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SEPIK WETLANDS MANAGEMENT INITIATIVE

Papua New Guinea



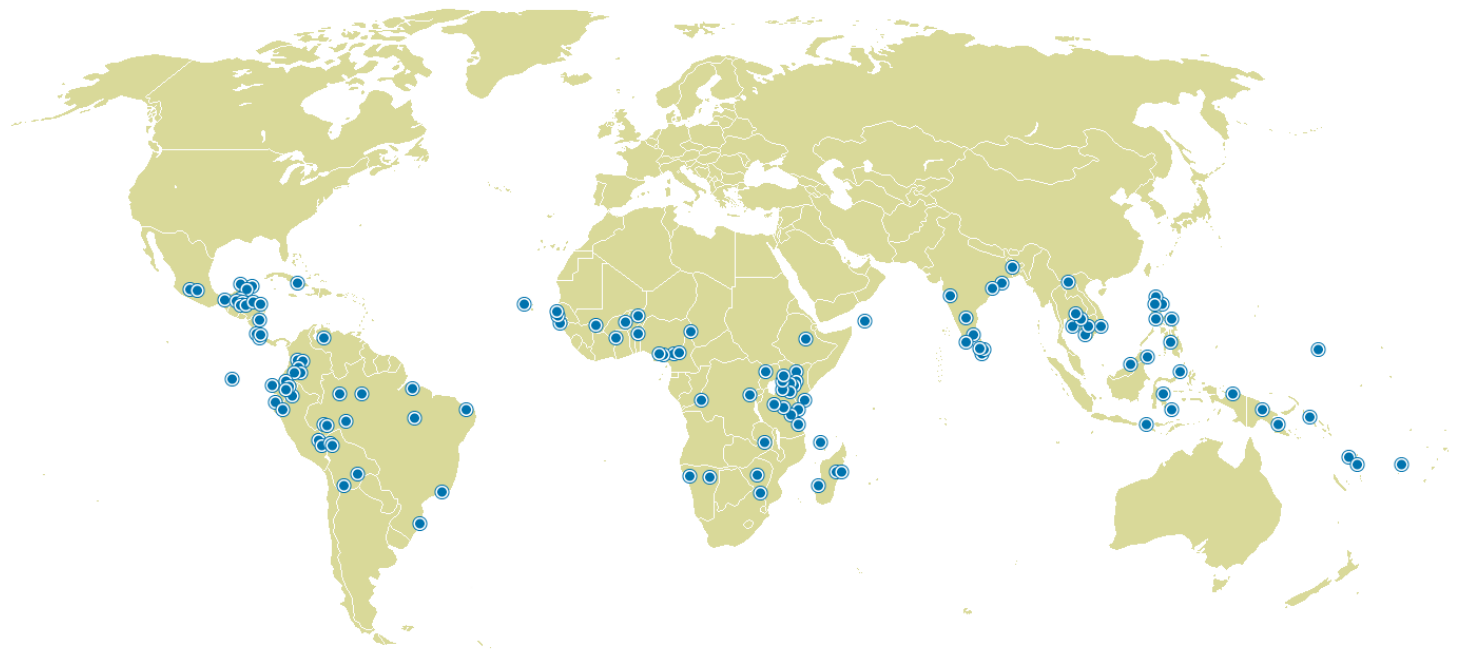
Equator Initiative Case Studies

Local sustainable development solutions for people, nature, and resilient communities

UNDP EQUATOR INITIATIVE CASE STUDY SERIES

Local and indigenous communities across the world are advancing innovative sustainable development solutions that work for people and for nature. Few publications or case studies tell the full story of how such initiatives evolve, the breadth of their impacts, or how they change over time. Fewer still have undertaken to tell these stories with community practitioners themselves guiding the narrative.

To mark its 10-year anniversary, the Equator Initiative aims to fill this gap. The following case study is one in a growing series that details the work of Equator Prize winners – vetted and peer-reviewed best practices in community-based environmental conservation and sustainable livelihoods. These cases are intended to inspire the policy dialogue needed to take local success to scale, to improve the global knowledge base on local environment and development solutions, and to serve as models for replication. Case studies are best viewed and understood with reference to *'The Power of Local Action: Lessons from 10 Years of the Equator Prize'*, a compendium of lessons learned and policy guidance that draws from the case material.



