day (June 5<sup>th</sup>) in 2008, the Ministry of Education organised a national climate change creativity competition open to primary, secondary, and post-secondary schools (state and private). Categories included posters, poetry, songs, and short plays. Prizes were awarded in mid-June at a special show at the International Conference Centre of Seychelles, featuring performances by prize-winners. This show was attended by the President and several ministers as well as schoolchildren and invited guests, and was given wide coverage by the local media. Many primary and secondary schools participated, but at the post-secondary level only the NIE took part.

World Meteorological Day in March 2008 also focused on climate change, and the Meteorological Office in collaboration with the Environmental Education Unit in the Ministry of Education organised a one day workshop for secondary school science teachers and selected students.

The Science & Technology Fair is organized by the Ministry of Education every two years for primary, secondary and post-secondary schools. School projects often focus on climate change itself (for example, Anse Boileau Primary School's 2008 project), or issues directly related to climate change such as energy and water conservation.

From time to time the Environmental Education Unit in the Ministry of Education organises short training sessions for in-service teachers, and these have occasionally been directly or indirectly related to climate change, i.e. Sandwatch, and workshops for World Meteorological Day in previous years.

### **Resource Materials for Teaching/Learning about Climate Change in Primary and Secondary Schools.**

Very few local materials exist to support teaching and learning in the classroom about climate change specifically, and few imported materials are available. One notable exception is the book, *Learning for Sustainable Living in Seychelles*, produced by the local NGO, Nature Seychelles in 2003. This book was written as a resource for secondary teachers, and includes a chapter on climate change (pp.133-139) which covers both background information and provides ideas for lessons. 15 copies of this book were donated to the libraries of each secondary school and 2 copies were donated to each primary school library. Unfortunately, few teachers seem aware of this excellent resource available to them and it is rarely used. The book is still available through Nature Seychelles at a reasonable cost, and sold to student teachers at the NIE at a reduced rate of only SR40 to promote its use.

The Environmental Education Unit in the Ministry of Education initiated the development of teachers' guide on climate change education around 2005; however this project has been stalled due to lack of funding support. It involved the adaptation of a South African curriculum resource for the Seychelles' context. The project was in its very early stages. The chapter on climate change in Nature Seychelles' book *Learning for Sustainable Living in Seychelles* already provides a good overview of climate change and some lesson ideas.

It is recommended that this resource document be completed as a document on climate change adapted to a specific curriculum area, i.e. Secondary Geography and that the formal curriculum be altered so as to include climate change as a specific topic.

There are a number of educational websites (mostly American) that provide free lesson plans and links to other resources for teachers such as:

<http://climatechangeeducation.org/>

<http://www.education.noaa.gov/tclimate.html>

<http://www.gcric.org/ipcc/ga/index.htm>

<http://education.arm.gov/teachers.stm>

[http://www.pyr.ec.gc.ca/EN/Climate/climate\\_educate.shtml](http://www.pyr.ec.gc.ca/EN/Climate/climate_educate.shtml)

Most teachers in government schools have been able to acquire their own laptop as part of a government programme launched in 2007. However, it should be noted that at this time, none of the primary schools are yet connected to the internet. The secondary schools all have computer rooms and internet access (in the computer room), and all are equipped with at least one computer lab which could be used for climate change education, either during computer classes or by classes of other subjects when the rooms are available.

### **Post-secondary Education**

Seychelles currently has nine post-secondary education institutions, most of which fall under the jurisdiction of the Ministry of Education. Aside from SALS (the School of Advanced Level Studies), most of these provide formal vocational training to prepare students for the world of work, i.e. in agriculture, tourism, teaching, fishing, construction, accounting, nursing, etc. Most of these institutions are focused on providing full-time programmes for S5 graduates, but some also provide opportunities for in-service education for professionals. Following is an overview of each institution and the degree to which their programmes address climate change education at present.

#### **School of Advanced Level Studies (SALS)**

The school of A level studies (SALS) offers opportunities for students who have successfully completed their IGSEs to follow the A level syllabus for a number of different subjects. The only A level course offered at SALS that specifically addresses the topic of climate change is Geography and about 50-75 students each year sit for this exam. Advanced level geography students study weather as a topic, and within this, the subtopic of climate change is covered, including causes, impacts, and mitigation as well as case studies of what can be done. Other topics in the A level geography programme related to climate change include coastal environments (and the effects of stresses such as climate change on coral reefs).

None of the other A levels include climate change as a specific topic although teachers of other subjects such as languages and arts could include it in the course work as a topic for project work or writing assignments if they were interested and if more teaching / learning materials were available and promoted for their use.

The school library at present contains little or no information about climate change or how it will impact Seychelles. Teachers are not clear about where they can go to access information about climate change and Seychelles. One recommendation coming from SALS is that more information about climate change be distributed to post-secondary school libraries, and that further information can be stored in a centralized location, preferably on the internet. A second recommendation was that A level geography students be invited to participate in national climate monitoring programmes and other climate related projects led by the Meteorology office or other departments, and that the school be equipped with a weather station. A third recommendation was that Seychelles consider offering the A level in Environmental Management to students at ALDEC (spell out) or SALS as this course provides scope for examining how climate change will impact on tourism, fisheries and agriculture and what can be done to adapt.

### **School of Visual Arts (Polytechnic)**

The School of Visual Arts forms part of the Seychelles Polytechnic. The students join this school after completing S5, and choose to enroll in one of three programmes: Fine Arts, Textiles & Fashion or Graphics. All students in the school are enrolled in a two year programme which leads to a certificate. About 20 students each year are selected to continue on to a third year of study at the end of which they sit for the A level examination in Arts and are also awarded a higher certificate in Arts. None of the School of Arts programmes currently includes any climate change content in the curriculum. However, the topics of environment and nature are often addressed by lecturers and frequently taken up by students in their A level project work. The school recognises the important role the arts can play to help people become more aware and reflective of environmental issues.

One of the third year lecturers coordinates an extra-curricular wildlife club to help students develop their environmental knowledge and experience. This club recently invited one of the co-chairs of the National Climate Change Committee to come and speak to them about climate change, in preparation for 2009 when climate change will be a theme for many of the national wildlife club initiatives.

### **National Institute of Education (NIE)**

The National Institute of Education (NIE) is responsible for teacher education in Seychelles. Most NIE students are engaged in full time study to become primary or secondary teachers. The NIE also offers some part-time courses for in-service teachers, as well as short workshops on curriculum or teaching strategies during the school holidays. All full-time student teachers take two compulsory units of environmental education (60hours total) before they graduate. These address current environmental issues as well as strategies for teaching environmental education. Climate change is not focused on specifically but it is indirectly covered. Students also undertake independent environmental service learning projects and at times choose to focus on climate change-related issues.

Primary student teachers follow a unit in social studies which includes climate change as a topic. Secondary geography student teachers also at times study climate change as a topic within their programme, but this is dependent on student and lecturer interests. The post –graduate certificate in education (PGCE) course currently has no environmental content.

### **National Institute for Health and Social Services (NIHSS)**

The National Institute for Health and Social Services (NIHSS) runs two main programmes: Nursing, and Environmental Health. These programmes currently have no content that specifically address climate change. The curriculum for these programmes is highly structured around a competency based assessment, and there is at present little flexibility (for lecturers to just fit it in?). There is also very little (if any) information available on the relationship between climate change and human health in Seychelles.

While the Nursing programme is more practical and more focused on clinical skills, the Environmental Health programme does address the impacts of ecological change in general (such as land reclamation) on human health and epidemiology. There is a growing awareness in the health sector of the relationship between health and climate change, and openness to the possibility of including climate change more formally in the Environmental Health programme. Recently, the school even submitted a proposal (unsuccessfully) for a scholarship to carry out research in this area. The school is interested in developing a module for the Environmental Health programme that specifically addresses the impacts of climate change on health, and how communities would adapt to or mitigate these impacts. Mr. Garry Dine, a lecturer from the school, suggests that there is a need for opportunities for post-secondary lecturers to network and further develop their knowledge of climate change issues.

## **Seychelles Institute of Technology (SIT)**

The Seychelles Institute of Technology (SIT) is Seychelles' largest post-secondary institution, and offers a range of certificate and diploma programmes in engineering and the built environment. SIT also occasionally offers short in-service courses for practitioners upon request from the private sector. At present, the majority of SIT students are in the one year certificate courses, and these do not address environmental issues or impacts, let alone climate change. Students in the two year diploma programme in Construction Industry take a module in environmental science which addresses the impacts of construction on the environment. Climate change is not directly addressed in this module but could be linked to content regarding reducing human impacts on the environment in general.

In terms of developing new curricula to support climate change education, the SIT has expressed an interest in developing a compulsory module for all of the certificate students and would focus on impacts of construction and technology activities on the environment, but would need external assistance to develop this. For the diploma students, one of the areas that could be developed further is related to technical drawings / design & construction of green, energy-efficient buildings.

Short in-service workshops on environment related topics have been held in the past, such as a workshop for refrigerant technicians to support the implementation of the Montreal Protocol to reduce ozone depleting substances. There might also be scope for further short in-service workshops of this nature for architects, draftsmen, contractors, etc.

## **Seychelles Tourism Academy (STA)**

The Seychelles Tourism Academy (STA) offers programmes to prepare professionals for the tourism industry. The main programmes offered are:

- 1) tourism and tour guiding;
- 2) food production & culinary arts;
- 3) restaurant & bar service;
- 4) reception, operations and services;
- 5) hospitality management.

These programmes are offered as full time one-year diploma courses and two year certificate courses or part-time apprenticeships. Hospitality management is a new three-year advanced diploma programme that can, for successful candidates, eventually lead to the completion of a BA or MA from an Austrian Institution. All of these are competency based programmes, i.e. designed to help students acquire the skills identified as necessary by the tourism industry.

There are only two courses that currently incorporate environmental issues directly. The Tourism and Tour Guiding course requires students to take units in local geography, local fauna and flora as well as legislation for environment and eco-tourism. It does not address climate change specifically, but the eco-tourism topic could be developed to incorporate issues pertaining to green modes of transporting /guiding tourists, carbon footprints of tourism and carbon off-setting, and other relevant topics.

The Tourism Management course currently does include a unit on sustainable tourism. However, the curriculum for this course is currently being adapted and updated, and there is scope to include more consideration of how the tourism industry will be affected by climate change, and how tourism managers can mitigate climate change in their establishments (with respect to energy and water efficiency, restoration of habitats, use of locally sourced products, reduction of waste, etc.) as well as plan ahead with a view to adapting to the impacts of climate change.

In light of recent concerns about food security, as well as growing awareness of the links between food production and climate change, there is scope for the food production and culinary arts course to also develop a module related to the environmental and health benefits of using locally produced, organic foods.

Similarly, the other two courses could consider developing a core unit on eco-tourism, to ensure that all STA graduates have a basic understanding of the environmental impacts of tourism, and basic ways and means to minimize negative impacts.

### **Maritime Training Centre (MTC)**

The Maritime Training Centre (MTC) runs full-time courses for S5 graduates as well as occasional short in-service workshops for professionals. The full-time students at the MTC follow a choice of four different courses: fisheries science, marine navigation, marine mechanics and basic fisheries. Climate change is currently integrated into several of the modules offered to students, mainly in the fisheries science course, which includes the study of factors affecting marine ecosystems (climate change being one). The fisheries biology unit also addresses environmental factors affecting fish and includes climate change. The research methods course also incorporates elements of climate change indirectly, as does the unit on legislation, which covers international conventions.

There is a willingness on the part of lecturers in this school to further incorporate climate change into their courses, and a recognition of its relevance, but lecturers have identified the lack of local teaching/learning resources as a significant constraint, and would like to see the development of posters, slide shows or films related to climate change impacts, mitigation and adaptation in Seychelles.

### **Seychelles Agricultural and Horticultural Training Centre (SAHTC)**

Most students at this school are S4/S5 graduates enrolled in a one year certificate in general agriculture (which includes elements of both agriculture and horticulture). Students can apply to continue their studies for a second year to earn a diploma in either agriculture or horticulture. A small percentage of full-time students are in-service, i.e. were practising farmers or farm labourers wishing to pursue further education.

All students in the foundation (first) year take a compulsory unit in weather/ climatology which addresses climate change. A number of other units also address adaptation to a changing climate. The school is interested in further developing the climate change content of their units, but is constrained by lack of climate change educational resources (audio-visual materials, teachers' guides etc.)

