Zwazo

Number 23 Seychelles conservation magazine

Sustainable Living

Sustainable Living and Development

Sustainable Tourism

Energy Efficiency

Sustainable Livelihoods for Island Women

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Photo: Balancing Act (Conor Jameson)

NO. 23
January-June 2011

CONTENTS

Zwazo

Zwazo is produced biannually by Nature Seychelles, a non-profit, non-governmental organization that has worked in conservation in Seychelles since 1998. Its primary objective is to improve the conservation of biodiversity through science, education, awareness and training programmes. To achieve this we are dependent on voluntary support and funding. If you would like to help this work, please contact us at the address below.

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A word from the

FRONT LINES

That sustainable thing

What is sustainable living? Whilst we in Seychelles crave for shops that contain all manner of things that we think can make our lives more comfortable, thousands and thousands of people in the richer countries are deliberately turning their backs on what they believe is blind consumerism and environmental over-consumption. To them that is what sustainable living is all about.

Some time ago I read what most people in this country would find a weird book. It is hand-lettered and illustrated by Dan Price, one of the growing number of Americans who has gone in search of sustainable living. His message is: you can live a life of freedom, in harmony with the rhythms of nature, and your own internal rhythm and you can live very well with very little. The book describes Price's 14-year effort to find simplicity in a meadow in Oregon in the US where he builds huts and experiments with reducing his life to the bare essentials.

Reviewers of the book say it is engaging story of one man prospering spiritually and mentally by turning toward an ecologically balanced life. But most people in Seychelles would not understand this or sympathize with it. To them Price's account is one of poverty and squalor. His account may be familiar to some only in that they have escaped such a life and do not want to return.

This illustrates a significant gap between the thinking of Western people and those from the developing world. Whilst many people from North America and Europe are weary of their lives, possessions and popular culture, people from the developing world are eager to adopt the same. Which is the right way?

In this issue of Zwazo we do not provide answers to this question but we have asked several authors to explore aspects of sustainable living including green architecture, alternative energy and sustainable tourism. We hope you can make up your own mind about what sustainable living is.

Nirmal Shah

GEF Supports Seychelles' Protected Areas Conservation

Nature Seychelles has signed a grant agreement for financial support to carry out activities under a project that will strengthen current approaches to protected areas in Seychelles.

The grant has been received as part of the project, "Strengthening Seychelles Protected Area System through NGO Management Modalities" funded by the Global Environment Facility (GEF) and being implemented by the Ministry of Home Affairs, Environment and Transport, through the Department of Environment, with support from the United Nations Development Programme (UNDP).

The project is aimed at strengthening the management framework of Seychelles' Protected Areas, which fall under the administration of a number of different government institutions, parastatals and environmental NGOs. It will create synergies between current government conservation efforts and those of non-government partners in the establishment of new protected areas, and improve the management of existing terrestrial-marine protected areas.

Nature Seychelles and three other NGOs - Seychelles Islands Foundation, Marine Conservation Society Seychelles and Green Islands Foundation will work with the Department of Environment on the project.

Nature Seychelles will carry out restoration of the coral reef habitat around Cousin Island Special Reserve, look into the fish spawning aggregations near Cousin and work to demarcate Marine Important Bird Areas (IBAs).

Although the reefs of Cousin Island had a very high coral cover and the highest fish biomass of any marine reserve in the granitic islands of Seychelles, a bleaching event in 1998 dramatically reduced coral cover. This and the marine habitat require urgent restoration (See story on page 4).

Fish spawning aggregations of several species that are located near the Cousin Special Reserve are to be investigated to see whether the Reserve plays an important role in fish movements and in protection of small fish.

Seychelles has globally significant colonies of seabirds. Marine IBAs are areas in the ocean which are important for seabirds. Identification of Marine IBAS is therefore important for Seychelles. "They are in fact marine animals because they feed at sea, so we need to know where these areas are," says Nirmal Shah, Nature Seychelles Chief Executive.

The significant industrial tuna fisheries around Seychelles also lend urgency to this work. Over-exploitation of tuna may make foraging for small fish by seabirds harder, as tuna drive small prey fish towards the surface. "We will work with BirdLife's Global Seabird and Global Marine IBAs Programmes to deliver this sub-project," Shah says.

Following the success of the terrestrial Important Bird Areas programme, BirdLife International - Nature Seychelles is BirdLife's Partner in Seychelles - has proposed the creation of Marine IBAs to afford seabirds elevated protection.

The project intends to apply the seaward extensions approach developed by BirdLife to current and potential IBAs. Information on existing terrestrial IBAs that host breeding seabird populations will be collated and seabird population data updated. The project will also compile existing at-sea datasets for seabirds from previous projects such as electronic tracking studies and map the proposed marine extensions to these IBAs.

The results will feed into the Seychelles' ongoing process to review and augment its protected area system as well as into BirdLife's global inventory of Marine IBAs. It will be aligned with the Convention on Biological Diversity process for identifying Ecologically or Biologically Significant Areas.

Photos: Left - Environment Principal Secretary Didier Dogley signs an agreement for the project with Nirmal Shah (Seychelles Nation). Right - The project will among other activities support creation of Marine IBAs (Martjin Hammers)

Full Speed Ahead Captain:
Reef rescue project hits the water

Coral reef restoration for which Nature Seychelles has recently received financial support from the United States Agency for International Development (USAID) has began with the arrival of a technical manager recruited by the organisation. Dr. Gideon Levy, an Israeli native, has been closely involved with coral reef restoration and the development of the "reef gardening" concept, which will be used in the restoration of reefs on appropriate sites that will be prepared and protected on Praslin and Cousin Island Special Reserve.

Local stakeholders brought in

And at a local stakeholders workshop to introduce the project held at the Island Conservation Centre, Praslin, attended by various local organisations working in environment, tourism, and development, Nature Seychelles called for the participation of local volunteers. The participation of local people is crucial to the success of the project, says Gideon. Volunteers can help in preparing sites by filling nurseries with corals and in the future transplantation of coral colonies.

"Local people can learn valuable techniques for reef restoration. As we have done with our pioneering land-based island restoration programmes in the past we would like to generate a pool of skilled local persons for sustained reef restoration," Nirmal Shah, Nature Seychelles Chief Executive says.

The reef gardening concept will be used to restore coral reefs on two sites on Praslin and Cousin Island Special Reserve. Although there are a number of techniques being used globally to re-grow corals, this model has been selected for its simplicity, cost effectiveness, and low negative impact on donor sites. The technique is called gardening due to its similarity to terrestrial forestation methods.

During the first stage coral nurseries will be established in sheltered areas away from harmful human and natural impacts. They will be given the best conditions possible to help high growth rates and survival of the small coral fragments.

In the second stage, corals that have grown to a required colony size will be transferred from the nursery and transplanted in pre-selected and treated degraded reef sites, in similar conditions as where they originated from, to give them a high chance of survival. As they are nurtured, the corals then slowly dominate and take over the reef attracting fish and invertebrates bringing a more healthy state, although survival is highly dependent on site selection.

Sites are usually selected based on the long-term goal of the restoration, be it to restore the ecosystem such as on Cousin or for tourism purposes. They are also selected for their natural attributes and stability - the granitic

Photo: Degraded coral reef around Cousin Island Special Reserve (Udo Engelhardt)

reefs for example are more stable than carbonate reefs and recent studies have shown that there is more natural recovery success on granitic reefs.

Successful re-colonisation of the sites will depend on what is stressing corals at the moment. This could be anthropogenic impacts such as pollution, reduction of light by turbidity and siltation inflicted by construction and sedimentation, and breakage caused by boat and recreational activities, or natural impact like macro-algae dominance. After the bleaching occurred, algae took over the dead reefs, and the dead coral broke into rubble creating a substrate not solid enough for coral survival. Suitable sites are best located away from activities that would have a negative impact and preparation and treatment like substrate solidification and algae removal will have to take place in order to improve chances for success.

Several local organisations have shown interest in the project. People from all scopes of the community, both divers or snorkelers were welcomed to get better awareness and understanding of the state and importance of the reefs of the area, and learn about reef conservation and restoration by volunteering and personally experiencing the methodologies to be introduced.

International experts give enthusiastic support

The project has also received the support of a group of regional and international coral reef experts who attended a technical meeting here in June. The meeting was held to discuss the methodologies to be used in this first attempt at large scale coral transplantation. It was attended by Coral Scientist Dr. Andrew Baker, Assistant Professor at the Rosenstiel School of Marine and Atmospheric Science of the University of Miami; Senior Conservation Zoologist and Director Coral Reef Programs, at the Wildlife Conservation Society Dr. Tim McClanahan; Dr. Ruby Moothien-Pillay, Principal Research Scientist, Biological Oceanography, Mauritius Oceanography Institute; Dr. Christopher Muhando, Coral Scientist and Senior Lecturer, University of Dar es Salaam, Institute of Marine Sciences; and Dr. Baruch Rinkevich Professor at the Israel Oceanography and Immunological Research Institute.

During the meeting the methodology for transplantation, coral species and geno-types to be targeted, and human resources requirement were discussed. Donor, nursery and transplantation sites were also inspected.

The experts who will serve as advisors for the project said that the Seychelles have at hand a unique case: an opportunity to undertake the first ever large scale coral restoration in the world, a real willingness of the local people to restore the reef, and the ability to undertake this through an NGO that is dedicated to the environment.

"There has been some studies done on a small scale in the region and a lot of important lessons learnt there, but what is going to happen here has never been attempted and that's the scale that needs to be done and the lessons learnt from that will be very valuable for the region," said McClanahan who has worked on corals of the region for over 25 years. It is expected that the practices, results and lessons learned will be cascaded in Seychelles and the region through the preparation of a guidebook for restoration and a business model.

"This is the first time that such a project is being attempted, go ahead," was the final word from Dr. Rinkevich who has 20 years in reef restoration working in the Red Sea, Philippines, Thailand, Singapore, Zanzibar and the Caribbean and who developed the gardening concept.

Photos: Top - Participants at the local stakeholders workshop - Praslin, Bottom - Underwater coral nursery (Gideon Levy)

What's on your Plate?
Promoting sustainable living in Seychelles

Nature Seychelles has published and launched to the public a book that promotes sustainable living in Seychelles through growing and consuming food locally. Seychelles' Roving Ambassador for Women's and Children's Affairs Ambassador Marie Pierre Lloyd launched the book called Grow and Eat Your Own Food.

The launch drew on this year's theme for Commonwealth Day marked on March 14th, which was 'Women as Agents of Change' and also celebrated the International Women's Day centenary.

The book promotes a concept called 'edible landscaping', which Nature Seychelles has used at its Heritage Garden. The garden was started to combine agriculture, conservation, folklore, tradition, and culture. It involved tapping into local knowledge about various valuable and traditionally grown plants, which were then used for landscaping. This concept is being promoted for replication across homes, in backyards, on reclaimed land and around buildings.

Nature Seychelles CEO Nirmal Shah said the garden has shown that one can grow whatever they want on reclaimed land. Nature Seychelles headquarters, the Centre for Environment and Education, is on reclaimed land. It also proved that people can landscape with useful native plants instead of decorative plants that could become invasive, and it encourages people to return to their past methods of food production.

"We are living in a modern society, where these things are being forgotten. We hope this book will help people situate our roots in a modern situation." Shah said.

Ambassador Lloyd said if sustainable living is to succeed, organisations must go down to households and families and schools and teach people through initiatives such as this. The benefits are many, she added, among them fresh food, good health, import substitution and food security.

Shah praised staff and volunteers of Nature Seychelles whose efforts have culminated in the book, particularly Lucina Denis who maintains the Heritage Garden.

The book is available in local bookshops for sale. Complimentary copies have been given to institutions such as the Seychelles Agricultural & Horticultural Training College.

Photo: Top - Grow and eat book.
Left - Ambassador Lloyd and Nirmal Shah launch book

The Only Way is Up!

Nature Seychelles celebrates achievements and reflects on new directions on World Environment Day

To observe World Environment Day, Nature Seychelles held its General Assembly on 4th June rallying members and stakeholders to celebrate the last 3 years of wonderful and exciting results delivered by the association. On hand to present the results were Nature Seychelles Chief Executive Officer Nirmal Shah, and Director for Strategic Operations, Kerstin Henri.