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PROJECT SUMMARY

In its work with 50 communities along the Sepik River – the longest river in New Guinea – the Sepik Wetlands Management Initiative has transformed the local economy and local treatment of wetlands. The sustainable harvest of crocodile eggs from nest sites along the river has become an important source of income for local residents. Previously, crocodile nest sites were being indiscriminately destroyed by wetland fires set for hunting, agriculture, or as part of land ownership disputes.

The initiative instituted a program in which local crocodile egg collectors following specified conservation guidelines would receive a guaranteed return from a commercial crocodile egg retailer. The combination of egg collection and crocodile farming to produce high-quality skins has doubled the annual income in participating communities, all while raising the awareness of wetland values and stressing the cultural importance of crocodiles.

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KEY FACTS

EQUATOR PRIZE WINNER: 2006

FOUNDED: 1998

LOCATION: Ambunti, East Sepik Province

BENEFICIARIES: Communities in upper & lower Sepik region

BIODIVERSITY: Saltwater & freshwater crocodiles



Background and Context



The Sepik River is the longest river on the island of New Guinea. The majority of the river flows through the Papua New Guinea provinces of Sandaun and East Sepik, with a small section flowing through the Indonesian province of Papua. The Sepik was identified in Papua New Guinea's 1993 Conservation Needs Assessment as "Very High Priority", the category of highest priority, due to its range of distinctive landforms, associated biota – in particular its extensive herbarceous wetlands – cultural diversity, and economic value.

A local response to loss of wetland resources

Sepik Wetlands Management Initiative (SWMI), based in Ambunti, East Sepik Province, was formed in 1998 to address fire-related wetlands degradation in the middle regions of the Sepik River. During dry seasons, local people were burning grassland for hunting, cultivation, or as part of landowner disputes, and in the process destroying vast areas of wetlands and nesting habitats for the New Guinea Freshwater Crocodile (*Crocodylus novaeguineae*) and Saltwater Crocodile (*Crocodylus porosus*). By 1998, more than half of crocodile nesting sites surveyed had lost over half of their suitable nesting area; at a third of the sites, more than 80% of the vegetation had been lost.

Since its establishment, SWMI has promoted crocodile and wetlands conservation work in the Sepik through various strategies. These have included raising community awareness of the importance of wetlands and wetland resources; the facilitation of a sustainable crocodile egg harvesting program between community members and a commercial collector; increasing local awareness of and taking action on controlling the spread of invasive species; crocodile population monitoring; and developing community-driven wetlands and wetland resources management plans. The link between community participation in conservation and the viability of livelihood activities based on natural resource management has been at the centre of SWMI's work.

Its four main objectives are developing a community-oriented, self-help approach to conserve local wetlands, and in particular herbarceous habitats; halting the degradation of locally-important wetland habitats, especially crocodile nesting areas, and rehabilitating sites where possible; enhancing the conservation of local biological diversity; and strengthening the sustainable utilization of local wetlands resources.

SWMI's multi-stakeholder approach to conservation has involved maintaining strong relationships with both government agencies and non-governmental actors. The latter category has included international conservation NGOs as well as the private sector. The Papua New Guinea Department of Environment and Conservation, Pacific Island Ministries, and the district-level government offices in Ambunti village have all played important roles in coordinating responses to ecosystem threats and strategies for conservation. The project has been funded and supported since 2005 by the World Wildlife Fund (WWF) through its Sepik River Programme. SWMI has also partnered with Mainland Holdings Limited, a Papua New Guinea-based commercial crocodile egg collector.

The project does not have a guaranteed funding source, however, relying on grants to operate on a full-time basis. The seven staff members, made up of five men and two women, work on a voluntary basis for the majority of the time. The organisation consists of a chairman, vice-chairman, treasurer, secretary and three field officers. A technical advisory board comprises two community members – one representing village crocodile farmers, another on behalf of crocodile habitat landowners – representatives from WWF, the Papua New Guinea Department of Environment and Conservation, and a private expert.

