

Managing Samoa's environmental resources: a global obligation

*Muliagatele Iosefatu Reti**

Introduction

One of the most important outcomes of the United Nations Conference on Environment and Development (UNCED) process is the Agenda 21, a multi-sectoral plan of action to address environment and development issues and concerns of the 21st century. It was heralded as 'a blueprint for a global partnership aimed at reconciling the twin requirements of high quality environment and a healthy economy for all peoples of the world'¹.

Samoa had adapted the principles of the Rio Declaration in the development of its National Environment Management Strategy, commonly referred to as NEMS. These principles placed the well being of people first and foremost. They also recognised that people and the environment were interrelated and inseparable². Humans were as much a part of the environment as the other living organisms that shared this world with them. The logic therefore was that all living things including humans will be adversely affected if the balance of nature was not maintained. The adaption by Samoa of the same principles as the Rio Declaration suggested a desire on its part to adhere and abide by this Declaration including the implementation of Agenda 21 that resulted from the same conference. This being the case, it is fair to suggest that the NEMS was a natural extension of Agenda 21 and that its implementation was a demonstration of Samoa's commitment to an international obligation it made in 1992.

This paper looks at how Samoa fared in meeting its obligations to the global community through the implementation of national strategies, programmes and plans that are consistent with Agenda 21. It is a snapshot at Samoa's achievements since Rio. Particular attention is given to the NEMS and the State of the Environment Report (SOE), these being the two main documents prepared on Samoa's environment during the UNCED process. At the outset, it is pointed out that it is not the intention of this paper to evaluate the success or otherwise of the implementation of the NEMS or other plans developed and approved by the government or its agencies for the purpose of protecting Samoa's environment. Rather, the intention is to provide an interim assessment of how far the country had progressed in its implementation of various programmes and projects aimed at addressing some of the key environmental issues jointly identified in the NEMS and Agenda 21.

Some might question, with good reason, the validity of the NEMS as the basis for assessing the government's commitment to the protection of the global environment. In the first instance, it is a national plan with little or no relevance to the rest of the world. Secondly, the much-anticipated resources for the implementation of this very comprehensive plan never materialised, much to the disappointment of government and those involved in its development. The above concerns are acknowledged; they are valid. However, it is argued that national action can and should contribute significantly to achieving global objectives. The ever popular saying 'think globally, act locally' is reminiscent of this notion. The lack of

*M.I. Reti is the South Pacific Biodiversity Programme Manager, South Pacific Regional Environment Programme

resources to implement the NEMS was a genuine concern that, to a large extent, caused much scepticism about the real value of this plan. It is however noted that subsequent plans and strategies have identified basically the same priority issues as the NEMS and hence, while the NEMS had lacked in implementation, its importance as a priority-setting plan makes it a useful basis for this assessment.

Agenda 21

In simple language, Agenda 21 is a blueprint on how to make development socially, economically and environmentally sustainable. It offers policies and programmes to achieve a sustainable balance between consumption, population and the Earth's life-supporting capacity and describes some of the technologies and techniques that need to be developed to provide for human needs while carefully managing natural resources. What Agenda 21 is espousing is that sustainable development is the way to reverse both poverty and environmental destruction.

Agenda 21 calls on governments to adopt national strategies for sustainable development. Such strategies should be developed with wide participation, including non-governmental organisations (NGOs) and the public. It puts most of the responsibility for leading change on national governments but says that they need to work in a broad series of partnerships with international organisations, business, regional, state, provincial and local governments and NGOs and citizens' groups. Agenda 21 says that only a global partnership will ensure that all nations will have a safer and more prosperous future. It is based on the premise that no nation can secure its future alone – but together we can – in a global partnership for sustainable development³. Agenda 21 represents a consensus reached by 179 States in Rio de Janeiro. It is a manifestation of the fundamental principles of the Rio Declaration on which States must base their future decisions and policies, considering the environmental implications of socio-economic development.

NEMS

The late Prime Minister, Hon. Tofilau Eti Alesana, in his address to the United Nations Conference on Environment and Development, Rio de Janeiro, 1992, referred to the formulation of the NEMS as a comprehensive approach to addressing environmental issues in Samoa⁴. He referred to it as a framework for the preparation of detailed policies and educational efforts that guide the government and the Samoan people towards a more sustainable future. It aimed to establish the government's position on sustainable development, and promote clear policies to guide development programmes. It also hoped to facilitate sectoral cooperation, providing a more balanced approach to common environmental issues⁵. The NEMS identified the lack of well-defined national policies on environmental issues and the potential confusion and uncertainty this could lead to. It therefore recognised the need for better coordination of research and data collection to ensure a systematic approach to the understanding and dissemination of information.