The school also runs in-service training sessions for farmers, and these do at time focus on issues related to climate change (such as adapting to changing weather, rainfall patterns, pests, etc.) but do not directly address climate change itself, i.e. causes, mitigation, adaptation.

### **Polytechnic - Business Studies**

The Business Studies School falls under the Seychelles Polytechnic. They offer two programmes: accounting and secretarial studies. The secretarial studies programme is more technical, helping students to develop secretarial skills for the workforce, and does not at present include much environmental content specifically. The accounting programme prepares students to be book keepers, financial controllers, etc. This programme does take into account themes such as corporate responsibility, personal effectiveness, and economically efficient use of resources, but does not treat these as separate environmental topics. The school tries in general to promote the ideals of care for the environment and engages students in extra-curricular activities such as clean up.



**Figure 1: Summary of climate change content presently included in formal education**

Institution / Policy	Comments
Primary Curriculum	Many related topics included such as climate, water and energy conservation in curriculum
Secondary Curriculum	Cross-curricular theme in secondary geography but not a compulsory topic. Other teachers (i.e. language) include it in lessons at times. A teachers' guide on climate change was initiated by the Environmental Education Unit but not completed.
National Institute of Education	Topic covered in geography for primary student teachers only. At times covered in programme for secondary geography student teachers.
School of A Level Studies SALS	Topic covered in A level Geography only
Seychelles Agricultural and Horticultural Training Centre SAHTC	Topic covered in weather and climatology for all students
Seychelles Tourism Academy STA	None
Seychelles Polytechnic: Business Studies Business Studies	None
Seychelles Polytechnic: Arts	None
National Institute for Health and Social Services NIHSS	None
Maritime Training Centre MTC	Topic covered in fisheries science programme
Seychelles Institute of Technology SIT	None
Extra-curricular Initiatives	Climate change has been directly and regularly addressed over the last five years through national competitions, special projects, in-service teacher workshops and workshops for school children organised by the Environmental Education Coordinating Unit in the Ministry of Education. The work is usually carried out by school clubs during extra-curricular time, but occasionally integrated into lesson time. Science and Technology Fair entries often focus on climate change and/or strategies and technologies for mitigation and adaptation.
Eco-School Competition	Does not address climate change directly although criteria include energy and water conservation. This annual competition is only open to primary and secondary schools at present.

## Part II: Public Awareness Initiatives on Climate Change

### 1. Survey of Public Awareness of Climate Change

A small scale survey was carried out by interview on Mahe and La Digue, whereby about 15 Seychellois “on the street” were stopped and invited to answer a short series of questions related to climate change. Interviewees included children, youth, and working adults. Most of the interviews were conducted in Kreol, while 2-3 were done in English (according to interviewee preference). Their responses were recorded on video, edited and compiled into a short film (Attached on CD). While this survey is in no way statistically significant, it does provide some general insights into Seychellois thinking about climate change at this point in time.

The following questions were asked of interviewees.

- 1) What comes to mind when you hear the word, environment?
- 2) Have you ever heard of climate change? If yes, tell me what you know about this issue?
- 3) What do you think are the causes of climate change?
- 4) Do you think climate change will affect you personally? How?
- 5) What, in your view, can we do to prevent or deal with climate change?
- 6) Where did you learn all this?

The following is a summary of their responses:

The first question was simply intended to open the conversation. Respondents said that the word “environment” made them think of nature, everything around us, the place we live, plants, animals, etc.

In response to the second question, all interviewees had heard of climate change, with the exception of two primary school children. When asked to elaborate, they spoke of global warming, changing weather patterns, increase in storms, sea level rise, coastal erosion, coral bleaching, pollution, tsunamis, and threats to human health.

When asked about the causes of climate change, people referred in general to our human tendency to be greedy, selfish, and not take nature into account when going about our daily lives and business, or undertaking large scale developments. Some referred more specifically to pollution, cars and other transport as factors leading to climate change, but only two (both children) mentioned the process of burning fossil fuels or other sources of carbon. No one mentioned or tried to explain the greenhouse effect. A few people’s responses reflected the view that climate change was a natural occurrence and/or a challenge given to us by God.

When asked if they thought climate change would affect them personally, most respondents said yes, and a few mentioned health issues, the heat (and discomfort), drought, and sea level rise. However most did not really elaborate on their response nor seem to have an in-depth understanding of how much the impacts of climate change might affect our way of life here in Seychelles.

Regarding actions that can be taken to prevent or deal with climate change, most respondents mentioned general solutions such as reducing pollution, taking more care of how we treat the natural environment, driving cars less. None spoke of specific actions they could (or would) personally take, i.e. at home or in their place of work.

When asked where they learned what they had shared, respondents cited the media (television), their own observations of their environment and human activities, and school.

## **Conclusions drawn from this small scale survey:**

Overall, the interviewees all appeared to have a basic and seemingly sincere concern for the environment / nature and how it is being impacted by human activities, which can, based on their responses to Question 6, perhaps be attributed to environmental education programmes in the media and schools. Almost all were familiar with the term climate change, and most had a basic understanding of some of its general causes, but demonstrated little understanding of the processes involved. Similarly, interviewees had a very general understanding about how climate change might affect us here in Seychelles and few ideas of what specific actions individuals, organisations or the state must take in order to prevent climate change or adapt to its impacts. These preliminary findings suggest that we are in need of better climate change education, awareness and training programmes that will equip all Seychellois with the knowledge and skills they need to act upon an apparently well established sense of concern for their environment.

## **2. Agencies Promoting Public Awareness of Climate Change**

Seychelles has a long history of promoting public awareness of environmental issues, and this was formalised in the first **EMPS (1990-2000)**. While the Department of Environment has always been a key leader in public awareness campaigns, it must be noted that today there are many other government departments, parastatals, non-governmental organisations and local businesses which are also actively involved in planning and implementing environmental public awareness campaigns. However, the effectiveness of these campaigns has never really been measured, and there has been a lack of any coordinated long-term strategising or prioritising of campaign issues (one of which would now most certainly be climate change). In an attempt to begin to resolve this barrier, in June, 2008, the Department of Environment hosted a national workshop to produce a strategy for environmental education and awareness in Seychelles. The final strategic plan is still being developed, but it should be noted that any initiatives to promote public awareness of climate change should be considered within the framework of this national strategic plan.

### **Department of Environment (Education, Information and Communication Section)**

The Education, Information and Communication (EIC) Section in DOE has the mandate for leading environmental awareness campaigns for the public. Past campaign topics have included waste, biodiversity conservation, coastal zone management, tree planting, and more recently food security and climate change

The EIC section works closely with SBC Television and Radio to produce regular environmental programming such as Planete Seychelles, Karne Lanatir, Resours, etc. as well as advertising spots related to their campaigns. Occasionally, these programmes have focused on climate change related topics, particularly during the last few years, but detailed records of television and radio programmes and dates aired are not always maintained. The EIC section works closely with the private sector (Seybrew, Cable & Wireless, Barclays, etc.), schools, and other key partners such as NGOs, parastatals and other government departments. The EIC Documentation Centre has a mandate for keeping climate change related information, but often does not receive copies of documents and resources.

Several radio and television programmes prepared by the Division of Environment were aired on climate change and its socio-economic impacts (agriculture, fisheries, tourism) as well as its effects on biodiversity (marine, erosion/coastal zone). Programmes also focused on health impacts, as well as mitigation and measures (e.g. in the construction sector). Newspaper articles reporting initiatives both at the national and international level on the subject have been published e.g. about SEYMEMP. There has also been general media coverage on the 1997 coral bleaching and the general trends in local climate. Two international television programmes (CNN and NBSC) were also initiated and conducted with the participation of Banyan Tree Resort.

The Department of Environment has led a number of public awareness campaigns focused on the promotion of the conservation and wise use of wetlands (often in collaboration with partners such as Nature Seychelles and Wildlife Clubs of Seychelles). Public awareness programmes and activities are

conducted each year to commemorate Wetlands Day and also during environmental programmes in the media. While these campaigns have not necessarily made a direct link between climate change and wetlands, there is a strong link in that coastal wetlands can provide a buffer zone to protect coastal communities from sea level rise. This can be emphasised more in future wetlands education campaigns. Examples of some past projects which have made this link include: the Indian Ocean Commission (IOC) funded Grand Anse project; research projects undertaken on coastal management; coastal reforestation and rehabilitation projects, e.g. mangrove coastal replanting on Curieuse in some areas on Mahé e.g. at Anse a la Mouche and at Anse Boileau after the 2004 tsunami.

Coastal replanting initiatives also include the “My Tree My Seychelles” campaign, which can be considered as one of the awareness campaigns on the climate change issue. It started in January 2008 targeting all segments of the society, working closely with the private sector, NGOs, schools (primary, secondary and post secondary), ministries, individuals, etc. A request for partnership was conducted on tv. Activities such as coastal rehabilitation and fruit tree planting are undertaken with assistance provided by the Ministry of Environment, Natural Resources and Transport.

The Assessment of Impacts and Adaptations to Climate Change in Small Island States Study was conducted in 2002 with the participation of Seychelles. It recommended certain adaptation measures and trialed out the step log system as a method of coastal protection on Praslin. This has proven to be successful and will be replicated in other areas requiring coastal protection. Groynes are to be reinforced and new ones are being built at Anse Kerlan, Praslin as adaptation measures for protection against coastal erosion. These local examples can be incorporated into public awareness programmes focused on adaptation to the impacts of climate change.

Other government departments, parastatals and NGOs have from time to time taken the lead on climate change related public awareness campaigns. The following section provides a list of these agencies as well as programmes they have initiated.

## **The Media**

Seychelles has a number of newspapers (daily and weekly), two state-operated local radio stations operated by SBC (AM and FM) and one state-operated local television station (SBC), all of which are used extensively by the state and other actors to convey information about climate change and other environmental issues. Newspapers and magazines from other countries are not widely available for sale, so most residents refer to the local press. There are two international radio stations that can be received locally: BBC Africa and a French station, however the local radio stations are by far more widely listened to by the local population. SBC television and TV-5 (French) are available for free; however a significant proportion of the local population also has cable tv and access to a much wider variety of stations and programming. Nonetheless, it should be noted that most residents watch the local news and many of the locally produced documentary programmes (despite access to other television channels). Generally, the local media are receptive to covering environmental initiatives taking place in Seychelles, and open to input from local environmental groups.

Many of the environmental programmes featured in the media originate from the EIC section in the DOE, although it should be noted that a number of NGOs, notably Nature Seychelles and Island(s) Conservation Society, contribute regular columns to a number of newspapers. Nature Seychelles and Wildlife Clubs of Seychelles also regularly contribute to the development of television and radio programmes on a range of environmental issues.

## **Newspapers**

Several local newspapers: Nation, Regar, Rising Sun, and People have regular (weekly or even bi-weekly) pages devoted to environmental news. The Nation in particular has provided extensive coverage of climate change related events. Since 2004 (the earliest date permitted by archival searches on their website), a total of some 97 articles have been published related to the topics of climate change, global warming, and

sea level rise. Many of these articles focused on publicising Seychelles' participation in meetings, international agreements, and networks, and reporting on the observed or studied impacts of climate change on marine or terrestrial ecosystems. While coverage of climate change topics in print media has been quite high, it should be noted that very few of the articles are educational as such - advising readers how to reduce their contribution to climate change or how to plan for dealing with its impacts.

### **SBC Television**

Records are not available of the number of specific television and radio programmes related to climate change that have been aired over the last ten years, but a large number of these have been initiated by the Department of Environment's EIC section in collaboration with the Seychelles Broadcasting Corporation (SBC). One edition of *Planète Seychelles* (television) from around 2005 focused on climate change and tourism. There have been a number of television programmes on agriculture that have addressed issues related to climate change, such as dealing with droughts/changing water supplies and introduced agricultural pests. A recent edition of the agriculture programme *Resours* aired on World Food Day in October 2008 focused on food security and climate change.

### **SBC Radio**

SBC AM radio station has regular environmental programmes, which are researched and carried out in collaboration with the government and NGOs such as Nature Seychelles and Wildlife Clubs of Seychelles. The programme *Nature Watch*, aired once a week, has at regular intervals covered the topic of climate change. The other local radio station, *Paradise FM* plays mostly music but has in the past done live road shows at community events. This could be re-instated to coincide with climate change related events such as coastal tree planting projects.