Key Activities and Innovations



KEY ACTIVITIES

The initiative's main activities are centered on providing adequate information to change community members' behavior, encouraging more sustainable harvesting of crocodiles and their eggs. A secondary focus has been on increasing awareness of the existence of invasive species and finding ways to minimize their expansion.

SWMI's work can be categorised into five program areas. Their management of natural resources has been underpinned by initial resource mapping and planning with local communities, using a Participatory Rural Appraisal framework. This process of engaging local people is reinforced by awareness campaigns on the importance of wetlands and their resources, and actively involving communities in minimizing their impacts on their environment. A third area of work has been monitoring populations of crocodiles. This has been carried out by crocodile night counts, aerial crocodile nest counts, and tagging of crocodile individuals. Many of these monitoring activities involve local people, while aerial counts have been carried out in conjunction with government agencies. SWMI's role in improving local livelihoods, meanwhile, has been based on its work with Mainland Holdings. The initiative oversees the relationship between this commercial collector and local people by facilitating the sustainable harvesting of crocodile eggs, and ensuring that payments are made according to a signed contract, or *Tok Orait*, between communities and Mainland Holdings. Finally, SWMI provides training on crocodile

farming and crocodile egg harvesting techniques to improve the sustainability of these income generating activities. This has involved training on regulations to ensure that harvesting of crocodiles and their eggs do not deplete crocodile breeding stocks; other training has focused on improving the quality of crocodile skins from village farming pens, allowing farmers to generate higher profits.

These work areas have involved approximately 50,000 people in the lower and upper Sepik regions. SWMI has engaged around 50 villages in these regions while conducting awareness raising, trainings, and monitoring activities. SWMI has also spent time with these communities conducting Participatory Rural Appraisal exercises. The populations of these villages range from an estimated 300 to 1,500 inhabitants.

INNOVATIONS

Various innovations have enabled substantial success for Sepik Wetlands Management Initiative in both biodiversity conservation and poverty alleviation. These have included the extensive engagement of local communities in all aspects of SWMI's work, utilizing the cultural and traditional significance of crocodiles to underpin their conservation, and creating tangible incentives that reinforce local action.

“The region has seen unprecedented changes in water levels. Crocodile farmers have been urged to elevate crocodile farms to about three meters and improve water outlets and feeding areas. SWMI intends to conduct more awareness in the area of flooding and saltwater intrusion.”

Jerry Wana, Chairman, Sepik Wetlands Management Initiative

Using Participatory Rural Appraisal (PRA) processes, maps were initially developed between SWMI staff and community members to display the various land use activities in their areas. The communities then played a key role in deciding what to protect, and how this should be undertaken. The PRA activities were explained to communities using role-playing and drama conducted in local languages. Ultimately the challenge of establishing sustainable use practices was overcome through intensive community involvement in all activities relating to the protection of natural resources, and incorporating their needs in the aims of the project. SWMI has also used participatory approaches to gain a clear understanding of local people's perceptions of development, especially in the context of the utilization of natural resources for this.

The annual Sepik River Crocodile Festival was initiated in 2007 in collaboration with WWF. The festival is used to promote the importance of the crocodile – a culturally significant species – to enhance conservation in the Sepik. Integrating conservation into local cultural traditions in this way has rooted the impetus for sustainable resource use in local capacities.

Finally, communities have gained substantial economic benefits from protecting their wetlands and their wetland resources. This has been supplemented by incentives for communities and individuals who have taken lead roles in implementing skills given in training, and in coming up with innovative ideas.



Impacts



BIODIVERSITY IMPACTS

The initiative's work in the Sepik region has achieved substantial environmental impacts, measured both in terms of the numbers of saltwater and freshwater crocodiles, their eggs, and their improved habitats.