Antoine Marie Moustache Nature Seychelles' Council Chair - who opened the meeting and welcomed those present - said the organisation's council is extremely **pleased with its achievements,** which he said would not have been possible without dedicated staff. Permanent staff now number 20 and include a high percentage of women - more than 60% - ranging from field based wardens to senior technical executives.

Nature Seychelles has been vigorous in conducting its mandate to improve the conservation of biodiversity through scientific, management, educational and training programmes.

The organisation has led inspiring action saving species on the edge of extinction and restoring entire islands into hotbeds of biodiversity. Its management of Cousin Island Special Reserve has earned international acclaim with Cousin being recognised as a model for island conservation. Using radio, TV, the internet, books, posters, colour magazines, training and curricula materials, the organisation has educated and rallied many to action both locally and internationally. It has been the focus of local and international media attention and has been featured in many TV and Radio programmes and articles such as on CNN, the Today Show and the New Scientist magazine.

The highlights for the period under review included the translocation of the Seychelles Magpie Robin and Seychelles Paradise Flycatcher to the private island of Denis. The translocation of the Flycatcher resulted in its breeding for the first time outside

Photo: Top - Cousin Warden Jakawan Hoareau at work (Herve Chelle) Inset - Kerstin Henri talks money

of its stronghold of La Digue Island. A partnership with Urbino University is looking into the state of the Seychelles Kestrel, which hangs perilously on the balance on Praslin. Cousin Island's 40th anniversary was celebrated bringing together international partners and experts in a symposium that looked at the past and charted the future for this special island.

More conservation success was to come through research findings that established that the number of nesting hawksbill turtles on Cousin have increased eight fold. And in 2010, Cousin Island became the world's first Carbon Neutral Reserve. The association continues to work with the public, government and private sector through initiatives such as the introduction of environmental management systems for tourism businesses and the stakeholder group for seabirds.

The financial health of the organisation presented on behalf of treasurer Amy Bowers by Kerstin Henri revealed the determination that has gone into mobilising resources for conservation. A number of donors have been approached to provide grants for projects. Among the larger grants received are the United States Agency for International Development (USAID) support for restoration of corals damaged by climate change and the Global Environment Facility (GEF)support for protected areas management.

Nature Seychelles has also invested heavily in infrastructure development at its headquarters in Mahe and on Cousin Island Special Reserve. Funding has come from core resources and from donors and has helped in the construction of staff housing on Cousin, the Nature X centre used for Green Health activities and the road leading to the headquarters.

The new direction the organisation is taking is making conservation relevant to people. To this end, new programmes such as Green Health that combines nature and wellbeing at the urban wetland, the Sanctuary at Roche Caiman have been started. During this period, Nature Seychelles signed an agreement with the Seychelles Agricultural Agency to promote food security through its Heritage Garden initiative. The organisation is developing more community oriented programmes that will include working with the vulnerable in society and widening its constituency base. A new staff position has been created for this purpose.

During elections Antoine Marie Moustache, Mike-King Harman and Amy Bowers were unanimously endorsed to continue as council members. Ruby Pardiwalla was also voted in as new council member. Ms. Pardiwalla, the Executive Director of the National Council for Children (NCC) a statutory body, has been involved with children rights in the Seychelles for many years and will be part of the direction the organisation is taking of working with young people especially those who are the most vulnerable and at risk.

Members reflected on the change-making nature of this organisation that has been a pathfinder blazing new trails for other to follow. **"Well done. Exciting. So many achievements in so little time," are some of the plaudits from members, stakeholders and donors.**

Nirmal Shah shares achievements

In the foreground (L to R): Council members Amy Bowers, M King-Harman and Antoine Moustache

Nirmal Shah with Bernard Elizabeth chair of LUNGOS and Mariette McKelvey Chair, Co-operative des Artisans

Members listen to presentations

Equipping Young Conservationists

Photos: Jakawan (second from left) and above - Annesa (left) during their earth watch field training.

Cousin Island wardens Jakawan Hoareau and Annesa Rath were part of two recent Earthwatch expeditions in Curieuse and Praslin Islands.

Earthwatch provides practical field experience and scientific training for promising young scientists and conservationists in Africa, Eastern Europe, and Southern Asia. Participants are involved in ongoing Earthwatch field projects in their countries. Jakawan and Annesa took part in a project, Coral & Coastal Ecology of the Seychelles, run by Earthwatch in partnership with the Seychelles Centre for Marine Research and Technology.

It involved carrying out surveys around various islands. Participants received training on how to map out the richness and diversity of the fauna present in the selected habitats and sites, and helped record type and number of species.

The data collected can be used by local communities, conservation organizations and the Seychelles government for effective management of these areas. The exercise also cultivates a better understanding by participants of the importance of the coastal habitats of the Seychelles.

"This training has provided me with new insights into things. I am more aware of the smaller beings which serve equal importance in our colourful ecosystems," Jakawan said.

For Annesa, the principal goal of the expedition which took place in Praslin was to understand the drivers and threats related to fish stocks and fisheries worldwide, particularly those associated with coral reefs, which are diverse and increasing in significance.

Such threats include overfishing, destructive fishing practices, pollution and loss of vital marine habitats like reefs, sea grasses and mangrove environments, and also their resilience and adaptability to changing environmental conditions.

The work was directed towards understanding past and present patterns of resource use and adaptation to changing fish stock abundance, in order to understand the potential of fishing communities to adapt to future environmental conditions, and policies needed to facilitate this process. This will in turn enable management policies to be identified which maintain biodiversity while also recognising the needs of local communities that depend on fishing and other marine resources.

During the expedition Annesa helped to gather data on the drivers which govern community, adaptability and resilience to environmental change, in other words "sustainable livelihood." Research was based on three components of sustainable livelihoods which can affect climate change: firstly "natural capital" involving the distribution of key fish stocks and their abundance. Secondly "financial capital" which refers to the impact of altered resource availability on incomes, revenues and the cost of fishing activity. And finally "social capital" which refers to the impact of changing fish stocks distribution and abundance of property rights, access conditions and the institutions which govern resource management.

Fishermen, shopkeepers and hotel workers were interviewed.

"The Earthwatch expedition was an excellent opportunity for me to update my knowledge on climate change and its effects," says Annesa

For Nature Seychelles, which strongly believes in nurturing young people, the Earthwatch training is very welcome. "It fits well with our own objective of inducting young Seychellois into conservation leadership," said Nirmal Shah, Nature Seychelles Chief executive.

We Want More Women in Conservation!

Arriving on Cousin Island Special Reserve, visitors will not fail to notice the enthusiastic group of female wardens who will welcome them to the island. It might be the driver of the boat, one of the people pushing the boat or the person leading a tour of the island.

Now numbering four full staff members, their presence on Cousin is a result of Nature Seychelles actively promoting equal opportunity for both men and women. This is not only reflected in the desk jobs perceived to be easier on women but in field jobs which require both physical and mental competency. Many of the volunteers who a visitor would meet on the island are also female.

"We have a well developed Gender Policy in our Administrative and Staff Handbook. This and other related **policies aimed at empowering both men and women have ensured that women receive the same attention, salaries and opportunities as do their male counterparts,"** says Kerstin Henri, Nature Seychelles' Director for Strategic Operations.

"Women now make up 60 percent of our staff including being in senior positions - a fact that we are very proud of," she says.

Among Nature Seychelles women staff are an economist, a science officer based on Cousin, a communications officer, four wardens, a horticulturalist based at the Heritage Garden at Roche Caiman and management staff at the Mahe and Praslin offices.

"Opportunities for growth such as training are offered to both men and women. Talents and skills are actively cultivated. A woman who wants to work in areas where men are traditionally preferred such as boat operation is encouraged to utilise and develop their skills. In fact I have always felt that there are certain conservation jobs that women are better at than men." Says Nirmal Shah Nature Seychelles' Chief Executive.

And for the women, their greatest reward comes from the contribution they make to nature conservation.

Women have long played a key role in environmental conservation in Seychelles. The first Minister of the Environment was Danielle de Saint Jorre. She is recognised for the significant contributions she made in environment protection programmes in Seychelles.

In her memory, since the year 2000 the International Ocean Institute presents a Scholarship every year for one woman from Small Island Developing States (SIDS) involved in marine related research activities to improve their knowledge. Her portrait is among those of other leading environmental figures gracing the walls of the conference room at Nature Seychelles headquarters. Following in of these giants and knowing that they are making a contribution to environmental conservation in the Seychelles is a huge inspiration for the women at Nature Seychelles.

Photos: Nature Seychelles female staff at work

Nature Explorers Brings Benefits to Children

Would you have fun jumping like a frog, standing like a tree, and balancing like a heron? Or walking on a fallen tree and listening to the sounds of nature? The children in the Nature Explorers class at Nature Seychelles love to!

Nature Explorers is part of the Nature Seychelles' Green Health programme, which combines yoga and fitness in natural surroundings with activities that help the environment. Robin, a yoga teacher and conservationist started the programme mid-last year. And now he has began running a dynamic programme for children combining yoga, general fitness and self-discovery.

Classes increase flexibility, strength, discipline, confidence, general positivity and calmness. They encourage children to be ready to learn, create, and develop. "The children are of course having fun. But the core is education," says Robin. "Children are generally more willing to learn. Adults you have to persuade to do handstands - children have to be persuaded to do the warm up first!" he says.

A typical class allows for exploration and using one's imagination. Everything is exercised - from eyes to arms and legs. And classes are non-competitive, fostering cooperation and compassion. Every child works at the level they find themselves in to be build self-esteem and confidence.

Studies have shown that students who participate in yoga have better focus, perform better in school and are physically fit. It has helped children with learning and attention difficulties. Because its non-competitive it helps build self-belief and all children can feel good about themselves because one cannot really fail.

The setting of Nature Explorers classes within the Sanctuary at Roche Caiman helps in the discovery of nature and various natural materials lend themselves as ready tools to be used for classes. Robin has fashioned

pieces of wood as balance beams, stepping stones, toad tokens, basically anything he and mainly the children can imagine to use them for to exercise and have fun. Learning the animal poses, where they live, how they move, how they live together also educates children about nature. Learning the other nature poses such as mountain increases awareness and appreciation of the wonderful healing world around us.

Nature Seychelles will soon be expanding this programme to include children from vulnerable environments.

To follow the Green Health programme see this blog: http://greenhealthseychelles.wordpress.com/

Photos: Top - A yoga class. Inset - The setting allows for nature exploration.

Tomorrow's Protectors

More children visit Cousin Island Special Reserve

Cousin Island Special Reserve has always been a favourite with children. And now island coordinator Ian Valmont says the island is welcoming even more local children. Within the first four months of 2011, 387 children had visited Cousin especially during the April school holidays. Teachers are also asking for organised tours for children and make requests for special visits to the island.

"Although the Reserve is closed after visiting hours and over weekends we allow the visits as these are Seychellois children who are the inheritors of the natural heritage we are keeping in trust for them. So we ask our wardens to give up some of their relaxation time to welcome them and show them around," says Nirmal Shah Nature Seychelles Chief Executive.

Guiding has been styled to include activities such as the guessing game to enthuse the children and to gauge how much they know about the wildlife.

A tour involves a walk that starts from the beach after a thrilling beach landing. The group gathers under the visitor shelter with its information about the island where they receive a briefing. Groups are split into smaller units and each is assigned a guide.

The guide takes the children through the forest with its seabirds that include fairy terns (Golan) and white-tailed tropicbirds (Payanke) that can be found all year round, and endemic landbirds like the Seychelles warblers (Timerl Dezil), Seychelles mapgie robins (Pi Santez) and Seychelles fody (Toktok). There are also the island's giant Aldabra tortoises which love to walk up to visitors: children especially love to touch and be photographed next to this iconic symbol of Seychelles. A hike up to the highest top of the island provides a beautiful view of the surrounding islands. On the way, in rocks and burrows are Audubon and wedge-tailed shearwaters (Riga and Fouke). A walk back to the shelter then takes in the coastline where crabs and migrant shore birds are to be found.

The wardens say they get more than they give out of these visits. The children's enthusiasm is enriching and sometimes they even get serenaded as was the case with a local children's choir after their visit!