In a social marketing survey carried out on La Digue by Nature Seychelles this year, it was discovered that a large percentage of people listen to SBCAM radio during the early evening and on Saturday mornings, but that a significant number of people also listen to the SBC AM radio during the day at work. Although a similar survey should be carried out on Praslin and Mahe to better understand radio listening patterns, this information can (and already is being used) to plan optimal scheduling of environment related programmes for SBC radio.

### **Department of Natural Resources (Agriculture)**

Communication and awareness is conducted on a daily basis through the media and through the extension services that the Department of Natural Resources (DNR) provides to farmers. Actions to raise public awareness and education in support of sustainable farming and food production systems are promoted by the Department of Natural Resources targeting both farmers and students at the Seychelles Agricultural and Horticultural Training Centre through workshops and training sessions. The "Every Home a Garden" campaign is aimed at promoting food security by making every Seychellois household a food garden. This department worked in collaboration with the EIC section and SBC TV this year to produce a television programme focused on climate change and food security. Every year, the DNR organises a National Agricultural and Horticultural Show which coincides with National Day celebrations in June. Many local organisations put up information kiosks at this event, outlining the relationship between their work and agriculture, horticulture or food security. The 2008 event included a display on climate change by the Meteorology Office.

### **Energy Affairs Bureau (Ministry of Industries)**

The Energy Affairs Bureau (EAB) in the Ministry of Industries produced and disseminated a series of leaflets on energy conservation during the late 1990s. These were recently updated and printed in collaboration with Public Utilities Corporation (PUC).

### **Public Utilities Corporation (PUC)**

The Public Utilities Corporation (PUC) recently reprinted a series of brochures on saving energy, electricity and renewable energy, in collaboration with the Energy Affairs Bureau. They also printed and disseminated a series of posters and leaflets urging the public to use less water and energy to save money. These are widely posted and available in schools, government offices and other public places. PUC Electricity has also embarked on an education and awareness campaign through television spots on minimising wastage broadcast on SBC tv, through posters, as well as an energy exhibition conducted yearly except for 2008. Spots on minimising wastage of water are also aired on SBC tv at the initiative of PUC Water.

### **Seychelles Bureau of Standards (SBS)**

The Seychelles Bureau of Standards (SBS) recently hosted the 2008 World Standards Day which focused on green building design. As part of the celebrations, it printed articles in the Nation, hosted a workshop open to invited guests, and an exhibition open to the public.

### **National Meteorological Services (NMS)**

The National Meteorological Services (NMS) share weather and climate related information via daily meteorological programmes on SBC television and radio. The meteorological reports on tv every night put local weather in the context of regional and global trends promoting and facilitating the development and implementation of educational and public awareness programmes on climate change and its effects. The meteorological services also provide guest speakers on climate change to schools (upon request) and collaborate with the Ministry of Education to organise a training session for students and teachers each year to celebrate World Meteorological Day, which has focused on the theme of climate change at least twice.

### **Environmental Health Section (Ministry of Health)**

Environmental Health and other sections in the Ministry of Health have run many successful education & awareness campaigns on various health related issues through the media, banners in town, special events, conferences, training programmes, etc. They work in collaboration with the Red Cross Society of Seychelles, and through this association are becoming more involved in exploring the links between climate change and health.

The Department of Health has a series of education and awareness environmental public health programmes in the media such as studio clinics on SBC radio and the tv programmes "En bon santé". Awareness programmes are also conducted through communication via door to door inspections by environmental health officers to identify public health hazards and risks of diseases and to advise the public on how best to manage their household environment to control such risks. Awareness is also done through posters, slogans, campaigns and by linking up with different organisations e.g. Clean up the World with the Department of Environment (DOE) and other partners.

Educational campaigns are also undertaken with specific target groups of the population e.g. school children.

Awareness and education campaigns have been effective but tools to measure their effectiveness are lacking. More research is required especially to determine e.g. knowledge, attitude and practice of target groups.

The draft Report on the Impact of Climate Change in the Health Sector under the Second National Communication recommends the increase of public awareness towards sanitation as the key to preventing diseases and recognising the links between refuse, mosquitoes and diseases. In relation to surveillance and control programmes, the draft report recommends to incorporate current climate change concerns into programmes and measures, along with regular evaluations to determine a programme's likely effectiveness to cope with projected climate risks. Public education and awareness campaigns as well as the

implementation of an early warning system for disease outbreaks to alert the population and relevant authorities are also being recommended.

### **Tourism/Seychelles Tourism Board (STB)**

The theme for World Tourism Day in 2008 was “Responding to Climate Change in Tourism”. Awareness activities on this theme such as coastal tree planting were organised by the Seychelles Tourism Board (STB).

In 2004 a GEF PDF B project “Reduction of Environmental Impacts from Coastal Tourism through Introduction of Policy Changes + Strengthening Public/ Private Partnerships” was initiated and sought, amongst other aims, to carry out a demonstration project on the establishment and implementation of environmental management systems and voluntary eco-certification and labeling schemes.

In promoting sustainable tourism in Seychelles, an eco-certification scheme is being designed for tourism establishments. Only one hotel has an eco-certification. ISO 14001 standards have not been applied to the tourism sector in Seychelles. This sustainability label will serve as an awareness raising mechanism for hotels, their staff, as well as tourists.

### **Seychelles Centre for Marine Research and Technology – Marine Parks Authority (SCMRT-MPA)**

One of the mandates of the Seychelles Centre for Marine Research and Technology – Marine Parks Authority (SCMRT-MPA) is marine education and awareness. SCMRT-MPA has been monitoring the recovery of the coral reefs following the 1998 global coral bleaching event with projects such as “Promoting of coral reef recovery through substrate stabilisation” and “The Impact of recent tsunami on coral reefs of the inner islands (2004-2006)” funded by CORDIO (Coral Reef Degradation in the Indian Ocean) and SIDA. CORDIO was launched in 1999 to evaluate the extent and impact of the coral bleaching as well as determining the socio-economic impact. A series of educational CD-roms were developed in the region to aid in the CORDIO training programme and for field centres and schools in particular. Other projects were completed to help better understand the global impact of climate change on the marine environment and thus help in its conservation. The Kids Dive Club is one such project in which children between the ages of 12 to 14 years have been trained to increase their interest in the underwater world and thereby build capacity in the methods of reef monitoring. Moreover there have also been past displays on coral bleaching at SUBIOS, Regatta etc.

The Doctors’ House on the island of Curieuse has interactive displays about the Curieuse environment, particularly about the importance of coastal habitats (beaches, mangroves, coral reefs) and the (mainly human) threats to them as well as climate change (mainly emphasising the possible impacts of sea level rise, and also global warming on coral bleaching episodes).

The Seychelles Marine Ecosystem Management Project (SEYMEMP), a GEF funded project that was designed to assess the impacts of the 1997/1998 coral bleaching event on the Seychelles’ marine ecosystems, particularly those around the granitic islands, also included an evaluation of the socio-economic impacts of the coral bleaching event, along with proposals for adaptive strategies. Education and public awareness was an integral part of all these components.

### **Seychelles Island(s) Foundation (SIF)**

The Seychelles Islands Foundation’s (SIF) management is very aware of possible impacts of climate change and sea level rise on the Aldabra atoll, and is engaged in long-term monitoring programmes which could detect changes and eventually feed into education and awareness programmes.

### **DRDM**

The Department of Risk and Disaster Management (DRDM) set up in 2006 has two sections dealing with early warning and sensitisation; and disaster mitigation, risk and impact assessment. In 2008 a risk and disaster calendar was published in collaboration with the Red Cross Society of Seychelles, the Fire Brigade and the Meteorological Office, which served the purpose of providing a teaching aid in risk and disaster management. Public awareness activities were undertaken by the Department during the Disaster Reduction Day in October in 2007 and 2008. DRDM produced and disseminated three issues of a newsletter in 2008. They also worked closely with the media, airing several programs on television and radio, and publishing 15 articles in 2008 on disaster risk related issues. The Early Warning and Sensitisation section also held meetings and trainings sessions with a number of schools to help them identify risks and plan for disasters, some of which will necessarily be climate change related, such as storm surges and floods.

### **The Red Cross Society of Seychelles (RCSS)**

In response to a new focus by International Committee of the Red Cross and Red Crescent on the links between climate change and health, the Red Cross Society of Seychelles (RCSS) has initiated a number of workshops for its volunteers and health staff on the topic. RCSS recently released a report on the links between climate change and health in Seychelles and have plans to undertake more campaigning and training in this area, in collaboration with the Ministry of Health. A memorandum of understanding (MOU) has been signed in 2007 between the RCSS and the Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness. The aim of the MOU is to strengthen the capacity of the RCSS to better understand and assess the risks of climate change to the vulnerable people in the country and the programmes of the RCSS.

The RCSS through its quarterly newsletter 'Coup du Coeur', its monthly radio programme entitled '*Volonter an Aksyon*', and its website disseminate basic disaster preparedness and response related information. The RCSS has established Red Cross Clubs in schools and they have been highly successful. These clubs can be utilised as an effective audience for education and awareness.

### **Nature Seychelles and Wildlife Clubs of Seychelles**

These two closely associated NGOs have an extremely active education and outreach programme, working both with the general public and with schools (through the wildlife clubs network). They have produced a range of educational resources for schools (teacher activity guides and posters), one of which is the only teaching/learning resources that directly addresses climate change – Learning for Sustainable Living in Seychelles. A recent issue of the Nature Seychelles magazine, *Zwazo*, focuses on coastal issues, and the forthcoming 2009 Wildlife Clubs Magazine will focus on climate change. Copies of this magazine are distributed to all school wildlife clubs to share among their members. Wildlife Clubs of Seychelles have in the past, led peaceful demonstrations/marches on current environmental issues. While climate change was never addressed, there is scope for working with the clubs in 2009 to organise a rally on climate change.

### **Sea Level Rise Foundation (SLRF)**

This NGO was founded in 2007 in order to raise global awareness of sea level rise and its impact on small island states and coastal communities. Although it is still relatively new, its intention is to create an online database of information regarding climate change, to enhance information exchange within and between small island states and coastal communities, as well as to undertake research on the effects of rising sea levels on people, biodiversity and sustainable development. It has a website ([www.sealevel-rise.org](http://www.sealevel-rise.org)) with some information about its activities as well as a regularly updated BlogSpot with commentaries about different aspects of climate change ([sealevelrise.blogspot.com](http://sealevelrise.blogspot.com)).

### **Sustainability for Seychelles**

This new NGO aims to promote sustainable living in Seychelles through education, training, research and promotion of sustainable technologies. One of its objectives is to promote the use of appropriate



technologies to mitigate greenhouse gases. It is in the process of developing a website which will include tips for the public and local businesses on ways to reduce their energy and water consumption, and it is also planning to develop a brochure for distribution, as well as a mobile display which will include aspects of climate change mitigation and adaptation. Sustainability for Seychelles, in collaboration with other partners, coordinated an Earth Day Festival in April, 2008 at the Children's Playground. This will become an annual event and could be used to highlight climate change issues.

### National Consumers Forum (NATCOF)

This non-governmental agency promotes consumer education in Seychelles and has, in recent months since the devaluation of the rupee, been focusing on reducing consumerism to save money and resources. Their campaigns include television spots as well as banners in Victoria.

### Private Sector

While the private sector has not really initiated public environmental campaigns, several local businesses, such as Cable & Wireless, Barclays, Seybrew and Eden Island, have regularly provided financial support for environmental campaigns organised by government and non-governmental actors. Some hotels such as Banyan Tree and Fisherman's Cove have organised tree planting events on their grounds involving local school children. Several local businesses have collaborated with the MENRT to organise staff events focused on coastal tree planting as part of the My Tree, My Seychelles campaign.