Biodiversity monitoring and results

Crocodile population monitoring has involved three methods: aerial surveys using helicopters and GPS for nest counts, night specimen counts using flashlights conducted in canoes, and numbers reported from egg and hatchling harvesting. Members of SWMI and the Papua New Guinea Department of Environment and Conservation fly in helicopters approximately 50-60 meters above ground to spot crocodile nests, which are recorded using GPS. Two SWMI members act as spotters during the survey; one member acts as a navigator, communicating with the pilot and giving directions.

Night counts are carried out by SWMI staff members in lagoons, using flashlights to count crocodile populations based on the light illuminated from the eyes of the crocodiles. Yellow eyes are young specimens, while red eyes are adult crocodiles. Sometimes individuals are caught to identify their species type, to be weighed, and occasionally tagged for follow-up surveys.

A survey in 2007 estimated a total of 220 saltwater crocodile nests, compared to 150 in 1997 prior to SWMI beginning their work. Positive impacts can also be seen in freshwater crocodile nesting trends, with a sharp increase of almost 80% recorded between 1996 and 2007. Aerial surveys have revealed a steadily increasing total crocodile population between 1998 and 2010. The latest survey, covering 50 villages, counted over 500 nests.

There has also been a reduction in burning of grassland areas where crocodiles nest. By 2005, saltwater crocodile nesting habitats in 1.5

million ha of the middle and upper Sepik had been rehabilitated by regulations prohibiting burning.

Improvements in biodiversity are also reflected in the communities receiving improved income from the sale of crocodile eggs and skins since the initiative began its work. Between 2002 and 2006, the annual number of saltwater crocodile viable eggs and hatchlings found in SWMI canoe harvests increased from 3,465 to 13,491.

Invasive species eradication campaigns

SWMI has also been active in raising awareness of the harmful effects of invasive species on crocodile habitats. Pacu (*Piaractus brachyomum* - see image below) and Javu Carp (*Puntius gonionotus*) destroy floating grass mats that serve as nest sites; Water Hyacinth and Bush Morning Glory plants intrude on nesting areas. In villages in the mid-Sepik region, SWMI has begun activities to combat the spread of these species. This has involved conducting surveys in villages to determine the extent of these species, collecting anecdotal evidence from community members on where and when exotic species have been found, and taking photographs to collaborate these reports.



These findings are discussed with experts, who advise on developing posters to describe the adverse effects of these species and provide information on how to minimize their spread. SWMI then conducts awareness-raising in villages using posters. Actions have been taken in some villages to remove Bush Morning Glory and Water Hyacinth.

Signs stating community management rules have been erected in fourteen villages, with a further seven planned for communities in the upper and middle Sepik areas. SWMI is working with WWF and SWMI is working with WWF and DEC to develop community-managed crocodile and wetland areas. Management areas and plans will be developed by communities as part of their ward development plans, as required under the Local-level Governments Administration Act (1997). The ward development plans will then be endorsed by local government administrators through the Joint District Budget Planning and Priorities Committee. Community-based management of natural resources is therefore rooted in the context of decentralized development in Papua New Guinea: SWMI is playing a key role in this process of devolving control over habitats to the local level.

SOCIOECONOMIC IMPACTS

While SWMI has not been able to create direct employment for many community members – five local staff primarily work on a voluntary basis – they have been able to substantially increase local incomes through an agreement with Mainland Holdings. Increases in the value of crocodile skins and eggs have also underpinned SWMI's conservation efforts.

Local people sign a written contract, or *Tok Orait*, agreeing to regulations on the harvesting of eggs and skins in return for a guaranteed high price from the collecting company. Currently this is around 660 Papua New Guinea Kina (PGK), or USD 250, for a nest of sixty good eggs. Regulations limit the burning of crocodile nesting sites, protect nesting crocodiles, and establish a maximum size for crocodile skins. These stipulations have helped to ensure that breeding stocks of crocodile populations are not depleted.



Communities in the upper and lower Sepik region earn about PGK120,000 (USD 46,000) annually from sales of crocodile eggs, predominantly to Mainland Holdings, and over PGK50,000 (USD 19,000) annually from the sale of skins. An estimated total of PGK200,000 (USD 77,000) is received by the communities in the upper and middle Sepik, meanwhile, from sales of crocodile eggs and skins. Overall, SWMI estimates that there has been a greater than 100% increase in the income of the communities currently involved in the initiative's work (based on village profiles conducted on behalf of a local NGO in 2005).