Photos: The Angels Choir Mahe on Cousin Island Special Reserve

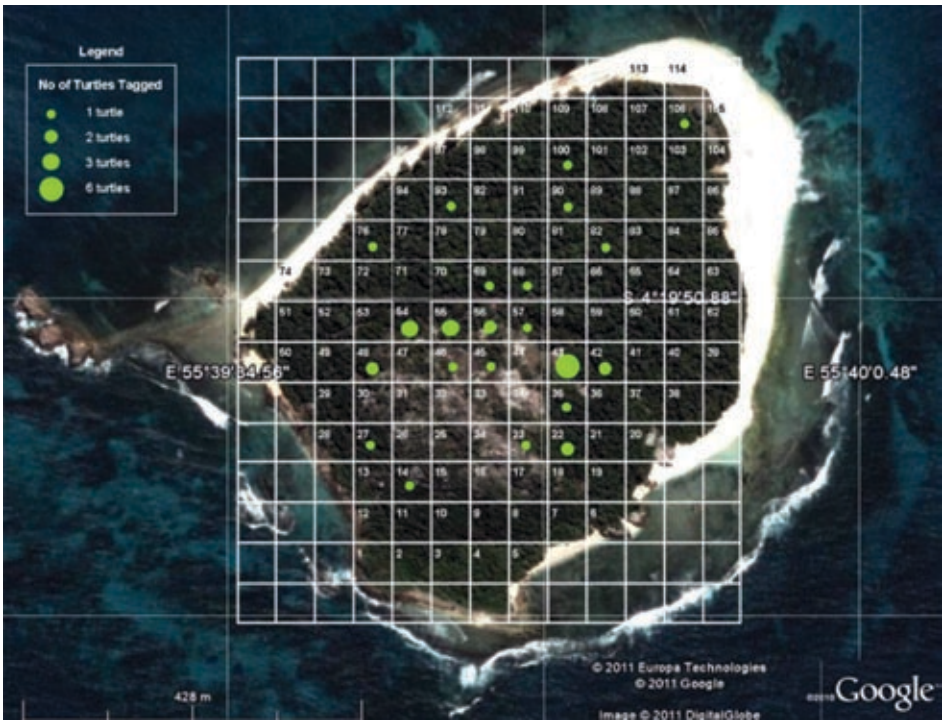
How Many Tortoises?

Sarah Bunce and Dr. Dale Kolody recently worked with Nature Seychelles to tag all the Giant Tortoises on Cousin Island Special Reserve to monitor the population. They have both previously volunteered on the Cousin Island sea turtle monitoring programme.

How many tortoises reside on Cousin Island at present?
In 1996, 10 tortoises were found and accounted for by the Department of Environment. In April 2011, we found and tagged 32 tortoises and 3 more were tagged by wardens after our 5 day targeted programme. We now know there are 35 tortoises. However it is likely that we did not find all the smaller sized tortoises. We estimate that between 40 and 45 tortoises reside on the island. Over the course of coming months (and years) wardens will continue to tag tortoises and the additional data will be added to the database to ensure increasing accuracy of the population estimation and up to date records.

What is the size distribution of the tortoises on Cousin Island?
The majority, 69% of tagged tortoises on Cousin Island are greater than 90 cm long with the next largest grouping at 26% in the 46-90 cm long category. Only one (3%) in each of the: 15-45 cm; and less than 15 cm long categories were found.

Figure 1 provides a visual impression of the population distribution relative to where the tortoises were tagged. The largest number of tortoises was tagged in the wetland area, a nice cool place to hang out.



Photos: Top Giant tortoise in the forest (Peter Chadwick)

Figure 1: Population distribution of tortoises tagged.

What is the general condition of the Cousin Island tortoise population? To answer this question we considered the carapace condition and any notable deformities. The white growth margins between each scute indicate that the tortoise is in a growth period (Bourne & Coe 1978). Of the 35 tortoises found, 80% had clear white growth margins. 17% of the tortoises had some sort of damage to a scute or scutes, including 1 puncture but most were cracks. 20% of tortoises have deformities in the carapace which may be due to historical damage or abnormal embryonic development. Tortoises with damaged toes or legs equaled 6% of the Cousin Island population.

The island's environment seems to be agreeable, with most observed tortoises in apparently good condition, no peeling scutes, no amputated limbs or missing claws as have been noted on the Aldabra atoll (Bourne & Coe 1978). The tortoises roam freely and likely enjoy a fairly diverse diet and fresh water.

Finally, one of our goals was to train Cousin Island wardens in the tagging method so they can tag any tortoises found subsequent to our trip using a consistent methodology. Successful training of the island's scientific officer, 5 wardens and 3 volunteers was achieved during the 5 day census Sure enough, the scientific officer and 2 wardens tagged 3 more tortoises after we left.

The wardens, who inform tourists about the island and the conservation work, had been reporting that there were 28 tortoises but thanks to this project they can update that information and raise awareness about the growing population of tortoises on Cousin Island.

Photos: Top - Tortoise of all sizes were tagged

Bottom - Training Wardens

Great News on World Turtle Day!

As World Turtle Day was being celebrated on 23 May, Cousin Island Special Reserve released its latest monitoring results for the 2010-2011 Hawksbill turtle *(Eretmochelys imbricata)* nesting season, which shows yet another increase in numbers of nesting turtles.

The number of Hawksbill turtle emergences and nests recorded in 2010-2011 (respectively 2319 and 945) were the highest ever recorded. The total number of different hawksbill turtles sighted was 293 compared with just 23 in 1973 when the turtle conservation program started. Previous estimated peak has been 256 turtles in one season.

Cousin Island Special Reserve manages what is thought to be the world's longest running monitoring program on Hawksbill turtles. The rookery there is considered to be the single most important site for hawksbill turtles in the Western Indian Ocean.

Last year a paper published in the journal *Endangered Species Research* analyzed the trends since conservation management started in 1972 on the island and showed an amazing eight fold increase in turtle nesting numbers. The data shows an increase at an average rate of 16.5 turtles per season between 1999 and 2009.

The largest hawksbill turtle population remaining in the Western Indian Ocean is found in Seychelles, where about 1,230-1,740 females nested annually in the early 1980s. Since then, however, populations have been reduced because of hunting of nesting females during the 30 years before 1994, when turtle harvest was completely banned. The most spectacular exception to the decline is the population at Cousin Island Special Reserve. The trend shows that conservation of even long-lived endangered species is possible.

Hawksbill turtles reach sexual maturity at 30-35 years and then lay between 1-6 clutches each season, each approximately 14 days apart and containing between 150-200 eggs. They don't breed every year; rather they spend 2-3 years out at sea before returning to nest again. Hawksbill turtles in this region are unusual in that they nest in the daytime, making them particularly vulnerable to poachers. For many years they were heavily exploited, mainly for their shell but also for their meat and eggs. However, in 1994, a law was passed in Seychelles which granted them complete protection. While poaching does still occur in some parts of Seychelles, the Special Reserve status of Cousin Island and the vigilant efforts of staff mean that no poaching takes place, so any turtles which come ashore here are able to lay their eggs in safety.

Photos: Top - The monitoring programme for hawksbill turtles on Cousin is the longest running in the world (Herve Chelle) Bottom - Turtle Hatchling (Martin Harvey)

Shooting Birds

International media as conservation partners

Cousin Island Special Reserve has recently received quite a fair dose of media attention. Early in the year, the popular Reunion TV programme Zone Australe aired a segment on the Seychelles islands produced by Serge Marizy that included the Reserve. The programme explained how saving the Seychelles warbler on Cousin saved other bird species and provided a sanctuary for endangered wildlife and the importance of the Reserve for nature conservation. It celebrated the regional collaboration found in initiatives such as turtle monitoring with the Sea Turtle Observatory Kelonia of Reunion, and seabird research with Laboratoire d'Ecologie Marine at the University of Reunion.

In May, a group of visiting filmmakers from South Africa arrived to shoot a documentary for the popular television programme 50|50 screened on SABC2 - the South African Broadcasting Corporation. Their attention was on seabird research conducted on the island, the effect the Mapou tree (*Pisonia grandis*) is having on seabirds and how this is being solved, and the island's carbon neutral status.

Nature Seychelles has been carrying out long-term monitoring of the impact of Pisonia on seabirds. The trees produce sticky seeds several times a year, which become entangled in the feathers of seabirds, preventing them from flying and finding food, and often resulting in their death. But while Pisonia seeds have such a negative impact, the tree also provides nesting sites for some seabirds and endemic birds, and is a source of insects for endemic birds. The first part of the programme - 'Bird Eating Trees' which explained this complex phenomenon and what is being done to manage it aired on SABC2 on 27 June.

The second instalment that will talk about the Cousin Island carbon initiative started in 2010 to reduce the island's carbon footprint airs later. The carbon offsetting programme is an on-going initiative that reassures visitors concerned about their footprint when they travel using long haul flights that they can come to Cousin with a clear conscience.

In April, popular media personality Varun Sharma of hit TV series 'Inside Luxury Travel' aired to millions worldwide was on the island to film for his show. Despite arriving during mosquito season and being the recipient of quite a number of stings Sharma said of Cousin on his blog: **"Cousin Island is a MUST see here on Praslin ... mozzies or not."**

"The media are our allies in conservation providing a window to what we do," says Nirmal Shah, Nature Seychelles Chief Executive. "It is critical that we make conservation everybody's business and we have been very happy to host a diverse media broadcasting to a wide audience around the world," he adds.

Nature Seychelles receives dozens of requests for professional photography and filming on the Special Reserve. "We are very receptive of filmmakers who want to promote conservation. We also use the films as an awareness tool," says Liz Mwambui, Nature Seychelles' Communication Manager.

Photos: Top left - Cousin Warden J'elle was filmed for Zone Australe. Right - Cousin on SABC2 50|50 Bottom - Mary, Cousin's scientist with Varun Sharma (via Varun's blog)

Terns, Noddies, Tropicbirds, Frigatebirds...

After having been observed breeding for the first time in 2009 on St François Atoll, it is now confirmed that Black-naped terns are regularly breeding on that isolated atoll. Several pairs were observed in February 2001 nesting on the beaches including the presence of chicks at different stages of development. Some were even nesting on an old shipwreck. It is also possible that a roseate tern is breeding with the black-naped terns, but this is yet to be confirmed.

This and other seabird news were discussed at the last meeting of the Seychelles Seabird Group (SSG) in May. Coordinated by Nature Seychelles, the SSG meets twice a year to discuss matters pertaining to the conservation of seabirds. The SSG is made up of island managers, conservation officers from a number of islands and representatives of the Department of Environment.

Still in the outer islands, Aldabra management conducted a survey of its frigatebird population in January and February. The last one was done in 2000. Another one is planned for the next breeding season to fine-tune the results.

Cousin wardens conducted their twice yearly seabird survey in February for 3 of its 7 breeding seabird species. The White tern population seems on the increase, but the White-tailed tropicbirds and the Audubon shearwater have shown a decrease. However, as these species breed year-round, the census probably underestimates the total population.

Aride management has been monitoring its population of seabirds and is preparing for the forthcoming breeding season. The Lesser noddies started to arrive as early as February this year.

Updates were also given on seabird monitoring on Alphonse and Desroches. Some interesting information has been coming out of the outer islands where seabird monitoring is still fairly recent, and we can expect a lot more information in the coming years.

Sadly the news is not always good. There were reports that poaching has been taking place on Booby Island, a small uninhabited island located between Praslin and Aride where Bridled terns had been nesting. This shows that despite the efforts of all those engaged in the conservation of seabirds, they still remain at risk.

Photos: Brown Noddy on Cousin Island (Peter Chawick)
Black-naped Terns (Lee Fuller)

Climate Change Adaptation:

Experts agree on priorities for WIO region

Experts from the Western Indian Ocean (WIO) region have agreed on actions that will help countries to adapt to climate change. The experts recommend activities such as vulnerability assessment research and action-oriented adaptation programmes in key areas of water, food security, agriculture, infrastructure, biodiversity, urban development and tourism among others. They also outlined priorities for mitigation such as policy formulation, as well means of execution that include financing, innovative partnerships, and the transfer and adoption of suitable technologies.

The actions have been outlined in a statement that came at the end of an international conference on climate change held in Mauritius from 21st – 23rd March 2011. It was attended by about 200 professionals working on climate change issues drawn from regional bodies, non-governmental organisations, business communities, governments and development partners. The conference theme was "Climate Change Impacts, Adaptation and Mitigation in the Western Indian Ocean (WIO) region: Solutions to the Crisis."