**Figure 2: Summary of climate change content in public awareness programs and campaigns**

Initiative	CC content
Television Programmes	<i>Planete Seychelles</i> programme on Tourism and Climate Change in 2004? <i>Resours</i> programme on Climate Change and Food in October, 2008 SBC news coverage of climate change events such as World Tourism Day in 2008, launch of Sea Level Rise Foundation, etc.
Radio	Nature Watch programme on SBC AM by Lucille Adrienne has regularly touched on climate change as a topic
Print Media	Nation and Regar cover climate change related local news (i.e. local events, meetings, workshops, agreements signed by Seychelles, coral reef bleaching) regularly. Nation articles after 2004 accessible from its website archives section. Rising Sun includes articles about tips for homeowners on saving money and using local resources, i.e. home gardening.
Magazines	Upcoming Wildlife Clubs of Seychelles magazine (2009) will focus on climate change Nature Seychelles magazine (Zwazo) regularly includes articles on coastal management issues related to climate change
Special Events and Theme Days	World Tourism Day 2008 activities focused on climate change (STB) World Food Day 2008 activities focused on climate change (DNR) World Meteorological Day 2008 – theme focused on observing our planet for a better future – direct links to climate change. (NMS) World Water Day 2004 focused on water and disasters, linking to climate change World Standards Day 2008 focused on green building design (indirectly linked to climate change) Earth Day Festival 2008 included a displays on renewable energy by the NIE World Disaster Day 2008 focused on safe hospitals and took into account the impact of storm surges and floods.
Exhibitions	SBS exhibition on green building design in October 2008 Meteorology office display at National Agricultural and Horticultural Show 2008 focused on climate change DNR exhibition at Festival Kreol stall for World Food Day 2008 focused on climate change
Campaigns	No long-term, planned public awareness campaigns have focused on climate change specifically EAB and PUC have produced brochures, posters and tv spots focusing on reducing electricity and water use and Natcof is currently leading a banner, poster and tv spots campaign to reduce consumerism and resource use.
Training	Red Cross Society of Seychelles has held workshops in collaboration with Environmental Health to explore relationship between climate change and health National Risk and Disaster Management office has held training sessions for staff of different government departments and schools addressing risks such as extreme weather events.
Local Websites	Sea Level Rise Foundation website and blog has information about climate change and small island states/coastal communities

## PART III: CLIMATE CHANGE EDUCATION AND AWARENESS PROGRAMMES AT POLICY LEVEL.

### 1. Environment

**The Environment Management Plan of Seychelles 2000-2010 (EMPS)** is the main policy document relating to environmental management in the Seychelles. One of the guiding principles of the EMPS is fulfilling international and regional environmental responsibilities pertaining to environmental management.

Ten thematic areas were chosen to cover all major development sectors as well as certain key subjects of relevance to environmental management such as environmental economics. Education, awareness and advocacy as well as vulnerability and global climate change are the cross-cutting themes of the EMPS. Other cross cutting themes of relevance are partnerships, public consultation and civil society participation; training and capacity building; management; science, research and technology; monitoring and assessment. As the current EMPS ends in 2010 and a new 10-year EMPS is in the process of being formulated, it is imperative that climate change issues and particularly education and awareness issues on climate change are considered a high priority and integrated within the programmes of the new document.

The **Seychelles National Strategy for Plant Conservation 2005-2010** has the following targets which relate to climate change:

- Conserving crop diversity (which relates to food security and climate change)<sup>3</sup>
- Managing Alien Invasive Species by reviewing and implementing enhanced measures to reduce the risk of introduction of new alien invasive species, pests and diseases, and managing existing species that could threaten natural ecosystems<sup>4</sup>
- Sustainable production of valuable plants. Though not directly linked to climate change, this emphasises the need for sustainability of any harvested native plants, which could be affected by climate change.<sup>5</sup>

Objective 6 of the **Seychelles Plant Conservation Research Agenda 2008-2015** identifies the impact of climate change on habitats and plant species. The whole objective relates to research about the implications of extreme weather events, effects on cloud forest habitats, changes in coastal ecosystems and their ecosystem services (e.g. wetlands) and effects of drought on glacial vegetation.

The objective of the **Seychelles National Wetland Conservation and Management Policy, 2005** is to “protect and conserve wetlands so that wise and sustainable use of their functions and values, including indirect benefits, are secured now and in the future”. One of the targets of the policy is education and sensitisation of the public and school children on the importance, protection and conservation and socio-economic values of the wetlands. This should be extended to address the public in general.

Numerous management plans for wetlands exist, e.g. those of the Plantation Club, Banyan Tree, Anse Royale and also private islands Aride, North, Denis, Frégate, and Cousin. The hotels on these sites adopt and manage these wetlands through their management plans which are elaborated in collaboration with the wetlands unit in the Department of Environment. Sea level rise (and hence climate change) is a factor considered in the management of numerous wetlands e.g. Aride, Roche Caiman and the La Digue plateau. However, the level of education and awareness of the stakeholders about these climate change issues is

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<sup>3</sup> Target 5

<sup>4</sup> Target 7

<sup>5</sup> Target 8

unclear. Education and awareness activities should target these stakeholders so as to ensure the management plans are climate proofed.

The Environment Protection Act, 1994 (EPA) has provisions for the declaration of Coastal Zone, its protection and management but these are yet to be developed.<sup>6</sup> Coastal zone sector studies have been undertaken under the Second National Communication to the UNFCCC. The studies analysed the present coastal erosion and flooding situation in Seychelles and made recommendations on the two issues in the light of climate change risks, specifically sea level rise. An assessment of the state of the coast lines of the 3 main islands was carried out and recommended adaptation measures, as well as an identification and assessment of areas at risk to flooding with recommendations on how to proceed with development in such areas. Public awareness features in the recommendations.

The mechanisms for awareness in development exist through the planning and the Environment Impact Assessment (EIA) processes. The Planning Authority set up under the **Town and Country Planning Act, 1972 (TCPA)**, is the body that approves development in the country. It comprises stakeholders involved in the development process. Environmental Impact Assessments (EIAs) are dealt with under Part IV of the Environment Protection Act, 1994 (EPA) and the **Environment Protection (Impact Assessment) Regulations, 1996 (EP) (EIA) Regulations**<sup>7</sup>. The legislation requires that an EIA study be carried out and that an environmental authorisation is obtained prior to any develop in a protected or ecologically sensitive area<sup>8</sup>. These decision making processes need to address climate change considerations such as future water shortages; vulnerability of sites due to location either in mountainous or coastal areas; suitability of sites for development; rainfall, etc which need to be taken into account when granting permission for development. New Building Regulations which take into account the effect of extreme weather events, are being prepared under the TCPA. These will include a scheme for adaptation and mitigation for coastal zones. All stakeholders e.g. architects, site clearers, contractors etc. involved in development need to be made aware of these issues.

## 2. Agriculture

The SINC identified climate change as a threat to biodiversity in the area of agriculture. This is further extended in the Second National Communication which addresses the promotion of research on climate change response activities in the agricultural sector. The following activities have been proposed:

- 1) An Insurance scheme for selected crop and livestock farmers as well as fishermen under the assumption that climate change will be manifested through more frequent extreme events which translate into higher risk for frequent disaster. . Farmers, through the contribution of a premium, would benefit from an insurance scheme in the event of losses through natural disasters. There is a planned FAO feasibility study on the introduction of such a scheme for both farmers and fishermen. The necessity of the scheme will be promoted within the farming community through education and awareness of the effects of climate change.
- 2) A study to assess crop varieties, water management as well as changes in planting schedules as important options in limiting the negative effects of climate change on the agricultural sector. The parameters of the study include insolation, temperature, humidity and rainfall on crop performance. A crop development plan for the next five years seeks to improve water management and irrigation systems so as to limit the negative effect of more frequent droughts as a result of climate change is

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<sup>6</sup> Section 11 EPA, 1994

<sup>7</sup> SI 39 of 1996 as amended by SI 36 of 2000

<sup>8</sup> S 15 EPA

being proposed. Education and awareness on how to adapt to climate change will be crucial in translating these practices and techniques to the farming community.

The **Agricultural Development Strategy (ADS) 2007-2011**, though not an official document, promotes national food security, embodies aspirations relating to climate change especially as its effects on agricultural will be felt. This will be through extreme weather events which would include periods of intense droughts, freak storms, wetness with negative physical impact of rain on crops, flooding of low lying areas, prolonged overcast conditions, high pests and diseases prevalence along with abnormally high ambient temperature leading to great loss of production, loss of livelihoods and threats to national food security.

Under the **Agricultural Development Strategy 2007-2011**<sup>9</sup> adaptation measures and mitigation options against climate change are promoted. Technologies and cultural practices in crop production that would provide adaptation measures and mitigate the impacts of climate change are being promoted with the aim of sustainable food production and the achievement of the set arable crops targets within the planned period.

The **National Food Strategy 2008-2011**, a plan of action which uses the ADS 2007-2011 as a launch pad, is updated regularly to take into consideration new changes. However, the **Plan of Action** neither refers to sustainable development nor the environment. Key actions proposed in the EMPS appear to be completely absent in the proposed plan with a lack of holistic, systems thinking. There is a need to investigate how technology can be used not only to make agricultural and fisheries production more efficient and cost effective, but also more environmentally sustainable, particularly with the climate change pressures the world is facing today.

The EMPS has a work programme on sustainable agriculture.

### 3. Fisheries

**The Fisheries Policy 2005** seeks to ensure that user groups and stakeholders have adequate opportunities to raise their concerns and actively take part in decision making.

It seeks to promote private sector collaboration for adequate and appropriate research and that the results are disseminated to all stakeholders. The Policy provides for the Seychelles Fishing Authority (SFA), within the framework of its fishing agreement with the European Union, to continue to train as many of its staff as possible to the highest level in collaboration with the Maritime Training Centre. The Policy also provides for SFA to continue to ensure that data generated by research are analysed and that the results of such analyses are published, respecting confidentiality with the aim of being distributed in a timely and readily understood fashion, in order to ensure that the best scientific evidence is made available as a contribution to fisheries conservation, management and development. The policy also promotes research activities in support of fishery conservation and management as well as research on marine resources and on the effects of climatic, environmental and socio-economic factors. Under the existing policy a framework exists to promote education and awareness on the effects of climate change on fisheries within the fisheries community and to create opportunities for training.

**The Fisheries Development Plan**, which is currently being drawn up, makes reference to climate changes and its effects on fisheries. It seeks to implement the **Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries** which promotes States to establish the research capacity necessary to assess the effects of climate or environment change on fish stocks and aquatic ecosystems.<sup>10</sup>

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<sup>9</sup> Strategy 4.5

<sup>10</sup> Article 12 Code of Conduct for Responsible Fishing

The following research is being undertaken in the Fisheries Sector under the Second National Communication to the UNFCCC: Determination of the socio-economic impacts of climate variability on Seychelles industrial tuna fishery, with a view to identifying management and policy strategies to adapt to future uncertainty and change. Recommendations from the study should include education and awareness of stakeholders on how to adapt to these changes.

#### 4. Energy Sector

The current **Energy Policy, 1999** promotes energy conservation practices as well as the appropriate utilisation of renewable energy resources and technologies. The Policy, however, needs to be revised to reflect current trends and practices. An Energy Committee has been set up at the national level, comprising of all relevant stakeholders, to supervise the drafting of a new energy policy and strategy which will address the following goals: a diversification of the energy base of the country so as to reduce dependence on imported energy carriers thereby limiting the vulnerability of the country to imported fossil fuels while taking into consideration the risks involved; allow optimal use of local and renewable energy sources by ensuring that these alternative energy projects are evaluated on the basis of providing benefits to consumers; enhance protection and preservation of the environment, in particular the reduction of the emission of greenhouse gases; promote energy efficiency in all sectors of the economy including the transportation sector; provide affordable energy to all sectors of the economy while ensuring the financial sustainability of the electricity as a public utility; promote economic growth and job creation by ensuring reliable supply of energy at internationally competitive prices. In particular, it will take into account environmental aspects by assessing the environmental impact of future energy production, distribution and use on both climate change and local environment; and assess the need for awareness campaigns for better energy conservation.<sup>11</sup>

#### 5. Health

There is no clear policy on how to deal with health hazards due to climate change though broad statements exist within the job descriptions of the EHOs. Data /statistics collected by the environmental health officers (EHOs) during the course of their duties e.g. investigations of complaints, disease outbreaks, building applications, landed vessels; aircrafts etc should help to review strategies and policies. A clear set of precautionary guidelines need to be put in place to determine what measures to take in emergency situations, including education and awareness on climate related health issues .