Consistent with the government's support for the UNCED process, the underlying principles for the NEMS were adapted from the Rio Declaration to which the government of Samoa had given its full support. For all intents and purposes, NEMS is the government's response to the UNCED's call on governments to prepare and adopt national strategies for sustainable development. The NEMS has 17 Principles (the Rio Declaration has 27) adapted from the Rio Declaration to fit the local situation and conditions. The similarities between the principles of the Rio Declaration and those of the NEMS supports the notion that the implementation of one of these is indeed a contribution in full or in part to the

implementation of the other. The rest of this paper looks at what programmes and projects have been undertaken in the recent past in Samoa that may have contributed to the achievement of the objectives and goals of the Rio Declaration, through the Agenda 21 and the NEMS.

Key environmental issues

The SOE had identified the following as the major environmental issues to be considered in the development of the NEMS for Samoa:

1. Management of population dynamics and change.
2. Protection of the quality and supply of fresh water.
3. Protection of the sea and marine resources.
4. Management of waste.
5. Combating deforestation.
6. Development of appropriate land use practices.
7. Conservation of biological diversity.
8. Protection of the atmosphere.
9. Planning for climate change.
10. Preservation of traditional arts, culture and history.
11. Development of human resources.
12. Promoting sustainable economic development.

The NEMS indeed followed up on the above issues by proposing a number of activities that were hoped to address some of them. The following section provides a brief overview of what progress had been made in addressing some of the above issues and to what extent such actions are likely to achieve the government's obligations to the country and to the international community. It is noted that this paper does not address all of the above issues, rather a few 'key' issues were chosen for analyses to provide a brief snapshot into how Samoa had fared with regards its addressing of these key issues. It should not, by any means be taken to reflect the overall performance of Samoa in the protection and management of its environment as a whole. It is however suggested that an extension of this 'assessment' would be a useful task for DEC to undertake as a means for evaluating the success or otherwise of its efforts to protect the country's environment and natural resources.

Management of population dynamics and change

The SOE identified the three main issues of concern to Samoa if national population is allowed to grow at current rates as 1) limited land resources; 2) depletion of other natural resources, and 3) strain on existing economic and social infrastructure. It also suggested that the main options in relation to population issues are 1) integration of dynamics and trends into national development planning, and 2) attainment of a national population growth rate that available resources can sustain. It noted however that the first priority was to finalise the draft National Population Policy which proposes a strategic integrated approach to population management, where a sustainable population growth is developed in relation to the success of national efforts in primary health care, community education and economic development. An analysis of progress to date in relation to the implementation of the suggested options would provide an idea of how far government had advanced in its addressing of the population issue.

To integrate population dynamics and trends into national development planning; **promote public understanding and support for the strengths of, and urgent need for environmental planning and adopt framework in which it can function** - The Division of

Environment and Conservation (DEC) of the Department of Lands Surveys and Environment (DLSE) must be commended for its work in raising public awareness about the importance and need to protect the environment of the country. Its awareness raising programmes with schools and the general public through the Environment Week; World Environment Day; Clean up the World Campaign; Ozone Day, public seminars and village meetings have contributed enormously to raising the level of awareness about environmental issues.

Of particular significance is the recognition by government of the central role village communities could play in environment protection. The support it has provided to programmes such as the Village-based fisheries reserves, the Samoa/IUCN Marine Protected Area project and the Saanapu/Sataoa and Uafato Conservation Area Projects are some of the few examples of the increasing recognition by government of the critical role of local communities in the conservation of the country's natural resources. However, according to Saifaleupolu (1993)⁶, community awareness of the intimate relationship between the biophysical environment and socio-economic development is poor. The high usage of chemicals and other destructive gardening methods in highly vulnerable sites is an illustration of the lack of awareness of the relationship between the environment and economic development.

This same lack of understanding may also be blamed for the lack of progress in the integration of population issues into national development plans and the adoption of a Population Policy for the country. In the 1998 State of Economic Strategy⁷ it is stated that draft national policies on water, waste management and land use were in preparation. It also mentioned four more national policy documents to be finalised in 1999, namely: biodiversity conservation, forestry, climate change and marine resources. That the government has recognised the need for these policies is an indication of its commitment to a sustainable future for its people. The sooner some of these policies are adopted and implemented, the better chance of their achieving good results.

Ensure the proper determination of development proposals to minimise adverse impacts on the environment - There is neither a planning legislation or a proper mechanism in place for the determination of the impacts of development proposals on the environment. The Environment Impact Assessment (EIA) legislation that was drafted with this very purpose in mind is yet to be approved by Cabinet. Until this is done, the likelihood of the government being left with the responsibility of 'cleaning up the developers act' could become a common situation in Samoa.