In his opening address, the Mauritius Minister of Environment and Sustainable Development, Mr Devanand Virahsawmy, said that the WIO region is most impacted by climate change although it contributes the least to greenhouses gas emissions. Climate change can jeopardize economic gains that the WIO countries have achieved and influence adversely the attainment of the Millennium Development Goals, he said.

"For us living on small islands and on the coast climate change is not an academic exercise, it is a clear and present danger. Indeed the objectives of this meeting are to share knowledge, experience and solutions gained in implementation of adaptation and mitigation strategies," stated Nirmal Shah President of the Western Indian Ocean Science Marine Association (WIOMSA) in his opening address.

WIOMSA organised the conference jointly with the Mauritius Oceanography Institute, the Indian Ocean Commission and the Secretariat of the Nairobi Convention (the regional convention on the environment).

Shah also presented Nature Seychelles' initiative that made Cousin the world's first carbon neutral island and nature reserve last year. The scheme is unique in that it invests funds derived from eco-tourism in Seychelles into climate adaptation projects in poor countries. The money buys carbon credits to offset climate change impact on Cousin Island, reassures visitors that their carbon footprint is taken care of and finances much needed climate community projects elsewhere in the world.

Last year a climate adaptation project in the war torn region of Darfur, Sudan received the investment. Two projects in Brazil and Indonesia are recipients of the carbon offset funds this year. The Brazilian project prevents deforestation and protects the Cerrado Biome by using agricultural waste in place of deforested wood to fire community based ceramic kilns. The Indonesian project made a number of vital upgrades to an existing conventional power station using coal to make it geo-thermal.

This well-received initiative demonstrated that WIO countries can move from being victims to champions, said Shah.

Photo: Left to right Fatoumia Bazi (COI), Richard Munang (UNEP), Ana Paulo Samo Gudo Chichava (MICOA), Hon Devanand VIRAHSAWMY, (Minister for Environment and Sustainable Development Mauritius) Claes Kjellstrom (SIDA), Nirmal Shah (WIOMSA President), Rezah Bedal (Maurtius Oceanography Institute-MOI) at the Opening Ceremony (WIOMSA)

Marine Protected Areas and Fisheries

The Western Indian Ocean Marine Science Association (WIOMSA) and ReCoMaP the regional programme for the sustainable management of the coastal zones of the countries of the Indian Ocean, held a Marine Protected Area (MPA) and Fisheries Symposium in the coastal town of Mombasa in March 2011. The Symposium brought together project teams from two major funding programmes in the region, namely the Marine Science for Management (MASMA) programme of WIOMSA and the various funding programmes of ReCoMaP.

ReCoMaP and WIOMSA have together supported a total of 18 projects on different aspects of MPAs. For instance, the six MASMA-funded projects have focused on topics such as spawning aggregations, larval settlement and recruitment, spatial behaviour and displacement of fishers due MPAs, effectiveness of CBOs in resource management, migrant fishers and their social and management implications and the role of MPAs in ensuring ecosystem services are sustained.

ReCoMap has supported numerous activities by NGOs, community-based organisations and Government agencies that have put in to practice scientific approaches for the management of conservation areas and small-scale fisheries, ranging from management planning for LMMAs and MPAs, design and consensus building for new MPAs, approaches to communication and conflict resolution, as well economic evaluations of conservation and management actions.

The Symposium provided a unique opportunity to bring together the MASMA and ReCoMaP project teams in order to share results, lessons learnt and issues arising from their work. As well as scientists and practitioners from academia, conservation bodies and government institutions, fisheries and MPA managers were also invited to promote Symposium participant's uptake of the project findings and to identify information needs for current and emerging issues.

"It is our expectations that based on the information generated by these projects as well as from our collective knowledge and experience, we will be able to come up with practical and innovative recommendations for targeted research and management interventions for MPAs," said Nirmal Shah the President of WIOMSA when he opened the symposium.

"I hope participants will not shy away from asking difficult questions for instance, why there are few successful MPAs in the region despite of all the resources invested in the past 20 to 30 years? With declining financial resources, what is the future of MPAs?"

The Symposium highlighted the need and opportunity for placing locally-based conservation and fisheries management interventions within broader-scale coastal zone governance. To achieve this, barriers between fisheries departments, national MPA authorities and community or NGO-led activities must be addressed, and structures for improving coordination between these groups established.

Opinions of the work of ReCoMap and MASMA by experts from different regions were very informative. As noted by Andrew Smith, the level of science associated with both MPAs and coastal fisheries in the WIO is impressive compared to the Asia-Pacific, notably the emphasis on multidisciplinary work involving social and economic studies. However, common to the Asia-Pacific region, the WIO is struggling with issues such as the disconnections between the objectives of MPAs, their design and their potential role in fisheries management. A full report of the workshop is available on the WIOMSA and ReCoMap websites.

Additional reporting by Jan Robinson via WIOMSA

Photo: Fish at Mahe Market (Peter Chadwick)

The Paradox of Development versus Environment

By Nirmal Shah

It seems to me that people nowadays are talking about the environment in terms that can only be described as negative. Few people I meet have something positive to say about the state of our natural environment. So has all the hooha about sustainable development been just a pipe dream?

Back in 1990, it was recognized in the National Development Plan and its sister document the Environment Management Plan of Seychelles (1990-2000) that the natural environment provides us with water, air, protection against erosion, beautiful beaches, fish and so many other vital things for our existence. Our two most important economic pillars tourism and fisheries depend on the natural environment.

The Seychelles is famous for its environmental protection. Protection of 50% of our land, success in saving threatened birds, increased awareness in the population, the list goes on. But all is not well as development continues. We see environmental problems popping up everywhere. And many are symptoms of larger issues as many people note.

And this is the case not only in Seychelles. The UN Millennium Ecosystem Assessment shows that most places exhibit degradation of the air, water, and soil. Species are becoming extinct as natural habitats are being destroyed. The emissions of greenhouse gases are ongoing. All the environmental problems put together amount to a very serious threat to human welfare.

Yet at the same time, all measures of well-being show that, on average, quality of life is improving around the world including Seychelles. How do environmentalists reconcile these two seemingly different state of affairs?

This "Environmentalist's Paradox" is examined in a paper published in the journal BioScience. The paper confirms that improvements in overall well-being are real, despite overwhelming evidence of environmental decline. People's complacency and disinterest in declining environmental quality is attributed by the authors to three main issues which are: increases in food production; technological innovations that decouple or remove people from natural ecosystems; and time lags that occur before the problems show up and well-being is affected.

The paper notes that the continued rise in well-being that we expect may not actually happen. The negative impacts on the environment such as from climate change threaten new gains in agricultural production. Technological advances can provide only a limited protection in this regard. With all the evidence at our disposal, society may not be able to successfully adapt to further environmental degradation, the authors state.

The paper notes that "ecosystem brittleness" may threaten the gains so far. They ask for better understanding of the actual benefits of healthy ecosystems to human welfare. At the end of the day understanding the Environmentalist's Paradox is vital to guiding sustainable living especially in small island states like Seychelles.

Nirmal Shah is Nature Seychelles' Chief Executive

Photo: A partial view of Mahe

Seychelles Sustainable Tourism Label

By Joe Rath

Seychelles is part of one of the major "biodiversity hotspots" in the world. Its most important resources are the rare beauty of the environment, as well as a significant fishery resource. Biodiversity is the base upon which the two major economic sectors – tourism and fisheries – have developed. This makes the conservation and sustainable use of biodiversity of vital importance for the country's sustainable development.

Due to the small nature of these islands and that the biodiversity is spread over the entirety of these islands, conserving the biodiversity in protected areas like National Parks will not necessarily result in the adequate protection of biodiversity. In order to address this, the Government of Seychelles launched the "Mainstreaming Biodiversity Management in Production Sector Activities" project in 2007 with support from the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF). The objective of the project is to internalize the goals of biodiversity conservation and the sustainable use of biological resources into the two main production sectors of Seychelles, namely fisheries and tourism.

In Seychelles, as tourism businesses occupy more and more land on the islands as the industry grows, it is important for these land owners to manage the very resources on which their businesses have been developed wisely and sustainably. While tourism can lead to problems such as waste, habitat destruction and the displacement of local people and wildlife, it also has potential to provide incentives for conservation and development. Careful stewardship of these key tourism assets is essential to the sustainability of tourism and to the integrity of the island ecosystem. Broadly speaking, sustainable tourism aims to enhance the quality and sustainability of natural and cultural heritage-based experiences by: (a) Minimizing the industry's negative economic, environmental and social impacts; (b) Optimizing economic benefits for communities; and (c) Contributing to the preservation of natural and cultural assets.

One tool to encourage the sustainable tourism businesses is the certification of enterprises through a Sustainable Label concept. Labels provide tourists and tourism intermediaries with valuable information on sustainable tourism products helping them to make more informed travel choices; additionally they serve as a useful marketing tool to the tourism establishments. Thus, there is more interest and even pressure to demonstrate social, economic and environmental results and impacts of certification.

Through the work of the BD Mainstreaming project and other partners, the Seychelles Tourism Board on behalf of the Government of Seychelles recently launched the Seychelles Sustainable Tourism Label (SSTL). This label is Seychelles' first ever sustainable tourism certification system and its purpose is to provide a set of standards to encourage and guide operators to do their part to increase the sustainability of tourism in Seychelles. The SSTL will be voluntary, user-friendly, and designed to inspire more efficient and sustainable ways of doing business. The criteria of the label are classified under eight themes comprising management, waste, water, energy, staff, conservation, community, and guests. It adopts an integrated approach to sustainability by including environmental, social, and economic components.

It is hoped that most of the tourism enterprises in Seychelles will adopt the label in the next couple of years and that through the implementation of the Label and its related components that the environment and community will benefit from viable and successful businesses and as a result the unique biodiversity of Seychelles is safeguarded.

Joe Rath manages the Tourism Component of the GEF/UNDP/ Government of Seycheles Mainstreaming Biodiversity Project

Photos: Top - Seychelles' rare beauty needs safeguarding Inset - Mr. Alain St Ange, CEO of the Seychelles Tourism Board, addressing delegates at the launch of Seychelles' Sustainable Tourism Label (STB)

Towards Energy Efficiency in Seychelles

By Andrew Jean Louis and Roland Alcindor

The Energy Situation

The Seychelles is almost 100% reliant on imported oil for energy needs, which is a significant economic and budgetary cost, and is the single largest contributor of greenhouse gases in the country (based on emissions during the shipping process and in the burning of fuel to produce electricity).

Demand for electricity has been increasing at a steady rate of 5% for the past decade and will probable increase by a further 8-10% this year, as a result of increased economic activities, especially in the tourism sector, the improvement in the lifestyle of the citizens and increase in foreign investment. There will be need for continued expansion of the electricity production and distribution system to cope with this increase in demand.

This year alone will have seen a 33% increase in conventional power generation with the addition of 2 new generators. A wind farm of approximately 6MW will come on line next year and will be the first plant in Seychelles that will generate electricity from a renewable source of energy that will be connected to the grid. In the next few years, a plant generating energy from waste will also come on line, and is expected to generate up to 15% of the country's need for electricity. Other power plants using renewable energy sources will also come on line in the future.

The country is currently preparing itself for independent producers of power to start operating. The process for drafting the necessary legislation started in late 2010 and is expected to end with the Energy Bill to be sent to the Cabinet of Ministers, by the end of September 2011. Even homeowners will be able to have a few panels on their houses and to produce electricity from the sun and sell the excess to the grid.

Photos: Top - The sun is an abundant renewable energy source (Cas Eikenaar) Inset - Victoria by night

Harnessing the sun: UNPD/GEF Roof Top Grid Tied Project

The sun is one of our most abundant energy sources and its potential to produce electricity for local consumption is virtually untapped. Here in Seychelles, the energy from the sun has been used extensively in the past for various purposes including water heating. But the energy from the sun, which consist of light and heat, can also be use to produce electricity. This is a process, known as photovoltaic, occurs when the light is absorbed by a special material and produces electricity. Solar energy, a clean and renewable source of energy, does not produce any greenhouse gases and can help reduce the impact of climate change. A significant portion of fossil fuel can be displaced if this technology is used.