#### 6. Disaster

The Department of Risk and Disaster Management (DRDM) set up in 2006 has the mandate to prepare for disasters and coordinate responses at the national level as well as early warning, education and sensitisation on the subject. The draft **National Disaster Management Policy** was submitted to Cabinet in June 2008 and is awaiting approval. The **National Disaster Response Plan** developed last year addresses the risk of Tsunami, Cyclone and Flood at national and district levels. There are now 25 district response plans (and 1 specific response plan for Silhouette).

A Public Awareness consultancy under the UNDP Disaster Management project is underway and plans to look at public knowledge with regards to Disaster Risk Reduction with the aim of developing a public awareness strategy for DRDM.

Since the 26<sup>th</sup> December 2004 tsunami, the National Meteorological Services (NMS) has been designated as the Early Warning Centre for the Seychelles and acts as the warning centre in the event of disasters such as winds, heavy rainfall/flooding, tropical cyclones and tsunamis. The tsunami warning programme is also embedded in the Multi-Hazard Warning System. Various activities, programmes and initiatives have been developed to ensure that Seychelles is tsunami ready; and is part of the global programme for a Tsunami

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<sup>11</sup> Draft TOR Energy Policy and Strategy July 2008

Warning System in the Indian Ocean. Some of the main work being carried out is as follows: data observation and monitoring, seismic observation; tide/sea level monitoring and dissemination.

## **7. Forestry**

The **Seychelles Forest Management Plan, 1993** does not make reference to climate change.

## **8. Water**

A consultant is currently being recruited to lead the development of the Water Supply Development Plan for 2008-2030. Climate change should feature in the plan, particularly education and awareness activities targeted at the public for the sustainable use of water.

## **9. Land Transport**

The **Seychelles Land Transport Planning and Policy Study, 1997** does not make reference to climate change. Education and awareness within the document relates to road safety only.

## **10. Invasive Alien Species**

Invasive Alien Species (IAS) pose the greatest threat to Biodiversity in Seychelles and that climate change could well have significant bearing on this. The UNDP Bio-security project will address this issue more substantively.

## **11. Human Resources**

The national framework for education, training and awareness is through the Human Resources Development Committee comprising the Ministry of Administration and Manpower and the Ministry of Education and Youth. A **Human Resources Development Plan of Seychelles (HRDP)** 1994-2000 proposed a number of areas for human resource development. With a budget of over 15 million USD, the HRDP sought to improve human capacity in Seychelles. Unfortunately, it did not address capacity needs for sustainable development, especially the opportunities created through the implementation of the environment management plan.<sup>12</sup> In its next review this should be addressed particularly in relation to building capacity to address climate change.

## **12. Tourism**

The policy documents for the tourism sector fail to take into account the issue of climate change.

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<sup>12</sup> Govt. of Seychelles (2002) "Seychelles National Report to the World Summit on Sustainable Development"

**Figure 3: Summary of the direct programmes/policies addressing climate change education and awareness**

Sector	Programmes & Policies
Agriculture	SNC: Insurance scheme for selected crop and livestock farmers; Study to assess crop varieties, water management as well as changes in planting schedules
	<b>Agricultural Development Strategy 2007-2011</b> makes reference to Climate change directly and promotes increased food security through adaptation to changing conditions and increased local production
	<b>The Food Security Strategy 2008-2011</b> promotes climate change adaptation and mitigation measures
Disaster	<b>National Disaster Management Policy awaiting Cabinet approval</b>
	<b>National Disaster Response Plan</b> addresses risk of Tsunami, Cyclone and Flood at national and district levels. (25 district response plans and 1 specific response plan for Silhouette).
	National Meteorological Services designated as Early Warning Centre for the Seychelles
Cross-Cutting	EMPS 2000-2010: Education, awareness and advocacy as well as vulnerability and global climate change are the cross-cutting themes of the EMPS. Climate change, education awareness & training (EA&T) are integrated into plans for many sectors, i.e. agriculture, energy
Fisheries	<b>Fisheries Development Plan</b> currently being drawn up, makes reference to climate change effect on fisheries, strengthening research capacity
	<b>Fisheries Policy 2005</b> promotes training and research related to fisheries conservation & management, in light of climate, environmental and socio-economic factors
Energy	Goals of New Energy Policy will allow optimal use of local and renewable energy sources; reduction of the emission of greenhouse gases & promote energy efficiency
Plant Conservation	Targets of <b>Seychelles National Strategy for Plant Conservation 2005-2010</b> relating to climate change: Conserving crop diversity; Managing Alien Invasive Species & Sustainable production of valuable plants
	<b>Seychelles Plant Conservation Research Agenda 2008-2015</b> (Objective 6) identifies the impact of climate change on habitats and plant species
Wetlands	Management plans for wetlands (by hotels and private islands) with sea level rise considered a factor.

## Part IV: Efforts to promote information sharing and networking at the national, regional and global level

Libraries and general documentation centres exist locally and these include the National Library, Alliance Francaise, and Documentation Centres at SBS, DoE, DNR and the Ministry of Education (MoE).

Seychelles has various Government and NGO environmental websites and databases which have been put in place to promote and facilitate public access to information and information sharing. The following are some examples:

- National Meteorological Services [www.pps.gov.sc/meteo/](http://www.pps.gov.sc/meteo/)
- Department of Environment [www.env.gov.sc](http://www.env.gov.sc)
- Nature Seychelles [www.natureseychelles.org](http://www.natureseychelles.org)
- Sea Level Rise Foundation [www.sealevel-rise.org](http://www.sealevel-rise.org) ; [www.sealevelrise.blogspot.com](http://www.sealevelrise.blogspot.com)
- Island Conservation Society [www.islandconservationsociety.com](http://www.islandconservationsociety.com)
- Sustainability for Seychelles [www.s4seychelles.com](http://www.s4seychelles.com)
- Marine Conservation Society of Seychelles [www.mcscs.sc](http://www.mcscs.sc)
- Denis Island [www.denisland.blogspot.com](http://www.denisland.blogspot.com)

Committees at the national level promote information sharing and networking such as the Environment Management Plan of Seychelles Steering Committee (EMPS-SC), which oversees the implementation of the EMPS 2000-2010, the main policy document guiding sustainable development in the Seychelles; and the National Climate Change Committee (NCCC), which guides the implementation of national actions under the UNFCCC.

A **GIS Unit** exists within the Ministry of National Development. Its role is to create data; provide assistance to other organisations in creating data; provide technical support, advice and guidance to other organisations and provide basic information on standards to follow for creation of data. All governmental agencies and other defined users can obtain access to information subject to conditions on the use of the data obtained. Information for governmental organisations is free of charge whilst the public have to pay a fee.<sup>13</sup> A national survey of the major wetlands of Mahé, Praslin and La Digue has been completed and is now available on GIS.

There is much networking between many organisations. Most partnerships established are between organisations with similar objectives in terms of management and conservation of the environment and sustainable development, such as partnership in the field of plant conservation for the development of a National Plant Conservation Strategy or networking in the field of turtle conservation for the ultimate establishment of a management plan for turtles of the Seychelles. Annexe 1 provides a list of the types of data holdings that exist in the country.<sup>14</sup>

**The Sea Level Rise Foundation (SLRF)**, a non-profit organisation, was launched on 25<sup>th</sup> September 2007. It aims to provide a mechanism to bring global attention on the impacts of climate change on small island states and other low-lying areas with a more focused effort for adaptation to sea-level rise. Most of the initiatives are either at initial stages or are still being negotiated. Its main awareness tool is its website with a local version for the Seychelles. Partners and networks are being identified to create an online resource knowledgebase and clearinghouse for sea-level rise related research, technologies, tools and practices. This will support a common platform for the exchange, research and exchange of techniques and

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<sup>13</sup> Henriette, E. (2005) "The National Implementation Structure for the AEIN."

<sup>14</sup> Henriette, E. (2005) "Preparation of the Country Implementation Plan for an Environment Information Management Systems/Network for the Seychelles."



technologies to address adaptation to sea level rise. SLRF aims to focus on capacity building and knowledge transfer to reduce vulnerability to sea level rise by mobilising resources to this end.

The **Beach Monitoring Programme** undertaken by the Environment Engineering Section (EES) in partnership with hotel owners and NGOs focuses on the beaches of the main islands of Mahé, Praslin, La Digue, Ste. Anne and Silhouette. Its main objectives are to establish a long term monitoring system for Seychelles' beaches creating a database of beach profile for Seychelles with data being collected every 1-3 months. Hotel employees are trained in methods of taking beach profile measurements and on the management approaches for the sustainable use of the beach and are sensitised on the issue of sea level rise and coastal erosion and their potential effects on the beach.

The Seychelles Coast Guards (SCG) undertakes **hydro graphic surveys** in the country and is currently creating a database to that effect.

**Coral Reef Monitoring Network:** As part of its regional environment programme, The Indian ocean Commission (IOC) launched a Regional Coral Reef Network in 1998, linking National Coral Reef Networks that were created in all member countries of the IOC. A monitoring programme of a number of coral reefs was initiated in each country; the programme would study both the coral cover of the reefs and the fish population of certain key species, mainly species that are of commercial value or can act as a bio-indicator of the ecosystem health. A status report is produced each year, both nationally and regionally. The regional data is then fed in a global database held by the Global Coral Reef Monitoring Network (GCRMN).

A **national sea surface temperature (SST) monitoring network** is in place in the country.

Information sharing and networking information on climate change is shared between neighbouring countries participating in the CORDIO project. Seychelles, through SCMRT-MPA is a member of WIOMSA and is also participating in projects such as Earthwatch.

**Disaster/ Early Warning System:** The DRDM secretariat coordinates responses to disasters at the national level.

The National Meteorological Services (NMS) has been designated as the Tsunami Warning Center for the Seychelles. Its main activities include data observation and monitoring; seismic observation; tide/sea level monitoring; and dissemination. Tsunami advisories/warnings are normally dispatched to the DRDM Secretariat, environmental and media authorities. The partners are as follows: NMS, Seychelles National Oil Company (SNOC), Telecoms, Department of Risk and Disaster Management Secretariat, DOE.

For the tsunami warning centre, local tsunami warning templates have been prepared and loaded on the 'SYNERGIE' data and information system. Emergency addresses, telephone and fax numbers including mobile numbers, have been reviewed, updated and published. Mobile service for alerts has also been implemented. Tsunami advisories/warnings are normally dispatched to the Department of Risk and Disaster Management Secretariat, environmental and media authorities.

A database exists with information on past disasters and events.

**Health:** Data /statistics are collected by the environmental health officers (EHOs) during the course of their duties e.g. investigations of complaints, disease outbreaks, building applications, landed vessels, aircrafts etc. and are available to other organisations upon official request. The draft report on the impact of climate change in the health sector under the Second National Communication made the following recommendations for data and information management: to maintain a high level of data and information management and a culture of data collection and update as well as to identify existing data and information gaps.

**Development:** The mechanisms for awareness in development exist through the planning and the Environment Impact Assessment (EIA) processes.

The Planning Authority, set up under the TCPA 1972, is the body that approves development in the country. It comprises of stakeholders involved in the development process. Planning Authority does have consultation mechanisms with the public and information sharing with other sectors. Consultations with the potential developers exist in the pre-planning phase. This is done in collaboration with the Seychelles Investment Bureau (SIB) and the Planning Authority. The mechanism to promote consultations with the public, however, needs to be further promoted as it is felt that there is a lack of information made available to the public to allow them to make informed decisions about their future developments. Environmental concerns need to be integrated into the planning process and the TCPA. The Mainstreaming Biodiversity project should address this to a certain extent as the project aims to integrate biodiversity concerns into the TCPA. Environmental Impact Assessments (EIAs) are dealt with under Part IV of the EPA, 1994 and the EP (EIA) Regulations, 1996. However, the process does not take into account climate change considerations.

The **African Environment Information Network (AEIN) project** was launched in 2004. This is a capacity building programme aimed at testing ways in which the Seychelles can harness and enhance access to information and knowledge to support the management of environmental resources and reporting on both national (Status of Environment Reports) and regional (Africa Environment Outlook) levels. The AEIN implementation strategy focuses on developing a structure and support mechanism for collating and storing relevant data, harnessing professional skills and expertise within the country to analyse and generate policy-oriented information, and then using information and communication technologies to communicate this information to decision makers at various levels of society. The Seychelles along with twelve other African countries was chosen as pilot countries to participate in the AEIN initiative. The Ministry of Environment, Natural Resources and Transport of the Seychelles (MENRT) was mandated to implement this initiative at the national level.