There has also been interest from local communities to develop their own crocodile harvesting facilities. A WWF-European Union initiative, titled the 'Sepik Livelihoods Project', is working with SWMI to assess crocodile ranching potential, develop a Wetland Resources Management Plan, and directly assist local communities to improve existing crocodile facilities and build new ones. Some ranches were constructed after 2009, but were destroyed by heavy flooding. Improved designs and advanced management techniques are needed to promote profitable ranches.

Many of the farmers have invested their increased profits into school fees for their children; in other cases, revenues have been used to purchase outboard motors for canoes; set up fuel sheds; build water tanks to be used by communities; build a primary school; and renovate a traditional building. In two cases, guest houses have been built using revenue from sales of crocodile eggs, while funds have also been invested in three trade stores.

POLICY IMPACTS

Sepik Wetlands Management Initiative has been able to have considerable influence on policies at the local level, and some influence at regional and national levels, while its partnership with WWF has informed planning processes for the wider Sepik region.

Many of SWMI's activities are supported by the Ambunti district's five year development programme. The district allocates funds for the annual crocodile festival, and is also actively involved in plans to establish local crocodile farming. SWMI representatives also attended a workshop on developing a National Biodiversity Strategy for Papua New Guinea, held in Milne Bay in June 2007. Finally, SWMI is working with WWF to advocate for policies on water catchment and watershed management in Papua New Guinea, including the Sepik River basin.

There have been obstacles to the initiative successfully influencing policy decisions, however. To date, the Papua New Guinea Department of Environment and Conservation has not been proactive in developing policies for crocodile and wetlands management. The department as a whole is underfunded, while repeated re-structuring has resulted in a lack of continuity in personnel. In addition, SWMI is situated in a remote area of the country. Communication and transportation costs are high, meaning that opportunities for consultations with government offices and other stakeholders are limited.

Sustainability and Replication



SUSTAINABILITY

SWMI has managed to achieve a high degree of social and cultural sustainability, while its impacts on biodiversity and local incomes are testament to its ecological and economic viability. As an organization, however, the initiative remains dependent on external resources in the form of funding and technical assistance.

Increasing egg and hatchling harvests demonstrate that SWMI's work has encouraged a more sustainable approach to resource management; the sustainable egg harvesting program generates USD 46,000/year for local communities. Ongoing work in increasing income-generating opportunities for local communities ensures that the financial incentives for conservation will be reinforced. For example, many farmers have been trained in increasing the value of crocodile skins; as a result, some crocodile pens are now producing high quality crocodile skins. SWMI's work has also emphasized identifying communities' needs, and subsequently developing strategies to address these needs. One example of this is their partnership with WWF-EU to develop local farming of crocodiles.

These positive environmental and economic benefits are underpinned by a high level of cultural awareness of the importance of conservation. The annual Sepik River Crocodile Festival has grown in size, promoting crocodiles as an iconic species in the Sepik, and further encouraging communities to take action in protecting the animal and its habitat within the region.

SWMI has identified various strategies to enable their sustained organizational existence. They are currently bidding for contracts from the government's Department of Environment and Conservation to lead natural resource management projects elsewhere in the country. They are also negotiating with Mainland Holdings for the payment of management fees for facilitating the crocodile egg harvest programs conducted annually in the Sepik.





WWF has provided funding and technical assistance through their Sepik River Programme, based out of Wewak, in East Sepik Province; longer-term funding and improved office facilities would greatly move this work forward. Having a representative based in Wewak would enable greater coordination with other groups based in this regional centre.

REPLICATION

SWMI is currently working in about 50 villages in the upper and middle Sepik regions, representing a substantial scaling-up of their initial work in the region. In 1998, SWMI was working with sixteen of these villages. It has used its experience and lessons learned from each community to inform its work in other cases. New villages applying the SWMI model for sustainable crocodile egg harvesting include Wanamoi, Waniap, Houm 3, Luluk, Japandai, Aibom and Chambri.