The Government of Seychelles, with technical assistance from the United Nations Development Programme and financial assistance from the Global Environment Facility (GEF), is currently developing a project entitled "Grid-Connected Rooftop Photovoltiac (PV) Systems" which will over time reduce the carbon emissions of the Seychelles islands. The overall aim of the project will be to promote this technology to produce electricity for self consumption and sell the excess to the Public Utilities Company (PUC). The project will identify the main barriers that have not made this technology widely used so far and address these with innovative strategies; for example there may be the introduction of some form of fiscal incentives that will make this technology able to compete with conventional power stations. There will also be new laws put in place to allow individuals to sell electricity back to PUC. The potential for PV systems in the Seychelles is excellent, as the country has high levels of solar radiation due to the fact that the main islands are situated near the Equator.

The project, likely to start implementation in 2012, has 3 components that will support the creation of an enabling environment for the generation of power through PV systems by public/private entities through addressing policy/legislation barriers, capacity development and showcasing PV technology in demonstration projects.

The PV demonstration projects will be able to show whether rooftop PV systems are technically feasible and cost effective for Seychelles, both for small-scale systems on the smaller islands and for commercial buildings on the main islands, with the possibility of scaling up, thus allowing a greater percentage of energy production in the form of PV systems. The current cost of generating electricity is very high due to the archipelago's isolated location and its reliance on imported heavy fuel.

Climate change is defined by the United Nations Framework Convention on Climate Change as *"a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods".* Currently, the climate is changing through the process of global warming caused by the anthropogenic release of greenhouse gases (mostly carbon dioxide) into the atmosphere. The largest percentage of carbon dioxide released into the atmosphere comes from burning fossil fuels for energy purposes. Climate change, if allowed to continue, will have disastrous effects for the global population and even more so for Small Developing Island States like Seychelles. It is anticipated that the effects of rising temperatures, shifting seasons and sea level rise will lead to increased flooding, coastal erosion and water shortages in Seychelles, some of which is already evidenced.

Climate change and development are intricately linked. Failure to tackle climate change will have disastrous effects on development, while development processes (the speed and nature of development) are major determinants of global climate change processes. In an attempt to address these developmental issues, the Global Environment Facility (GEF) supports climate change projects in developing countries and economies in transition *"to achieve [...] stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"* (www.thegef.org). The PV project in Seychelles is a proposed concept that could assist in this endeavour.

Andrew Jean Louis is the Chief Executive Officer of the Seychelles Energy Commission

Roland Alcindor is the Programme Manager for UNDP Seychelles.

Photo: Example of Photovoltaic System on a house

Waste as Energy

By Tony Imaduwa

Waste has become an unavoidable part of our lives. Because of our increased consumption we are producing more waste than ever. It is estimated that approximately 100 metric tonnes of waste (municipal, hotel and construction) are collected per day in Seychelles.

Most solid waste collected in Seychelles currently goes to landfills - one of the most widely used methods of waste disposal in the world. Star Seychelles through a contract with the Landscape and Solid Waste Management Agency collects unsorted domestic and municipal waste in trucks fitted with compactors, which it sends to the landfills where further compaction and burial occurs. Green waste (yard waste) is turned into compost, and metals are collected, compacted and exported for recycling.

But landfills have many disadvantages. They are unsightly, have bad odour, and they attract vermin. They pollute the environment and can cause contamination of water and soil. Decaying organic waste in landfills also releases gases such as methane - a potent greenhouse gas.

In small island states such as Seychelles an additional challenge to using landfills for waste disposal is land availability. Landfills often occupy a prime resource. And once they reach capacity, new ones have to be developed resulting in a further demand on land.

Dealing with waste effectively and in an environmentally friendly way has become a priority for the government. The country's current Energy Policy also highlights the need to diversify the energy base using other technologies and energy sources for electricity, such as producing energy from waste. In order to resolve the twin issues of waste management and sustainable energy, the government has announced the start of a project that will use waste for energy.

Energy-from-Waste (EfW) or Waste-to-Energy (WtE) is a form of energy recovery in which energy is generated, in the form of heat or electricity, from waste. Most of Energy-from-Waste plants produced electricity directly through the combustion process or produce a combustible fuel product such as methane. There are a number of other new and emerging technologies that are able to produce energy from waste and other fuels without direct combustion. Many of these technologies have the potential to produce more electric power from the same amount of fuel than would be possible by direct combustion. This is mainly due to the separation of corrosive components (ash) from the converted fuel, thereby allowing higher combustion temperatures in e.g. boilers, gas turbines, internal combustion engines, fuel cells. Some are able to efficiently convert the energy into liquid or gaseous fuels.

Proposals have been received from interested parties with adequate financial capability and a demonstrable track record in the Waste-to-Energy industry to run the project. They are currently under review. Based on the evaluation, the most appropriate proposal will be awarded the contract and will be asked to submit a detailed project document. The project will be a Build, Own and Operate (BOO) and will be entirely financed by the proponent. Construction could start later this year once all contract negotiation and other legal matters have been completed and operation will commence not long after.

This project also falls in line with the Solid Waste Management Plan and will look at the sustainable treatment of solid waste and extending the possible lifetime of the new Providence landfill. It will use as much waste as possible for the production of energy, encourage recycling and re-using of waste and treatment or safe disposal of hazardous waste reducing the amount that will then go to the landfill.

It is expected that the electricity produced from the landfills will be sold to the Public Utilities Company (PUC) to complement national demand for power. The energy law that will allow this is currently under preparation and will be in place by the end of the year.

Tony Imaduwa is the principal officer for Energy Management and Renewable Energy at the Seychelles Energy Commission

Photo: Waste at landfills will be used for energy.

New Products from Old -

An artist steps up to the recycling challenge

By Liz Mwambui

I am standing at Jivan's Imports, a popular shop on Mahe's Market Street looking at an incense stick holder made from the Coco D Amour wine bottle. As I hold it, the dark glass catches light streaming from the open door and its reflections look like they have been painted on. What has been baked on it, is the word 'Seychelles' and this along with the Coco D Amour brand name give it an authentic local touch. The incense stick holder looks like anything but trash. Yet that is exactly what this and other items are made of: waste glass and paper.

Their creator is Manisha Shah and she is showing me the pieces and explaining their uses. She points to a candle holder, a spoon rest and a cheese bowl. A serving tray has been fashioned from two bottles - one still has the bold branding of a coke bottle. Each piece is attractive and I imagine it seating pretty on a table or sideboard. That's what they do.

Made in Seychelles

"They are very popular locally," Manisha tells me. People buy the items as gifts for birthdays, weddings and Christmas, she says, something that makes her very happy as it serves as a reminder that they are hundreds of things you can make by reusing and recycling household waste. Each piece comes with a transparent label with the branded name "Nirvana Creations, Made in Seychelles" and packed in what is also a unique bag. The bags are all cloth and made from off-cuts from a tailoring shop. No one bag is the same and they are also tagged with a hand painted cloth label.

Unique artist

Manisha is a unique Seychellois artist who uses trash as her artistic medium. Her choice is waste glass and newspaper, which would otherwise end up in the landfill. Friends and restaurants provide her with their discarded wine bottles and instead of sending her newspapers to the dustbin, she turns them to art. She also collects clear glass off-cuts.

Manisha is practising one of the three "Rs" of waste management - recycling. The other two are 'Reduce' and 'Reuse'. They are part of the basic concept whose cornerstone is minimising waste, which is both environmentally friendly and reduces our consumption of natural resources.

"My mother is into glass and recycling. She used to mainly do stained glass artwork when I was young and I watched her do it," says Manisha.

"When I came to Seychelles, a friend of mine was doing fusing and I thought that was interesting. I attended a course in Singapore, then got into it and kept experimenting. With a bit of imagination you can make beautiful and unique products out of your waste."

Fusing involves moulding and manipulating glass inside a kiln. "I also use slumping where glass is placed over a mould and heated until it drapes over the shape. There are other techniques such as dripping," says Manisha.

I ask what an artist would require to get started apart from trash and an imagination. "There is an initial investment one has to make and I would say the biggest is the kiln. I bought mine while travelling," she says.

Newspaper bags and glass cases

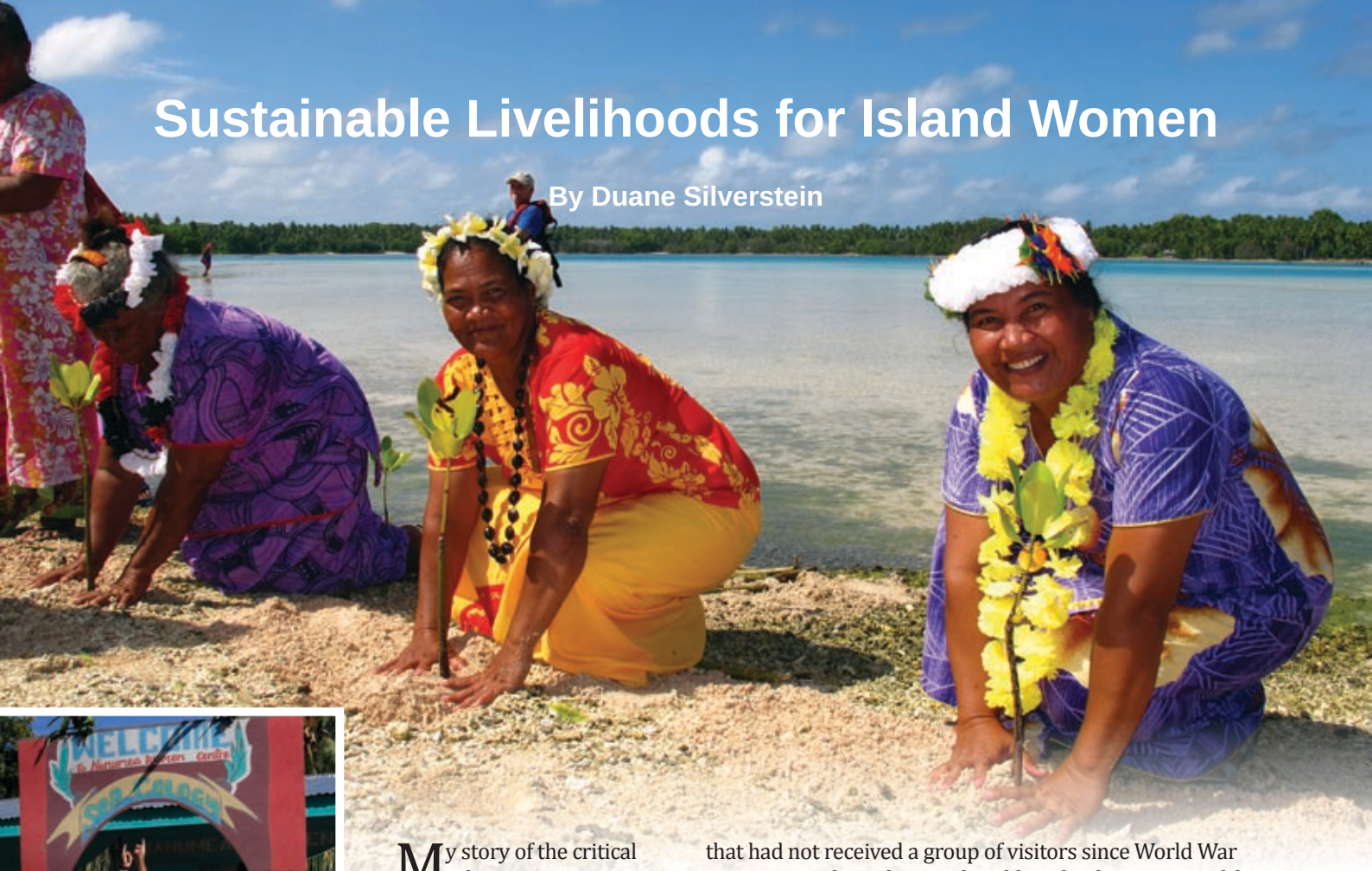
Apart from reusing glass, Manisha makes use of old newspapers to make such functional items as bags and spectacle cases. Newspapers are rolled and twisted and then woven together to make the items. A stunning spectacle case her mother made is on show at the shop. Alongside these she shows me pretty bracelets made with paper beads. So the next time you head towards your dustbin look inside your trash bag - you could be throwing away works of art.