The **Ocean Data and Information Network for Africa (ODINA)** The management of Ocean Data and Information Network for Africa (ODINA) was an Intergovernmental Oceanography Commission project which is being implemented in the Seychelles since 2003. It aims at the creation of metadata of marine data collected in the Seychelles waters through inventories; training of people in oceanography and ocean data collection; and finding ways to manage ocean data. Various organisations are involved in this initiative such as the MENRT, SFA, SCMRT-MPA, Marine Conservation Society of Seychelles (MCSS), SNOC and Nature Seychelles. Funding was obtained for conducting training including training in software use, workshops, undertaking of inventories and purchasing of necessary application software. The scope of the project was extended to include biodiversity, coastal zone and modelling of climate. The project is currently ongoing.<sup>15</sup>

**The Global Climate Observation System (GCOS):** In response to Decision 5/Conference of Parties (COP) 5 of the UNFCCC, in 2002 Seychelles prepared its national report on Systematic Observation activities under the GCOS guidelines. GCOS was established in 1992 to ensure that observations and information needed to address climate related issues are obtained and made available to all potential users. GCOS is intended to be a long term, user-driven, operational system capable of providing comprehensive observations required for monitoring the Climate System; detecting and attributing Climate Change; assessing the impacts of Climate Variability and Change; and supporting research towards improved understanding, modelling and prediction of the climate system. The Seychelles currently participates in the GCOS Surface Network (GSN), the GCOS Upper Air Network (GUAN) and the Global Atmospheric Watch (GAW) programmes.<sup>16</sup>

The NMS collect various forms of **climate related data**. Climate data is exchanged on a monthly basis on the Global Telecommunication System, and are sent to AFTN, Deutscher Wetterdienst in Germany and the UK Meteorological Office. Rainfall Observation is done under a Voluntary Observer Programme. Rainfall data is sent every two weeks to the Drought Monitoring Centre, Harare to be used in the climate summary

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<sup>15</sup> Henriette, E. (2005) "Preparation of the Country Implementation Plan for an Environment Information Management Systems/Network for the Seychelles."

<sup>16</sup> Govt. of Seychelles (2002) "Report to the UNFCCC regarding Seychelles' participation in Global Climate Observing Systems GCOS) and on systematic observation in Seychelles"

of the region. Stratospheric Ozone data is forwarded to the World Ozone Data Centre in Toronto, Canada for archiving with a copy kept at the Seychelles Meteorological Services. Data from the tide gauges installed at Pointe La Rue, which provide real-time, reliable sea-level measurements, is sent directly to the University of Hawaii Sea Level Centre (UHSLC) via satellites and disseminated worldwide on the World Meteorological Organisation Global Telecommunication for Meteorological Data Distribution. The data sets are submitted annually to the World Data Centre-A for Oceanography and the monthly values are provided to the Permanent Service for Mean Sea Level. The archive of daily and monthly data is also maintained on line with access through the World Wide Web. Monthly and annual meteorological summaries published are sent to designated recipients regularly or to users on request basis. Data is also available on the NMS web site and through the public weather services unit.

The NMS, SFA, SCMRT-MPA and the SCG are actively participating in regional programmes such as the Western Indian Ocean Marine Application Programme (WIOMAP), Global Ocean Observing System (GOOSAfrica) and IO-GOOS, the GOOS project for the Indian Ocean. The main objectives of the above projects are to initiate and develop a regional programme to enhance oceanographic activities and make oceanography operational in the Indian Ocean. It addresses improved and expanded marine meteorological and oceanographic services for living and non-living resource management, industrial development, marine pollution, disaster mitigation, climate monitoring, environmental protection, and sea transport.<sup>17</sup>

**The Seychelles National Clearing-House Mechanism (CHM)** set up under the Convention on Biodiversity (CBD). The CHM is a global cooperation and information network on the conservation and sustainable use of biological diversity and has three goals, which are necessary for achieving the goals of the CBD: Cooperation - the promotion and facilitation of scientific and technical cooperation; Information Exchange - the development of a global mechanism for exchanging and integrating information on biodiversity; and Network Development - the development of the CHM Focal Points and their partners. Though the main objective of the CHM is to promote and facilitate scientific and technical cooperation, the CHM will also provide an information exchange service to enhance the capacity of countries to cooperate in the development of policies and technologies and assist countries in developing partnerships through joint programmes. In 1997, the Seychelles received assistance from the GEF Biodiversity Enabling Activity through the United Nations Environment Programme (UNEP) to support the initial establishment of the CHM through the purchasing of equipment to make the CHM functional. Today, the Seychelles national CHM is functional but not yet fully operational. There is as yet no interactive website to house the CHM function and to allow for networking with national biodiversity information sources either nationally or internationally.<sup>18</sup>

The CBD seeks to develop an electronic portal and an alternative information and dissemination mechanism for the establishment of a global Communication, Education and Public Awareness network.<sup>19</sup> The aim is to link the portal to other networks and websites and communication, for example, the UNFCCC's website.

The goal of the **Nairobi Convention<sup>20</sup> Clearinghouse** and information sharing system on the Eastern African coastal and marine environment is to improve the coordination and participation of the Western Indian Ocean countries in the management of their coastal and marine resources through efforts to develop outreach information, networking and public awareness for an effective management approach. The project is designed to enable the Nairobi Convention develop a comprehensive information base and access services to quickly provide information to decision makers. The objectives of the project are to: develop

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<sup>17</sup> Govt of Seychelles (2002) "Report to the UNFCCC regarding Seychelles' participation in Global Climate Observing Systems GCOS) and on systematic observation in Seychelles"

<sup>18</sup> Henriette, E. (2005) "Preparation of the Country Implementation Plan for an Environment Information Management Systems/Network for the Seychelles."

<sup>19</sup> CBD Decision VI/19, 1 and CBD Decision VI/19, Annex (programme of work for a Global Initiative on Communication, Education and Public Awareness).

<sup>20</sup> The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region 1985

human resource capacities and appropriate information infrastructure to enable countries fully participate and benefit from lessons learnt from national and cross border activities; to develop an enabling environment for assessment through advocacy of standards necessary to acquire, process, store, distribute and improve utilisation of essential data in the region; and to provide access to scientific, technical, environmental, legal and policy level information essential for the sustainable development of the coastal and marine environment. In working with partners and collaborating institutions, the project will enable the Nairobi Convention to collect, integrate and analyse the rich data collections available in the region and present the results in forms that specialists and non-specialists can understand. The project aims to provide a shared-services platform of accessing resources while being responsive to users needs.<sup>21</sup>

ReCoMaP is setting up a Knowledge Management System on Integrated Coastal Zone Management (ICZM) which will remain operational beyond the duration of the ReCoMaP project. Stakeholders will be able to contribute and access information from this system remotely.

At the national level, the mechanism for information sharing and networking is further enhanced through committees such as the EMPS Steering Committee and the National Climate Change Committee (NCCC), which comprise stakeholders involved in the climate change and environmental management processes. However, there is a need to establish the most appropriate mechanism for better coordination and access to information, and therefore the role of the NCCC and the EMPS Steering Committee will need to be reviewed in that line. As the role of the NCCC is limited, focusing exclusively on the development of the Second National Communication projects, it is felt that it should be also involved in the implementation phase of the Second National Communication and particularly in education and awareness. Furthermore, the role of the NCCC should be extended to ensure that climate change considerations are integrated into all relevant national policy developments. This can be achieved under the EMPS framework. It is timely that the formulation and development of the new EMPS for 2010 and the next ten years is currently taking place. The NCCC should be directly involved in this process.

In addition, climate change related information should be consolidated and made more accessible to technicians, policy makers, and the general public through the establishment of a website with information about climate change mitigation and adaptation for different target groups (teachers, students, contractors, businesses etc.)

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<sup>21</sup> UNEP The Nairobi Convention Clearing House and Information System Information Sheet

## **Part V: Potential national and international funding and technical resources that have and could support climate change education and awareness in Seychelles.**

### **Introduction**

There are a number of local, regional and international potential funding sources that could be explored by stakeholders engaging in climate change education, awareness & training. However, the authors of this report have had great difficulty in identifying specific sources of funding for climate change education, awareness and training. Following is a list of possible funding sources that may serve as a starting point.

### **The Global Climate Observation System (GCOS)**

Assistance has been provided to upgrade the Seychelles Meteorological Services Centre with GCOS.

### **UNFCCC**

Support is being sought from the National Communications Support Programme and the UNFCCC for guidance on national communications. An estimate of the Second National Communication project budget funds that could be available for E&A implementation activities is being determined by UNDP PCU. Discussions are being organised with Seychelles National Climate Change Committee to discuss funding on E&A implementation activities.

Furthermore training support can be obtained under the UNFCCC as **UNFCCC Article 6 (a) (iv)** promotes the secondment of personnel to train experts on climate change and its effects, in particular for developing countries.

### **DRDM**

Various projects on education and awareness on disaster preparedness are being undertaken by DRDM. Efforts should be made to coordinate such initiatives with those envisaged by the NCCC.

### **Red Cross Society of Seychelles**

A memorandum of understanding (MOU) has been signed between the RCSS and the Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness with the aim of strengthening the capacity of the RCSS to better understand and assess the risks of climate change to the vulnerable people in the country and the programmes of the RCSS.

### **Global Environment Facility (GEF)**

This funding mechanism coordinated by the World Bank has been accessed by several stakeholders in Seychelles to fund biodiversity conservation projects. A coordinated national project for climate change education could be explored, involving the key stakeholders. Climate change mitigation is one of the GEF focal areas.

### **GEF Small Grants Programme**

This new funding mechanism has not yet been launched in Seychelles as the UNDP has had difficulty recruiting a national coordinator. Once the coordinator is hired, local NGOs could apply for funding assistance up to \$50,000 to support climate change education related projects. Climate change mitigation is one of the GEF focal areas.

## **ReCoMaP (Regional Coastal Management Programme)**

ReCoMaP is supporting environmental education through the implementation of the Seychelles Awareness, Communication and Visibility Action Plan (SACVAP) but it does not directly support any climate change related activities as this does not fall within the Programme's 7 priority areas. Theme areas such as coastal management provide potential for climate change education related projects.

## **Environment Trust Fund**

Seychelles' Environment Trust Fund provides small scale funding assistance to government and NGO projects but is very competitive with limited funds available.

## **Barclays Community Partnership Programme**

Barclays has just launched a new international funding mechanism for NGOs and community groups. Funds of up to £10,000 can be requested. The focus is on community involvement and poverty alleviation but climate change adaptation could be a potential issue of focus. There will be one or two application windows each year (the first one just closed in early December 2008). Barclays also awards some local community grants.

## **US Ambassador's Self-Help Fund**

Each year the US Embassy calls for proposals from community groups and NGOs for small projects related to social and environmental issues. They award SR5, 000 to 20,000 for successful proposals.

## **Echoing Green (<http://www.echoinggreen.org>).**

This programme, based in the US, offers 2 year fellowships to support outstanding emerging social entrepreneurs to launch new organisations that deliver bold, high-impact solutions to solve deeply-rooted social, environmental, economic, and political problems. The fellowships are open to people from all countries and the application forms are available on the website. This might be a good opportunity for Seychellois interested in starting a new business or organisation to help Seychelles adapt to the impacts of climate change.

## **UNESCO**

While little information is available on their website about funding opportunities, from time to time the International Cooperation Section in the Ministry of Education receives calls for proposals for small UNESCO grants related to education. Since 2005-2014 is the UNESCO designated decade of education for sustainable development, requests for funding for climate change education in formal education would likely be supported.

Also, the UNESCO Section for Science & Technology is responsible for coordinating environmental education initiatives and has in the past awarded small grants for short-term projects. This is another possible source of funding. The website is ([http://portal.unesco.org/education/en/ev.php-URL\\_ID=8084&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=8084&URL_DO=DO_TOPIC&URL_SECTION=201.html)) and the contact provided there is Julia Heiss, Section for Science and Technology Education, Tel: +331 456 81036, Fax: +331 456 85626 E-Mail: [j.heiss@unesco.org](mailto:j.heiss@unesco.org)

## **SADC-REEP**

Seychelles has recently been re-admitted to the Southern Africa Development Community (SADC) and is now in a position to access small grants and training opportunities to promote environmental education and awareness, through SADC's regional environmental education programme (REEP) based in South Africa. More information can be found on their website [www.sadc-reenp.org](http://www.sadc-reenp.org).