This work has also been published in conjunction with WWF. In June 2010, SWMI developed a training manual for crocodile farmers, based on their work to date. Approximately 30 farmers attended a training session conducted in Ambunti in September, 2010. SWMI has also facilitated peer-to-peer learning exchanges for farmers.

PARTNERS

Mainland Holdings Ltd.: only buy eggs from farmers that comply with SWMI rules for sustainable harvesting, specified in the 'tok orait' agreement.

World Wildlife Fund (WWF): provides technical support and resources. *Papua New Guinea Department of Environment and Conservation* – provides technical support and advice on government policies.

UNDP/Global Environment Facility Small Grants Programme (USD15,000, 2001-2002)

HELP Resources: local NGO conducting socio-economic development projects.

Pacific Island Ministries: have assisted in communications, printing and photocopying, etc.

Sepik River Crocodile Festival Committee: conducting awareness-raising during festivals on the sustainable egg harvesting program

Ambunti District Level Government: has included SWMI's work into the district's five-year development plan, and works closely with communities.

University of Papua New Guinea: has provided training on report-writing and establishing protected areas.

Most of these partners provide technical and financial support to the organization. SWMI partners with these organizations to conduct awareness on socio-economic issues (HELP Resources), promote sustainable harvesting of eggs (Mainland Holdings), undertake sustainable use and management of wetland resources (WWF/UNDP), and conduct crocodile population monitoring surveys (Department of Environment and Conservation).

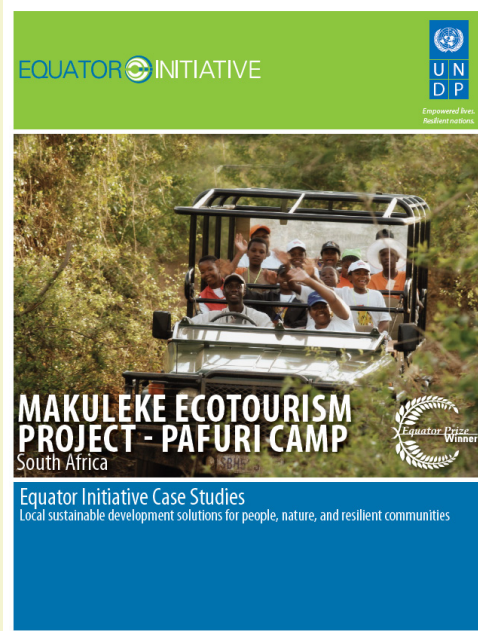
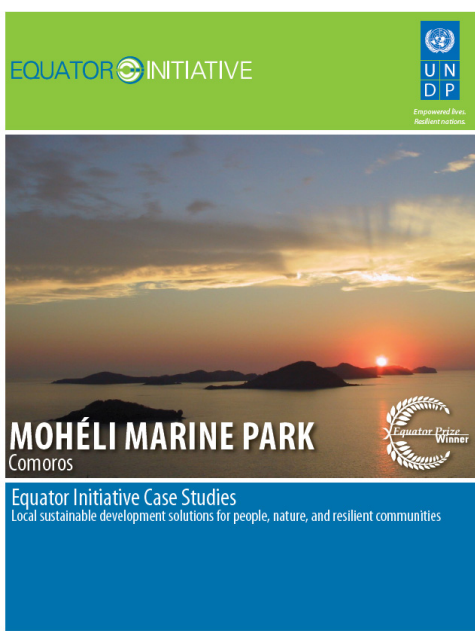
WWF in particular has been critical to the work of SWMI. They have given training to build the capacity of SWMI staff, provided technical guidance, and shared resources with SWMI where needed. Papua New Guinea Department of Environment and Conservation has provided technical support to SWMI through a rancher based in Ambunti. This rancher spends 50% of his time working with SWMI. The organization would not be able to continue functioning if key partners such as WWF, UNDP, or Mainland Holdings withdrew their support.



FURTHER REFERENCE

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