Liz Mwambui is Nature Seychelles' Communications Manager

Photos: Manisha makes items from recycled glass and paper

Sustainable Livelihoods for Island Women

By Duane Silverstein



My story of the critical role women can play in protecting the fragile ecosystems of islands begins in Tuvalu, one of the smallest, most remote, and lowest lying countries on Earth. Because the highest elevation on this Polynesian nation is a mere 5 meters above sea level Tuvalu is extremely sensitive to the effects of climate change which brings rising seas, increased flooding and stronger storm surges to its coast. Mangrove forests can help ameliorate this problem by creating a natural barrier against flooding and violent waves while preventing erosion.

The Tuvalu National Council of Women has long recognized the importance of their country's mangroves. Along with the people of the Tuvalu atoll of Nanumea, they approached Seacology (www.seacology.org), the NGO I head whose sole focus is preserving island environments, for support of a win-win project. Nanumea has a population of 660 people and outside of government employment, there are no paying jobs on the island. Everyone lives off the bounty of the land and sea in a subsistence fashion. Therefore, Nanumea was seeking support for the renovation and expansion of a Women's Centre where the local women can make traditional handicrafts for sale in the capital city of Funafati. In exchange, the people of Nanumea would begin a two acre lagoon based mangrove nursery and reserve, planting over 1,000 mangrove seedlings along the coastline. Seacology was pleased to fund this project.

Several months ago I visited this project along with Seacology President Ken Murdock. En route we stopped at several islands in the Marshall Islands, Kiribati, and Tuvalu that had not received a group of visitors since World War II. We were pleased to cut the ribbon for the opening of the Women's Center on Nanumea and join many of the local women in planting mangrove seedlings.

We produced a short video of this project which can be seen here: seacology.org/news/display.cfm?id=4262

This is just one of Seacology's 215 projects, which are found on 116 islands in 45 countries around the globe. It nonetheless had a profound impact on me. Not because of the extraordinary friendliness of the people of Nanumea and not because of the extreme beauty of the island – though both of these moved me. No, this project got me thinking about the status of women on islands and the important role they can play in conserving the environment. There are likely only a handful of people on earth who have visited more remote island villages than I have. Most of these villages from widely different cultures have several things in common. Though almost all of the village residents earn low wages, the women of the villages earn even less than the men. Additionally, and somewhat paradoxically, one of the best ways to get something done on these island villages is to have the women do it as they are very well organized. So I concluded that one of the best things Seacology could do to conserve threatened island ecosystems is to help provide island women with sustainable livelihoods in exchange for an agreement to make sure the local forests and marine areas are protected. I am convinced that this will be a cost effective and equitable way to improve the economic status of women while protecting island environments. I hope that Seacology will be able to launch more such projects in the future.

Duane Silverstein is the Executive Director of Seacology

Photos: Top - Planting Mangroves (Giovanna Fasanelli)
Inset - Opening women's centre (Ramona Wilson)

Sustainable Livelihoods on SIDS

By Ilan Kelman

SIDS (Small Island Developing States) life is often seen as being magical, romantic, alluring, and utopian. While reality sometimes matches these stereotypes, many difficulties also occur for those living on SIDS. Small land area, small populations, isolation, and marginalisation are frequently seen to conspire to reduce livelihoods opportunities.

That is a core challenge for sustainable development on SIDS. How can islanders generate local livelihoods that are fulfilling and that reduce consumption given all the island challenges faced? The answer: Because they must and because they can.

SIDS communities, in fact, often have significant advantages for sustainable livelihoods. Strong bonds within the population due to knowing each other, pride in unique cultural and natural heritage, and a wider SIDS population sending back remittances can support creative solutions for living on a SIDS without wrecking the island.

A long memory of tackling social and environmental changes in isolation, with varied degrees of success, provides SIDS peoples with experience and often flexibility to address contemporary changes. Examples are hazards manifesting rapidly such as hurricanes and some volcanic eruptions along with creeping environmental changes personified by climate change along with social trends such as the internet and rapid air travel. Changes bring threats and opportunities along with ethical challenges for balancing the two.

Volcano-based livelihoods

Volcanoes, for instance, have forced the evacuation of dozens of SIDS communities over the decades, from Niua Fo'ou in Tonga in 1946 to Montserrat after 1995. Volcanoes also form the source of many SIDS livelihoods. Good farmland and reliable water supplies often result due to an active volcano.

Volcanic landscapes draw tourists, with St. Lucia being an excellent example. Despite the island catering to large populations of those seeking sun, sea, and sand, tourists also visit the country's only World Heritage Site, the Pitons Management Area with its spectacular volcanic peaks and hot springs. Volcanic activity millennia ago formed a beautiful harbour for Rabaul, Papua New Guinea, supporting fishing and resource extraction livelihoods - with the accompanying dangers of resource overexploitation.

Any use of the volcanic landscape for livelihoods creates further dangers. Many tourists unfamiliar with active volcanic areas might not fully understand the warning signs. Locals, such as on Montserrat and Comoros, have been reluctant to evacuate due to an erupting volcano, or have entered an exclusion zone, for fear of not having livelihoods.

SIDS volcanoes bring sustainable livelihood opportunities. But they also bring threats.

Resource-based products

SIDS products promoting island uniqueness are frequently advertised. Caribbean cuisine is promoted as giving a fresh island flavour, such as from lemongrass. Maldivian spicy seafood is advertised as part of the island experience.

Fiji has sold bottled water by marketing the perception of islands as being pure and untouched. That led to ethical questions regarding the environmental consequences of using bottles and social difficulties regarding resource control, taxation, and fair treatment of employees. Controversies also erupted in the Federated States of Micronesia and St. Vincent and the Grenadines over plans to sell local water overseas.

SIDS resources lead to products supporting livelihoods. The implementation of resource-based livelihoods does not necessarily mean that the livelihoods are ethical or sustainable.

Balancing island life

The successful examples do not imply that island life is idyllic and that all island livelihood challenges can be overcome. The ethical challenges do not dictate abandoning the livelihoods. Instead, a balance must be sought, seeking success without ignoring ethical difficulties.

Through creativity, flexibility, and using island characteristics to their fullest advantage within ethical approaches, many (even if not all) challenges can be overcome to build and maintain sustainable livelihoods on SIDS.

Ilan Kelman is a Senior Research Fellow at the Center for International Climate and Environmental Research - Oslo, Norway (see http://www.ilankelman.org)

Photos: Left - The Pitons in St. Lucia's only World Heritage Site. Right- Furniture made on Fiji: A sustainable SIDS livelihood? (Ilan Kelman)

It Works, and Visitors Love It!

The Eco-architecture of Chumbe Island Coral Park in Zanzibar/Tanzania

By Sibylle Riedmiller

Amazing, fascinating, luxury-eco and truly ingenious, innovative, very comfortable…!", this is how visitors describe the Chumbe Eco-architecture in the guestbook, online travel blogs and feedback sites like TripAdvisor.com.

This is more than we could have hoped for, when developing Chumbe Island into a privately managed marine and forest nature reserve, and looking for building designs and operations that reduce ecological footprints to an absolute minimum, while still generating sufficient energy and water for tourists to feel comfortable.

When it all started in 1993, conditions were challenging.

Chumbe Island, a small formerly uninhabited pristine fossil coral island off the southwest coast of Zanzibar/ Tanzania, has no fresh water sources other than seasonal rains that run off quickly through the porous rocky ground. And the commitment was to protect the sensitive coral communities in the fringing coral reef sanctuary from any sewerage runoff and pollution.

Fortunately, we won the co-operation of renowned experts on state-of-the-art eco-technology for the small Eco-lodge and the Visitor centre, who designed buildings that function as self-sufficient units and generate their own water and energy. This is how they work.

Local building technologies and materials. All buildings on Chumbe Island reflect local architectural low-energy and low-input traditions and technologies. No endangered hardwoods were used, not even for furniture. Instead, building with fast-growing abundant Casuarina poles, palm-thatched roofs and hand-woven doum palm mats is sustainable and supports the local economy.

Natural ventilation. The spatial orientation and open design of all buildings makes maximum use of the prevailing directions of the seasonal Indian Ocean trade winds. Guests can regulate the flow of the sea breeze through the bungalow with hand-woven mat panels, while beds are fitted with small solar-powered fans. Thus no need for energy-demanding air-conditioning.

Rainwater catchment. All buildings make maximum use of rainwater that is collected by the palm-thatched roofs, funneled through gravel and sand filters and then stored in large cisterns holding 15.-25.000 litres under the floor of each building. These are sealed from light to avoid

algal and bacterial growth; thus the water remains fresh for showers throughout the year. To our knowledge, Chumbe Island is the only resort harvesting rainwater from palm-thatched roofs worldwide.

Composting toilets. To totally avoid sewage from flush toilets and also save precious water, the Eco-bungalows have composting toilets that recycle human and organic waste in a sustainable way. They reduce organic waste to one sixth of its original volume and produce compost and fertilizer for the grey water filtration plant beds mentioned below. Organic kitchen waste is recycled in compost beds that provide for the composting toilets. Any other waste is removed from the island.

Vegetative greywater filtration. To avoid introducing unwanted nutrients into the coral reef, the waste water (greywater) from showers, washbasins and the kitchen passes also through a filter before entering a sealed plant bed of species that absorb large amounts of phosphates and nitrates before the water enters the eco-system. All laundry is washed off the island.

Solar power for light, communication and water heating. Photovoltaic panels provide for lights and all other electricity needs. The Visitors' Centre has a solar-powered charging station for batteries of cameras and mobile phones, and the restaurant kitchen a solar-powered freezer. In all bungalows, shower water is heated by solar water heating panels.

Avoiding light pollution at night. The walkways, nature trails and beach areas are not artificially illuminated. Guests are given hand and solar powered torches for the pathways to the restaurant at night. This creates a paradise for star watchers and lovers of the Southern night sky. It also protects feeding and breeding patters of nocturnal animals, in particular one of the most stunning attractions of Chumbe Island: the rare giant Coconut Crabs (*Birgus latro*), red-listed by IUCN, the largest land crab on Earth and abundant on Chumbe.

Cooking energy. Against the backdrop of rapid deforestation, the search for clean and renewable cooking energy was a particular challenge. A restaurant has to offer a variety of dishes that are prepared and served hot at breakfast, lunch and dinner times, irrespective of guest numbers and peak sunshine hours. Thus, we experimented with a wide range of cookers: two models of solar cookers, solar boxes and a parabolic solar-cooker, low-pressure gas and kerosene cookers, as well as traditional charcoal stoves. A flexible combination of gas cookers, small insulated charcoal cookers and an energy-saving wood stove specially built for the staff kitchen was the most appropriate and cost-effective option.

Solid waste avoidance and removal. Buying unprocessed fresh produce from local markets and transporting supplies in large baskets avoids packaging materials, especially the universal killer of the environment: plastic waste! Organic waste is composted for use in composting toilets, while all inorganic waste is taken off the island.

All this, and nothing less, was needed to turn Chumbe Island into an ecological paradise, and for winning nearly all awards available for environmental conservation, sustainable designs and responsible tourism. Welcome to Chumbe, for an amazing experience!

Sibylle Riedmiller is the founder-owner of Chumbe Island Coral Park Ltd and an Executive Board member of the Wildlife Conservation Society of Tanzania (WCST)

Photos: Preceding page - All roofs catch rainwater (Frida Landhammar) This page bottom left - Chumbe Visitors Centre; roofs shaped for catching rainwater. Top Right - Chumbe bathroom showing composting toilet. Bottom Right - Coconut crabs are excellent tree climbers (Courtesy of Chumbe Island Coral Park)

Sustainable Living:
A Tale of Two Islands

By Nirmal Shah

Seychelles recently established diplomatic ties with Nauru, an island in the South Pacific Ocean and the smallest of the Small Island Developing States (SIDS). I think it would be interesting to compare the two countries because the study of other SIDS is important for us in Seychelles as we could derive models and lessons for sustainable living.

Many tropical SIDS have similar development patterns because of similar resource bases, colonial history, geography and so forth, but there are few whose current status are as far apart as Seychelles and Nauru. Here are some facts about Nauru.

Nauru is probably the only country in the world whose economy was completely dependent on seabird shit or guano. Like Seychelles, Nauru mined guano and exported it to be used for fertilizer as it is rich in phosphates.

Unlike Seychelles, Nauru is still mining guano (albeit reduced) and the country is now an environmental disaster of almost biblical proportions. I wanted to see it for myself because it's mentioned in many environmental textbooks. More than a century of guano mining has left a sort of moonscape of sharp coralline pinnacles virtually everywhere. The mining has degraded about 80% of the land area. Silt and phosphate runoff have had massive impacts on the marine environment destroying 40% of marine life. There are no endemic plants.