## **START's African Small Grants**

START's African Small Grants are provided to African scientists for one-year projects on global environmental change (GEC) in Africa. Climate change is a major focus. Scientists must be affiliated with an institution of higher learning or NGO in their country. Funding is for up to US\$15,000. [http://www.start.org/Program/African\\_sm\\_grants.html](http://www.start.org/Program/African_sm_grants.html)

## **RESEARCH SCHOLARSHIPS**

A search on the internet reveals quite a large number of research scholarships available for post-graduate studies on climate change related issues. A few examples are listed here:

- Tropical Forests and Climate Change Adaptation (TroFCCA) in Southeast Asia invites proposals for research scholarships in the area of forests and climate change adaptation (<http://www.cifor.cgiar.org/trofcca>)
- Commonwealth scholarships for an MSc in Education for Sustainability at London South Bank University in the UK are available each year for applicants from African countries. <http://www.lsbu.ac.uk/efs/prospectus/africanscho.shtml>
- Post-doctoral positions and PhD scholarships in climate research (with emphasis on the role of the ocean) are available through the Bjerknes Centre for Climate Research (<http://www.bjerknes.uib.no/>), the University of Bergen, The Nansen Environmental and Remote Sensing Centre and the Institute for Marine Research. [http://melding.uib.no/doc/arkiv\\_ls/1034763958.html](http://melding.uib.no/doc/arkiv_ls/1034763958.html)
- Oxford University: scholarships for an MSc in Environmental Change and Management: Scholarships are awarded each year - <http://www.eci.ox.ac.uk/teaching/msc/scholarships.php>

## Part VI: Conclusions and Recommendations

This report consists of a review of climate change education, awareness and training in Seychelles over the last ten years, based on the following:

- Interviews with climate change education, awareness and training stakeholders and the general public; and a review of policies and programmes, (see Parts I, II, III and IV of this report)
- A workshop for climate change education, awareness and training stakeholders (summarised below)

All of these sources of information have fed into the drafting of a strategy for education, awareness and training detailed in the recommendations below.

### **Interviews with climate change education, awareness and training stakeholders and the general public**

The formal education system demonstrates great commitment and support to environmental education initiatives in and for primary and secondary schools, and to a lesser extent environmental education in post-secondary institutions. A wide range of environmental topics are included in the primary and secondary curriculum, as well as in the curricula followed by many post-secondary schools, and these touch on climate related issues such as water conservation, energy conservation, coastal erosion and rehabilitation, coral bleaching etc.

However, the specific issue of climate change is not yet included as a topic in the primary or secondary curriculum in any subject, and is only included as a topic in a few specific programmes at post-secondary level, namely: A level Geography at SALS, Fisheries Science at MTC, and primary teacher education at the NIE. Only at the SAHTC is climate change included as a compulsory topic covered by all students in the school.

There is however, great interest in further incorporating climate change and related issues into the curriculum at secondary and post-secondary level, but teachers are constrained by a lack of audio-visual resources related to climate change. To promote climate change education in schools, teachers must have access to more local audio-visual resources (i.e. a short film or PowerPoint presentation on climate change in Seychelles, posters, fact sheets for students, etc.) as well as books and other resource documents in their school libraries.

Although climate change is not a major focus in the curriculum at any level of formal education, it has, however, been the focus of a number of different extra and co-curricular competitions, workshops and theme days coordinated by the Ministry of Education's Environmental Education Unit, particularly in the last two or three years.

Similar to the formal education sector, there have been numerous initiatives in Seychelles by both government and non-governmental actors to promote public awareness of environmental issues. The media, including television, radio and print, has been a key player in many events and campaigns, working in close collaboration with government ministries, parastatals and NGOs. Many national campaigns and events have been initiated by the Ministry of Environment, Natural Resources and Transport, led by their Education, Information and Communication Section, but parastatals, NGOs and the private sector also initiate their own public awareness campaigns and events. All of these stakeholders came together in a workshop in June, 2008 to devise a national strategic plan for public environmental awareness and education, which is still being finalised, and within which climate change should feature as a key issue. Climate change has occasionally been the focus of media programmes or special events, but has not really been dealt with in any great depth in terms of helping the public to understand how it will affect us in Seychelles, what we can do to mitigate it, and most importantly what we need to do to adapt to climate change.



## **Review of policies and programmes**

Climate change education and awareness is addressed by a number of programmes and policies in the country. This is the case in the EMPS 2000-2010, the Fisheries sector (the Fisheries Development Plan and the Fisheries Policy 2005); wetlands management plans; programmes for coastal erosion and flooding under the UNFCCC; and disaster management and early warning.

However, in some sectors the main policy documents remain silent on this issue whilst subsequent policies and the programmes address actions to mitigate and adapt to the effects of climate change. One example is the agricultural sector where the national agriculture policy is silent on the issue of climate change though the programmes of action and projects actions in the field do take climate change into consideration (e.g. An Insurance scheme for selected crop and livestock farmers and a study to assess crop varieties, improved water management and irrigation systems as well as changes in planting schedules; the ADS 2007-2011 promotes increased food security through adaptation to changing condition, mitigation measures to climate change and increased local production. An effort should be made to address the issue of climate change education and awareness in all policy documents and programmes in a coordinated manner through out each and every sector.

It is felt that education, awareness and training of climate change issues is not sufficiently addressed in certain sectors and should be further enhanced. This is the case of the HRDP; the National Wetlands Policy; development, land use policy and decision making processes; the Plant Conservation policy; and the health, forestry and land transport and tourism sectors. The new Energy Policy and Water Supply Development Plan being developed should also integrate climate change education and awareness.

The new EMPS for the next ten years, which is currently being formulated together with the SNC, should provide the mechanism to integrate climate change education awareness & training into all relevant national policies.

## **Climate Change Education, Awareness and Training Stakeholders Workshop**

A stakeholders' workshop was held on October 31<sup>st</sup> 2008 with the following objectives:

1. To enable networking among stakeholders involved in education, awareness and training pertaining to climate change;
2. To review past achievements;
3. To produce and prioritise a list of recommendations for the further development of climate change related education, awareness and training programmes in Seychelles.

About 45 participants representing government, NGOs and parastatals attended the workshop. Participants provided additional information on other policies, action plans, networking & information sharing mechanism, awareness programmes and formal education programmes. Through group discussions, participants identified the strengths and weaknesses of the existing Climate Change education, awareness and training mechanisms, programmes and policies in place and made recommendations on how to improve the deficiencies identified. Participants also identified target audiences. This was not an exclusive list; simply a starting point focusing on audiences that have not been targeted yet, and would benefit from some kind of educational intervention. These included the following: tour operators/ divers; tourists (different star types); policymakers- MNA's; SEYPEC, PUC; fishermen; artists; garbage collectors; media; hotel owners/managers; government & parastatal employees; Planning Authority; hospitals/RCSS; households (families); farmers (livestock, crops); industry-private sector; students/teachers; construction professionals (architects, builders, contractors); civil society: ngos, senior citizens, community, faith communities(priests, nuns etc.), animators (3<sup>rd</sup> age & NRA); donors; foreign investors & offshore businesses; car owners, drivers, taxi drivers, SPTC; researchers/scientists; police, army.

Recommendations from the workshop have been integrated into this study. Participants strongly recommended that funds be made available for the implementation of priority education, awareness and

training activities on climate change and urged the National Climate Change Committee to support this initiative. Please refer to Annex 2 for a list of stakeholders involved in climate change awareness, education and training, the majority of which attended the workshop and Annex 3 for the list of recommendations from the workshop.

## **Strategy to raise public awareness and promote education related to climate change issues**

### **Goals:**

All climate change education/awareness/training campaigns simultaneously must encompass three broad goals:

- Increasing knowledge about climate change, the causes, impacts, and what people can do to help reduce it or adapt the changes in store;
- Helping people develop attitudes of caring for each other and the environment (engage emotions);
- Helping people adopt and practice changes in behaviour in response to climate change.

Climate change education, awareness and training programmes can only be successful if they are supported by political will through the unconditional enforcement of laws and policies related to environmental protection. Furthermore, any actions taken to promote greater awareness of climate change among the public, local businesses etc. must be matched by opportunities to put the ideas into practice e.g. availability of energy saving bulbs or appliances, rain barrels, solar water heaters, etc. Finally, any education or awareness strategies or policies must take into consideration the specific cultural contexts of the Seychelles.

### **Recommendations:**

1. Use this report as a policy document for climate change education and awareness, and provide support to integrate climate change education into all sectoral policies and strategies, i.e. Energy Policy, Agriculture Policy, Education Policy, and National Environmental Education & Awareness Strategy, etc.
2. Implement specific strategies and action plans for climate change education/ awareness and training focusing on specific target groups and ensuring that all sectors of society are included, as established in this study, with input from stakeholders.
3. Promote ongoing stakeholder/community involvement in decision making regarding climate change education, awareness & training at national and district levels. Stakeholders would include NGOs, private sector, government agencies, community groups, youth, etc.
4. Establish and nurture a common approach and mechanism for networking, partnership and information sharing among stakeholders, within the framework of the NCCC and the EMPS.
5. Establish a system of sustainable financing for climate change education, awareness and training programmes.
6. Use local case studies showing how Seychellois can help mitigate climate change and adapt to its impact.

In order to implement these recommendations the following action plan has been drawn up:

## ACTION PLAN FOR CLIMATE CHANGE EDUCATION, AWARENESS & TRAINING 2009-2014

GENERAL OBJECTIVES	ACTIONS	APPROX. COSTS (USD)	PARTNERS	TIME FRAME	PRIORITY
1. Develop education and awareness materials on climate change for schools / public / stakeholders	a) Produce and distribute a booklet on climate change impacts, and mitigation and adaptation strategies in Seychelles in general and with the aim of promoting sustainable living practices.	USD 4000	S4S, SIT, STB, EAB, DRDM, RCSS	July 2009	High
	b) Produce a second booklet on climate change impacts, and mitigation and adaptation strategies, targeting specific sectors such as the construction industry, tourism industry, offices, etc.	USD 2000	same	July 2009	High
	c) Produce and distribute a short film (through an episode of Karnen Lanatir, using local case studies) for public viewing and to be used as a teaching aid	USD 2000	S4S with SBC, MENRT S4S, DRDM, RCSS	July-Sept 2009	High
	d) Produce and distribute a poster on climate change for use by teachers	USD 1000	S4S	July-Sept 2009	High
	e) Assist in the production and distribution of the WCS magazine for youth focusing on climate change cartoon insert	USD 500	WCS with S4S	March 2009	High
	f) Purchase books for school libraries (e.g. Learning for Sustainable Living in Seychelles) and the National Library	USD 10,000	MoE	April 2009	High
	g) Install climate change related stickers on SPTC buses	USD 2,000	S4S	March 2009	High
	h) Produce a video clip to sensitise tourists on climate change, how it affects Seychelles and specifically outlining actions that can be taken during their visit. Clip to be aired on all incoming flights to Seychelles.	USD 1000	TESS, STB, SBC, Air Seychelles, S4S, DRDM	June- Sept 2009	Medium
2. Empower/Use leaders, educators, artists and mentors to share their knowledge, values and experience with different target audiences	a) Conduct 3 in-service workshops for teachers (primary, secondary and post-secondary) to introduce them to climate change impacts, mitigation and adaptation and climate change education resource materials.	USD 3000	S4S, NIE	Sept- Dec 2009	High
	b) Organise competitions ( theatre, songs, poems) promoting education & awareness on climate change	Cost of prizes	S4S, NAC, DRDM, MOEd, MENRT	Jan-March 2010	Medium
	c) Promote arts-based strategies for climate change education campaigns (music, drama productions, art & photography exhibitions, etc.)	No cost	S4S, NAC, Arts Associations	ongoing	Medium