Nauru may be the smallest country but it is also the fattest nation. This is because the people of Nauru are the most obese in the world. More than 90% of adults have a higher Body Mass Index (BMI) than the world average. The most popular food and drink are fried chicken and cola!

Nauruans are among the sickest people on the planet. They have the world's highest level of Type 2 diabetes with almost half of the population affected. Nauruans do not live very long – the average life expectancy for men is only 58 years.

Nauru does not have a real seaport. From December 2005 to September 2006, Nauru became largely isolated from the outside world because the only airline with service to the island –Air Nauru- went bust. Taiwan stepped in and provided capital for the airline to restart operations under the name Our Airline.

In the 1990s, Nauru became a tax haven and illegal money laundering centre for a while until international sanctions forced it to stop. Nauru has no official currency of its own but uses the Australian dollar. Government and companies do not own any land and non-citizens cannot own land.

Nauru's economy is nothing to rave about. The government is bankrupt and does not have the ability to perform many normal functions. The National Bank of Nauru is completely broke. The unemployment rate is estimated to be 90%.

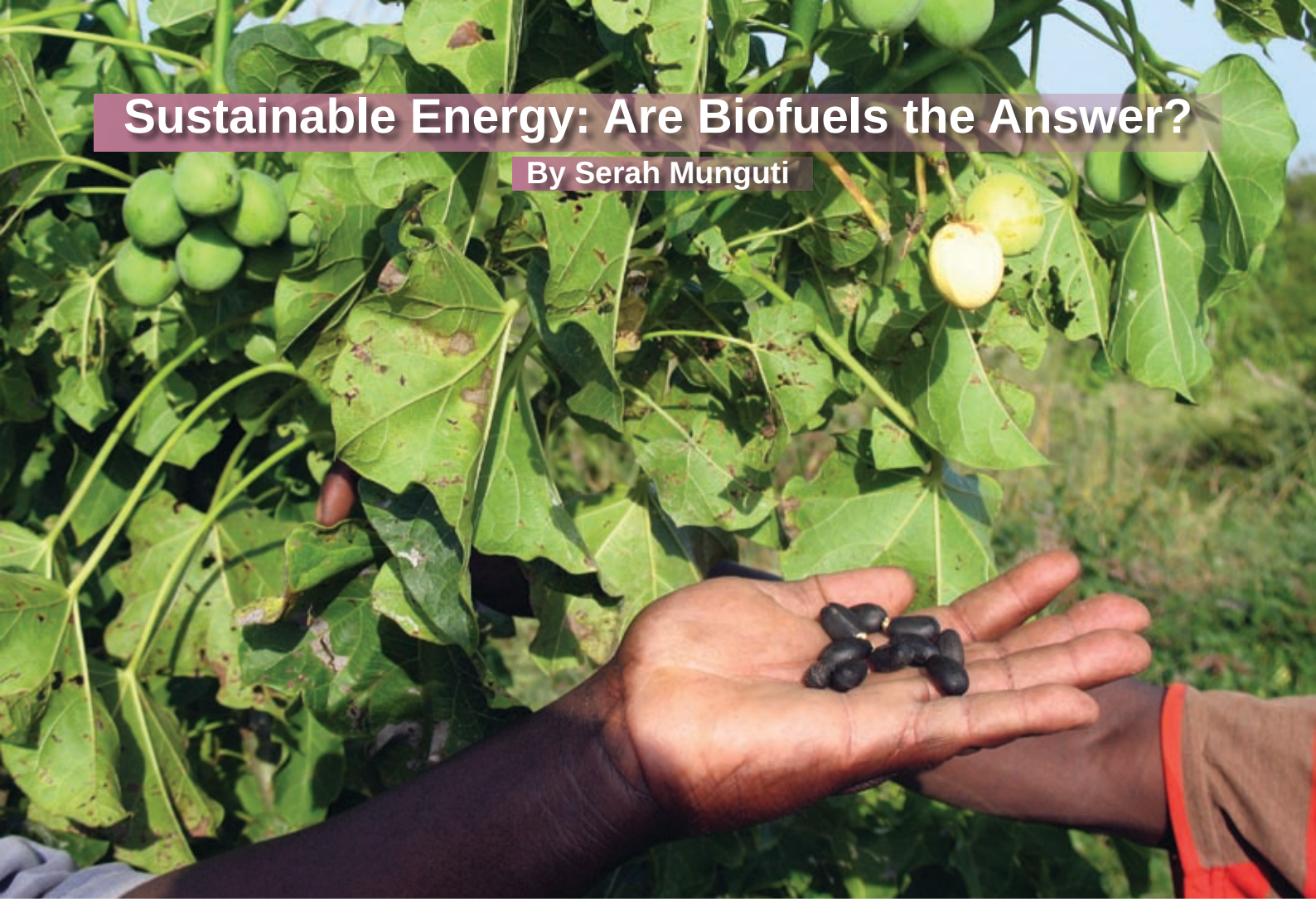
Sustainable living is a big deal for SIDS as they have certain constraints that perhaps tip them over to the side of un-sustainability. These constraints are apparent both in Seychelles and Nauru and include fragile ecosystems, distance to markets, few resources, past colonial exploitation, small population, lack of skilled expertise and so forth. However, the manner in which these constraints are understood and tackled sets individual SIDS apart.

Nirmal Shah is Nature Seychelles' Chief Executive

Photo: The highlands in Nauru were heavily mined for phosphate (Warwick Biggs via Flickr)

Sustainable Energy: Are Biofuels the Answer?

By Serah Munguti



Biofuels have been touted as the silver bullet, the sustainable answer to global warming and climate change. Are they in reality? Certainly not the ones that would be grown in Dakatcha Woodland in Kenya. The Italian owned company Nuove Iniziative Industriali Srl through a local subsidiary called Kenya Jatropha Energy Limited is proposing to convert 50,000 ha at the Kenya coast into *Jatropha curcas* plantations. The 32,000 ha Dakatcha Woodland is within the proposed plantations. This proposal has sparked a protracted controversy pitting conservationists on one hand and the developer and various government agencies on the other.

A key biodiversity area

The Dakatcha Woodland is located 40 kilometers North of the coastal town of Malindi. It is one of Kenya's Important Bird Areas. It is home to rare and globally threatened birds such as Clarke's Weaver, Sokoke Pipit, Sokoke Scops Owl, Fischer's Turaco and Southern Banded Snake Eagle. Clarke's Weaver, found only in Kenya, occurs in only two places on earth - Dakatcha Woodland and the Arabuko-Sokoke Forest to the South. The globally endangered bird is suspected to nest in Dakatcha Woodland, although its nest has never been found. The Jatropha project therefore threatens this species with extinction.

The Dakatcha Woodland is home to over 20,000 people and is the ancestral land of the indigenous minority Watha and Giriama tribes. The plantation will not only evict the tribes from their land, but will destroy their livelihoods and sacred burial sites.

Biofuel is fuel from living plants rather than ancient ones fossilized as coal or petroleum. Biofuels have been marketed as a green, renewable alternative to fossil fuels. They are supposed to reduce carbon emissions compared to fossil fuels. Ironically biofuel produced from the proposed plantations at Dakatcha will result in up to six times more carbon emissions than fossil fuels. This is according to a study commissioned by Nature Kenya, the Royal Society for the Protection of Birds and Action Aid (see separate story below).

European targets

Much of the biofuel produced in Dakatcha is destined for Europe because of new European Union targets. The Renewable Energy Directive (RED) requires 10 per cent of transport to be renewable by 2020 and most member states plan to meet this almost entirely through biofuels – which is likely to result in a doubling of biofuel use in Europe by 2020. To meet this target millions of hectares of land will need to be turned over to biofuel crops. Such land is not available in Europe so the alternative is Africa. Because biofuel crops require productive land it is unlikely that suitable land would be lying idle. As in the case of Dakatcha, suitable land is currently either under agricultural production, inhabited by wildlife or both. In the last three years European corporates have flocked into Africa and acquired vast pieces of land to grow biofuel crops – with devastating impacts on local people and wildlife. The Jatropha plant itself is poisonous to people, livestock and wildlife. Recent attempts to grow

the plant in plantations in coastal Tanzania have failed miserably. Scientists now caution that the crop should only be grown as a fence and never as plantations.

I recently attended an event at the European Parliament to present the Dakatcha case as an example of the impacts of European biofuel demand on wildlife and people in Africa. The EU Commissioner for Energy said that that biofuels grown in Dakatcha would not meet the new sustainability rules set out by the EU. The EU may have renewable energy targets to meet. But where does the wheel meet the ground? It is in Dakatcha and other parts of Africa such as the Tana River Delta in Kenya, coastal woodlands in Tanzania and forests in Senegal. The wheel meets the ground in Dakatcha where the Kenya Jatropha Energy Limited started bulldozing forest as early as February 2010. The only thing that saved the forest was campaigning by environmentalists. So if the project goes ahead and later the EU says that it does not qualify for their targets it will be too late for the people and wildlife of Dakatcha. It will be too late for the climate too!

It is not possible to meet the current EU demand for biofuel sustainably. The target needs to be either scrapped or severely down sized to allow for experimentation with biofuels before they can count towards meaningful energy supply to EU member states. Until then any ruthless pursuit of plantation biofuels in Africa will leave hunger, poverty, destruction and extinctions in its wake – without helping the climate.

Serah Munguti is Communication and Advocacy Manager for Nature Kenya

Photos: Previous page - Jatropha seeds (Dominic Mumbu) This page left: Bulldozer in Dakatcha Woodland (Francis Kagema) Right: Sokoke Pipit Tasso Leventis)

New study reveals biofuels carbon con

African biofuels destined for Europe will result in up to six times the carbon emissions of fossil fuels, a new study has revealed.

The report, commissioned by the RSPB (BirdLife in the UK), ActionAid and Nature Kenya (BirdLife Partner), focuses on the Dakatcha Woodlands in Kenya which are set to be destroyed to make way for jatropha plantations.

Campaigners say the results of the study make a mockery of claims that biofuels are a green, renewable alternative to fossil fuels. Biofuel currently makes up around 3.5% of the petrol and diesel in UK fuel pumps. However, the UK Government wants to increase this to meet EU targets.

Dr Helen Byron, RSPB's Kenya expert, said: "The Dakatcha Woodlands are a haven for wildlife and the threat they face is a direct result of European demand for biofuels. No government has done a proper assessment of biofuels imported from overseas to see if they will, in fact, reduce our carbon emissions – so we decided to do it for them.

"We were shocked to discover that the biofuel produced from the proposed plantations at Dakatcha will result in up to six times more carbon emissions than fossil fuels."

"Crucially the Dakatcha case also shows how biofuel plantations can create huge social upheaval with whole communities losing their land, homes and jobs." Says Tim Rice, of ActionAid a UK based Charity.

Dr Byron continues: "The proposed plantation in Dakatcha is just one example of the disastrous but unseen impact of biofuels on the climate, nature and people – there are plenty more coming to light all the time.

"The UK Government recognises the problems that subsidising biofuels is causing across the world and announced that it intends to limit such subsidies. But ministers must go further, they must challenge the European targets for biofuels and instead adopt an ambitious programme to reduce emissions from cars through improving efficiency and a massive roll-out of electric vehicles."

BirdLife International

Organic Farming for Sustainable Communities -
An Example from Nairobi, Kenya

By John Cheburet

Michael Rucho has a reason to smile. He grows pineapples, butternut and pawpaw in his three acre farm in Gatundu, about sixty kilometres East of Nairobi. For a long time, he has had to grapple with the challenge of marketing his organic produce.

Michael and other organic farmers in Nairobi and its environs have teamed up to open an Organic Farmers Market at Rusty Nail Restaurant in the Karen suburb of Nairobi. It is an open-air market that is slowly proving to be a good meeting point for farmers and consumers of farm products.

Every Saturday, consumers visit the market to buy certified organic products at affordable price. For Michael this is an opening he has been waiting for. Three years ago, he was trained by the Kenya Institute of Organic Farming on compost making, integrated pest management and certification. Armed with this information, Michael Rucho turned his from conventional to organic production. He is now a certified organic farmer.

Unfortunately, there was not much of a market for his organic produce and he would sell at the local market in Thika town just like any other farmer.

Lilian Marema, an organic farmer and an official of the group says that the prices of products on offer is fair because they want to attract more people to the market. "We want to reach out to a big customer base in the city and share with them the idea of healthy eating."

Nairobi is the biggest city in Kenya and is home to about 3.1 million people. Most of the food sold in the city comes from the highlands of Central Kenya and the Rift Valley.

The quality of fruits and vegetables available in conventional markets within the city is always in doubt because of heavy metals, contaminated water and high use of chemical fertilizers and pesticides.

And unfortunately, high fuel prices, changing rainfall patterns and rising inflation is slowly making the prices of basic food commodities out of reach of many of the inhabitants of Nairobi, particularly in the low income areas of Kibera, Mathare, and Kawangware. These areas are home to over 70% of the city's inhabitants.

Still, there is an increasing awareness among consumers that pesticide residues have long term side effects on their health; that is why the Organic Farmers market is being seen as a place where farmers are mindful of the health of their consumers even as they seek money from their agro-enterprises.

The initiative has benefited from input by stakeholders in the organic farming industry. The Kenya Organic Agriculture Network (KOAN) provides training on environmentally

friendly farming practices while Encert ensures that farmers adhere to organic standards and provides certification for farmers who have fulfilled these requirements.

At the Organic Farmers Market, the stands are marked as certified or conversion depending on the stage the farmer is in the certification process. Here, customers know exactly the kind of products they are buying, providing a different experience from the usual 'pick and go' in the supermarkets. "I love it when I get a chance to talk to the farmers who grow the food I buy. I know how the food I eat is grown", says Esther Waweru, a frequent customer in the Organic Market.

"Farmers who sell at the market pay KES 300 per table per week in food that goes to two children's homes in Kibera slums. Rusty Nail has given us the space for free," says John Scully of Spoondrift Organic Farm that sells its products at the market. He continues, "We are setting up a fund to support farmers who sell their products in the market." This way there will be a steady stream of income for the farmers.

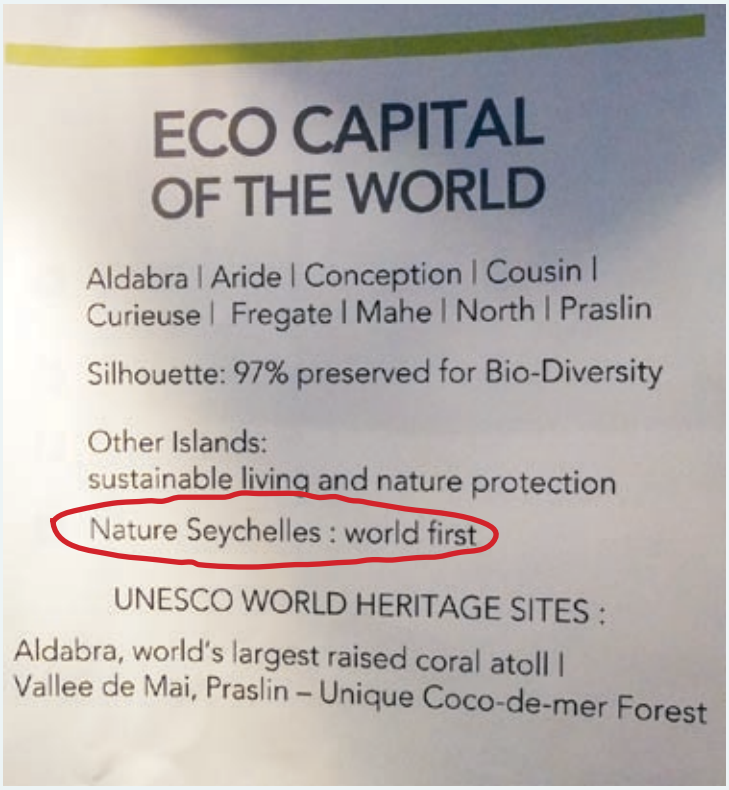
The Organic Farmers Market in Karen, Nairobi is an innovative idea and a future model to make health food accessible to the increasing urban populations of Africa. It is provides a symbiotic interaction between farmers and consumers in a way that engenders environmental protection.

John Cheburet is a radio producer for TOF Radio in Nairobi, Kenya

All photos John Cheburet.

What are people saying about us?

Seychelles Expo 2020 held in March/April to showcase current and future projects that will propel Seychelles into and beyond the year 2020 made praiseworthy mention of Nature Seychelles and Cousin Island for contributing to make Seychelles the "eco-capital of the world."



The Government has embarked on an ambitious mission to position the country as the 'Eco Capital of the World.' Almost 50% of the land area of Seychelles is under conservation and a host of eco-practices were announced as part of the Seychelles 2020 Expo. Islands such as Cousin, it was said, are already contributing to this mission, and, **"With Government leading the way in land and nature conservation, Environment groups such as Nature Seychelles (...) continue to be leading lights in a major world beating effort that places the Seychellois people right at the forefront of today's most important planet trend."**

The Ministry of Foreign Affairs, Republic of Seychelles said in the **The Seychelles MDG Status Report 2010:**

"Some NGOs, such as Nature Seychelles, are now fully financially independent and are very strong and vocal partners, giving more international recognition to key issues, leading to even more funding and technical assistance."

And: "Some of international renown like Nature Seychelles and Seychelles Islands Foundation, are actively focused on environmental issues."

The Zomba branch of the Wildlife and Environment Society of Malawi (WESM) thanked Nature Seychelles for making available to them its 'Birds are Brilliant' book.

"This (book) has been of great help in preparing our own bird activity book," Stephen Carr Chairman of WESM, Zomba, writes.

Intended as an activity guide for teachers, Birds are Brilliant introduces birds and biodiversity of Seychelles in an easy to follow narrative and contains fun activities for teachers to use with students. The Bird Activity Book seeks to involve young people in activities instead of passive classroom teaching.

Don Merton - 22 February 1939 to 10 April 2011
Conservation pioneer and friend of Seychelles dies

Internationally renowned conservationist Dr. Don Merton died at the age of 72 on 10 April 2011 after a battle with pancreatic cancer. Merton who hailed from New Zealand has been lauded by that country's Minister of Conservation Kate Wilkinson who said "Don has an extraordinary legacy as a conservationist. His revolutionary techniques have helped to save native species like the kakapo and black robin."

His groundbreaking methods brought New Zealand's Black Robin back from a single female on a remote island in the Chathams to a flourishing population of more than 200 today. He also led the team responsible for discovering the last Kakapo in Fiordland and managing that species' recovery through an innovative breeding programme on protected islands. He worked to save South Island Saddlebacks from extinction, and used his knowledge to help other species both in New Zealand and across the world.

Don started his career in conservation with the New Zealand Wildlife Service in the late 1950s, and quickly recognized the devastating impact rats and other introduced pests could have on native birds. He worked to eradicate pests from many New Zealand offshore islands, and overseas conservationists recognized his talents and recruited him to help remove pests, especially on islands in the Indian Ocean. In Mauritius he successful eradicated rabbits from Round Island.

His work in Seychelles to eradicate rats and cats provided the impetus to Birdlife International, Nature Seychelles, the Seychelles government and private island owners to restore island ecosystems and save rare birds like the Seychelles magpie robin.

In 1995 he undertook the first successful rat eradication in Seychelles on Bird island. When Norway rats invaded Fregate Island during hotel construction, the population of Seychelles magpie robin was in grave danger and he advised Birdlife International and the island management on eradication techniques. Owing to lack of resources this campaign failed.

In 2000, acting on Don's detailed recommendations the Government of Seychelles, private island owners and Nature Seychelles joined forces to eradicate rats and cats on several islands. The islands were Fregate, Curieuse and Denis. Don led the eradication campaigns and his methods involved the use of the anti-coagulant rat bait called Brodifacoum dropped by helicopter. The methods and equipment were new to Seychelles and this set the stage for many other eradication campaigns by several other persons and organisations over the years.

In his native New Zealand Don was honoured with several environmental awards and a Queen's Service Medal for services to New Zealand in 1989. In 1992, Massey University granted him an honorary Doctorate of Science for his contribution to science. He wrote or co-wrote more than 145 publications, including books, articles and scientific papers, to pass on his knowledge and techniques.

Photo: The late Don Merton, holding a Richard Henry Kakapo on Codfish Island. (Errol Nye, National Kakapo Team, Creative Commons Attribution-ShareAlike 3.0)

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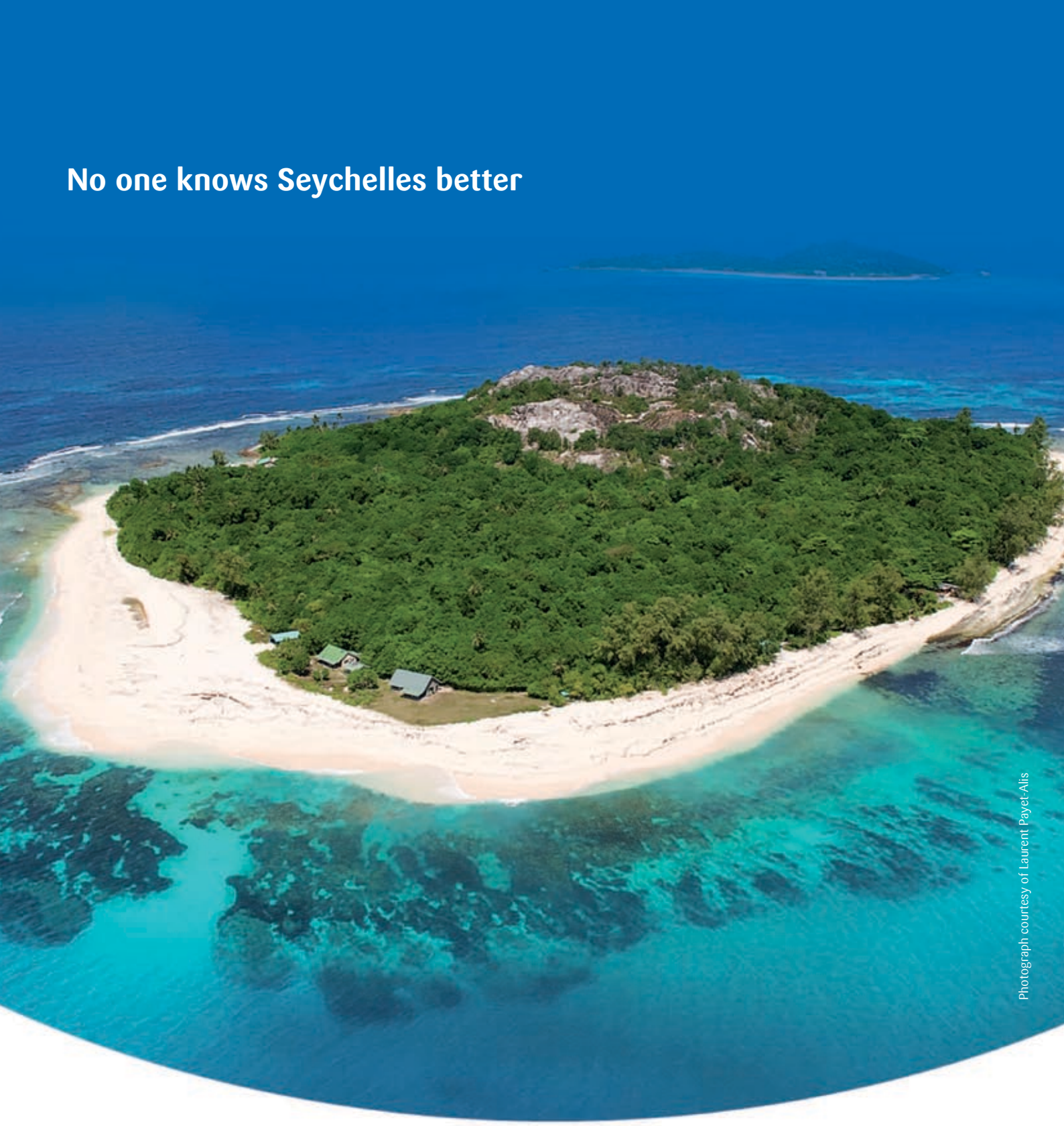

Photograph courtesy of Laurent Payet-Alis

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