3. Sensitise policy makers on climate change	a) Deliver a series of education and awareness presentations/organise site visits on climate change to policy makers (MNAs, Cabinet, PSs, DGs, Directors) to sensitise them on the issue of climate change	USD 1000	S4S, National Assembly, Cabinet, DRDM, etc.	July-Dec 2009	High
4. Integrate climate change education into all sectoral policies and strategies	a) Provide support to integrate climate change education & awareness activities into the development of EMPS 2011-2020	USD 2,000	EMPS SC, NCCC, sectors, DRDM	Ongoing (long term)	High
	b) Provide support to sectors to integrate climate change education & awareness considerations into all policies being reviewed and new ones being developed, i.e. Energy Policy, Agriculture Policy, Education Policy, Development policy, Water Policy	USD 8,000	EMPS SC, NCCC, all sectors, DRDM, DOE	Ongoing (long term)	High
5. Establish a mechanism for information sharing and networking	a) Review the role of the NCCC in education and awareness on climate change	USD 5000	DOE, NCCC, EMPS Committee, DRDM	Aug-Dec 2009	High (All)
	b) Consider and establish the most appropriate mechanism to use as the platform for networking and information sharing for climate change related issues (EMPS; EIC Section in DOE, NCCC, Sea Level Rise foundation)	USD 5000	DOE, NCCC, EMPS, DRDM	Aug-Dec 2009	
	c) Establish a website with information about climate change mitigation and adaptation for different target groups (teachers, students, contractors, businesses )	To be finalised	DOE with S4S, DRDM & SLRF	Jan-March 2010	
6. Provide opportunities for training in climate change and related issues for media and professionals involved in CC issues	a) Offer training on climate change for journalists on environmental reporting, particularly on climate change issues	TBD	ETF, Private Sector, MOF, Manpower	Ongoing (long term)	High (All)
	b) Offer on-going and targeted workshops on climate change for health, environment, marine, fisheries, secondary and post-secondary teachers, agriculture, construction, planning and development	USD 1000 /workshop	MoE, MENRT, S4S, DRDM, post-sec institutions, MoED	Ongoing (long term)	High (All)
	c) Provide scholarships for overseas graduate studies in climate change (meteorology, agriculture, etc. on e.g. adaptation strategies for Small Island Developing States)	TBD	MOF, Manpower	Ongoing (long term)	High (All)
7. Seek funding sources locally / internationally to support envl education, awareness and training programmes	a) Establish a mechanism for the sponsorship of education and awareness activities (consider ETF, the new EMPS and the Department of Risk and Disaster Management)	USD 5000	DOE PCU, NCCC, EMPS Steering Committee	Ongoing (long term)	High (All)
	b) Seek grants and sponsorship from private sector, industries e.g. STB, Air Seychelles, Seybrew, Cable and Wireless, IOT etc.	No cost	DOE PCU, NCCC, EMPS SC	Ongoing (long term)	High (All)
	c) Seek financial support for professionals (journalists, PR staff, educators, etc.) to participate in international workshops and conferences on climate change	No cost	DOE PCU, NCCC, EMPS SC	Ongoing (long term)	High (All)
8. Create opportunities for young people to learn more about CC	a) Organise holiday environmental camps for children and youth focused on climate change and sustainable living	USD 2000	S4S, NGOs, MENRT community youth groups, schools, WCS, parents, , etc.	December-January 2009	Medium
	b) Organise a gathering of NGOs/Youth/faith communities promoting education & awareness on climate change and sustainability on the occasion of Youth Day 2009	USD 10,000		September 2009	Medium

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- UNEP "The Nairobi Convention Clearing House and Information System Information Sheet"
- UNEP Issue Based Modules for Coherent Implementation of Biodiversity Conventions (2007) Project (Inventories and Discussion Document No. 1 Recommendations for coherent implementation of national legislation, policy and programmes)

## Policy Documents:

- Education for the New Society 1985
- Environmental Management Plan of Seychelles 1990-2000
- Seychelles Forest Management Plan/Sector Study 1993
- Human Resources Development Plan of Seychelles 1994-2000
- Seychelles Land Transport Planning and Policy Study 1997
- Energy Policy, 1999
- Education for a Learning Society 2000
- Environmental Management Plan of Seychelles 2000-2010
- Seychelles National Curriculum Framework 2001
- Seychelles National Curriculum Framework 2001a
- Science in the National Curriculum 2001b
- Fisheries Policy of Seychelles 2005
- Seychelles National Wetland Conservation and Management Policy, 2005
- Seychelles National Strategy for Plant Conservation 2005-2010
- Social studies in the national curriculum: Teaching and learning programme (trial edition) 2007
- Agricultural Development Strategy 2007-2011
- Food Security Strategy 2008-2011

Draft Terms of Reference Energy Policy and Strategy July 2008  
Geography in the National Curriculum 2008  
National Food Strategy 2008-2011  
Seychelles Plant Conservation Research Agenda 2008-2015  
Draft Fisheries Development Plan  
Draft National Disaster Management Policy and Plan

### **Legislation/International Conventions/Agreements:**

Town and Country Planning Act, 1972  
The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region 1985  
Convention on Biological Diversity, 1992  
United Nations Framework Convention on Climate Change, 1992  
Environment Protection Act, 1994  
Environment Protection (Impact Assessment) Regulations SI 39 of 1996 as amended by SI 36 of 2000  
FAO Code of Conduct for Responsible Fisheries

### **Websites:**

[climatechangeeducation.org/](http://climatechangeeducation.org/)  
[education.arm.gov/teachers.stm](http://education.arm.gov/teachers.stm)  
[www.denisland.blogspot.com](http://www.denisland.blogspot.com)  
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[www.sealevelrise.blogspot.com](http://www.sealevelrise.blogspot.com)  
[www.sealevel-rise.org](http://www.sealevel-rise.org)

## Annexes

### Annex 1: Types of data holdings that exist in Seychelles

Item no.	Type of data holdings	INSTITUTION
<b>Biodiversity-Ecosystems data holdings</b>		
1.	Endemic plant database	Botanical Gardens
2.	Seychelles White-eye; Endangered species; & Invasive species datasets	Conservation Section DOE
3.	Marine and coastal & bio-forestry and terrestrial datasets	Geographical Information System (GIS) Unit DOE
4.	Wetland dataset	Wetland Unit DOE
5.	Coral Reef; Bibliography; Land cover; Boundaries; Marine Ecosystems & Zooplankton datasets	Seychelles Centre for Marine Research & Technology
6.	Sea & Land birds; Vegetation; Terrestrial invertebrates; Marine life; Meteorological; Terrestrial reptiles; Wildlife; Species distribution datasets	Island Conservation Society
7.	Whale shark; Plankton; Turtles; Mooring buoys & Beach meteorology datasets	Marine Conservation Society of Seychelles
8.	Seychelles biodiversity	Nature Protection Trust of Seychelles
9.	Silhouette Island Information Centre	Nature Protection Trust of Seychelles
10.	Turtle & Reef; Alien and Native Vegetation Cover; Terrestrial/Biodiversity (in development) datasets	North Island (Hotel Resort) with Plant Conservation Action Group
11.	Aldabra ecological data: rainfall, turtle, tortoises, vegetation	Seychelles Islands Foundation
<b>Environmental data holdings</b>		
12.	Annual Forestry Report	National Parks & Forestry Section DOE
13.	Beach Profile dataset	Coastal Zone Management Unit DOE
14.	International Treaties (inventory); Priority Listing of Conventions; International conference attendance (to be set up); Training (to be set up) datasets	International Conventions Unit DOE
15.	Inland water pollution; Pollution and environmental impact assessment; Non-biodiversity datasets	Geographical Information System (GIS) Unit DOE
16.	Climate; Soil temperature & Satellite imagery	National Meteorological Services
17.	Division of Environment Documentation Centre	Education, Information & Communication Section DOE
18.	Surface water; Aerial photographs; Land use; Major settlements & Urban areas	Pollution Control and Environmental Impact Division DOE
19.	Surface water (Irrigation); Land use (agricultural land use and optimisation); Roads (Agricultural access roads); Major settlements (agricultural land settlement schemes); Crop types/distribution (biodiversity); Crop production (agricultural production); Livestock distribution (agricultural production) & Species distribution (Food crops and biodiversity in agriculture)	Natural Resources Department
20.	National Archives	Ministry of Community Development, Youth, Sports & Culture
21.	Climate (Rainfall, evaporation, evapotranspiration); Surface water; Groundwater; Roads	Public Utilities Corporation
<b>Socio-economic data holdings</b>		
22.	Tourism	Seychelles Tourism Board
23.	Population & Boundaries	Management and Information Systems Division
24.	Population	Social Development Division Ministry of Health and Social Development
25.	Lobster; Long-line fishing; Mother ship operation; Fisheries	Seychelles Fishing Authority

	(artisanal and industrial); Crab giraffe (Spanner crab); Environmental datasets (satellite data of sea surface temperatures, bathymetry, chlorophyll and altimetry data); Ecosystem (marine and coastal); Sea cucumber dataset; Coral cover & Aquaculture datasets	
26.	Oil and natural gas & Geology	Seychelles National Oil Company
<b>Mixed themes data holdings</b>		
27.	CATAL	Centre for Industrial Scientific and Technical Information and Documentation (CISTID), Seychelles Bureau of Standards
28.	SEYREP	Centre for Industrial Scientific and Technical Information and Documentation (CISTID),
29.	ARTICLE	Centre for Industrial Scientific and Technical Information and Documentation (CISTID)
30.	CATALOGUE	Centre for Industrial Scientific and Technical Information and Documentation (CISTID)
31.	DIRECT	Centre for Industrial Scientific and Technical Information and Documentation (CISTID)

Source: Henriette, E. (2005)



## Annexe 2: List of Stakeholders involved in Climate Change Awareness, Education and Training

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### **Annexe 3: Recommendations from the workshop**

- Address weaknesses
- Attitude change should be a goal not just awareness
- Strategies to overcome barriers
- More involvement of stakeholders-community based campaigns/grass roots involvement in decision making
- Train the trainers, leaders (innovative/novel approach by empowering people giving them the opportunity to learn more and to pass on the info/knowledge))
- Avoid duplication, create synergies between partners
- Develop strategies for environmental education
- More networking e.g. for resources e.g. between NGO Private sector
- Need action as required by stakeholders
- Teach people not sectors on how to be resilient/ adapt
- Sharing of info/ responsibilities for climate change education & awareness
- Use ordinary people as examples for case studies for approaches/adaptation in climate change education
- Must educate for flexibility, resilience adaptability and problem solving at all levels e.g. food security, home gardens
- Political will and commitment to support climate change mitigation and education & awareness
- Put Seychelles in international situation e.g. price increases of fuel, food etc
- More sensitising of individuals + target groups e.g. community, decision makers through media, workshops, fairs, familiarization trips, etc.
- More enforcement of laws/policies/practices
- More availability of alternative equipment/appliances to promote energy conservation or use of renewable energy technologies
- Harmonise policies
- Offer incentives (financial e.g. through government subsidies and non financial) for change of behaviour
- Make available alternatives (dual flush toilets, solar panels, energy saving bulbs).
- Pilot projects: composting toilets
- Build stronger communities
- Redesign buildings (stilts, bamboo, wood, cross ventilation, passive cooling
- Local tourism to reduce carbon footprint of Seychellois travelling overseas
- Sustainable financing for climate change education and awareness initiatives

### **Actions Identified for Target Audiences for Climate Change Education, Awareness and Training**

#### **Policy Makers:**

- Adopt a hands on approach/strategy through on site/practical/educational visits to educate and make policy makers aware of climate change issues
- Enroll policy makers to take up an ecological footprint calculation programme

#### **Media:**

- Training programme on environmental reporting, particularly on climate change issues for journalists
- Focal person to coordinate programmes on climate change

#### **Tourists:**

- Video clip to sensitise tourists on climate change, how it affects Seychelles and specifically outlining actions that can be taken during their visit. Clip to be aired on all incoming flights to Seychelles.

#### **Fishermen:**

- Encourage fishermen to diversify and to be more involved in fisheries management
- Include climate change education in the school curriculum for fishermen-to-be

#### **Tour operators/ Divers:**

- Include awareness and education materials in marketing tools/strategy
- Promote on-site tourism e.g. tree planting, voluntary contributions
- More efficient use of tour buses

#### **PUC/SEYPEC:**

- Promote and make available alternative sources of electricity production
- Use alternative district lights
- Import better quality fuel (low sulphur)
- Ensure energy efficient appliances are available and encourage consumers to use them

#### **Artists:**

- Workshops to sensitise artists on climate change issues
- Competition( theatre, songs, poems) promoting E&A on climate change

#### **Garbage operators:**

- Promote and encourage sorting at source
- Follow through at landfill
- Harness biogas from landfill