In his Foreword to the Seventh Development Plan, the late Prime Minister, Hon. Tofilau Eti Alesana stated: 'Underlying all our policies is the concept of sustainable development. It has become evident in recent years that much apparent development, especially in agriculture, has been achieved at the expense of long-term health of the environment. We have, in effect, been consuming our natural capital. This will stop. Much more effective control of land use will be asserted, and all major projects will be required to have an environmental impact assessment before they are approved for implementation'⁸. While in his 2000/2001 budget address, the Hon. Prime Minister, Susuga Tuilaepa Sailele Malielegaoi referred to a number of major capital development projects to be implemented during this period⁹. They include, amongst others, the following: a) a \$58.2 million infrastructure asset management project; b) a US\$5 million petroleum storage tank project; and c) a \$54 million Rural Water Supply project.

It is not known if any independent EIAs have been carried out for any of these projects to determine their potential impacts on the environment. If not then the government has failed to live up to the commitment earlier demonstrated by its leaders. Procedures for considering the potential environmental impact of line ministry and private sector projects need to be put in place and routinised, so that they are applied as a matter of course rather than on an *ad hoc* basis.

Allocate equitable distribution of social services and recreational facilities between rural and urban centers - It is fair to say that government has done much in this area since NEMS. In addition to the opening of one new hospital, nine private health clinics are now operational in the country. The number of pre-school facilities is also on the increase, especially in rural villages. Several sports fields have been established around Upolu and Savaii and sports development programmes are reaching out to the rural population. Between 90 and 95 per cent of the population have access to a piped water supply¹⁰. All urban households have access to piped water¹¹. However, since much of this water comes from river flows in catchment areas that are continuously being cleared and developed, the scarcity of water for home consumption and for industrial use is a real concern. A \$54 million Rural Water Supply is currently underway with funding from the European Union. Government funding for watershed management increased from S\$466,200 in 1989 / 90 to \$7,169,400 in the period 1992–1995¹².

Evidence of government's commitment to the equitable distribution of social services and recreational facilities is impressive. The European Union-funded water supply project is expected to further improve the availability and quality of water supply to the rural populations, but awareness raising and educational programmes aimed at reducing the high rate of water use must continue.

Establish a central planning agency charged with all aspects of environmental planning, including the social, physical, natural, economic, historic and cultural environment - This activity, although not implemented, would probably go some way in achieving the much desired goal of integrating environment and development. However, there has been no recent reference to the establishment of such an agency and it is therefore assumed that this is no longer a priority for government, at least in the near future.

The DEC was set up with the understanding that there might come a time when the government would wish to consider the relocation of the Division to a more appropriate Ministry, or to set up an independent statutory body with full responsibility for environmental planning and management. These 'options' were considered essential to enable the Division to make transparent and unbiased critiques of all development proposals, including those by government agencies and corporations. With the support and participation of other government agencies, NGOs and other groups the DLSE is now leading, through a participatory process, efforts to develop a National Biodiversity Strategy and Action Plan for Samoa (NBSAP). It is expected that this plan will serve as the blueprint to guide government, its agencies and all other stakeholders in the protection and management of Samoa's biological resources.

The preparation of the NBSAP is an opportune time to revisit the issue of an appropriate body to deal with environment and conservation matters in the country. For the NBSAP to be effectively implemented, and for environment and conservation issues to be better integrated with national development plans and policies, an appropriate structure with high status and

with the necessary flexibility and independence to carry out its mandate is required. Cost permitting, the time is probably right, especially as inter-agency consultations are continuing as part of the NBSAP development process, for government to consider an appropriate body that matches the high profile and importance the environment and conservation deserves.

Attainment of a population growth rate that available resources can sustain - Marshall (1950)¹³ estimated (based on total available agricultural land and human needs) that in order to maintain a high standard of living with all amenities of civilisation, the optimum population for Samoa would be 130,000 people. This number was reached in 1966 when the total population for Samoa was estimated at 131,377. Twenty-five years later, the population has exceeded 161,000 people. If Marshall's estimate were to be used as the benchmark for determining the standard of living for Samoa, then it is quite clear that with the population now exceeding 160,000 (and still growing); attaining a high standard of living for Samoa may already be beyond the capacity of existing resources. What is interesting to note though is that despite the increase in total population, the average annual growth rate for Samoa has been declining from 3.3% in 1961 to its lowest of 0.1% in 1986, and 0.5% in 1991).¹⁴ If the current annual growth rate of 0.6% is maintained, then it is estimated that Samoa's population will reach 180,000 by 2011.

Although the natural growth rate of Samoa is still high at about 2% per annum¹⁵, population growth rate, (currently estimated at 0.6%) is likely to remain low for as long as there is a high rate of overseas migration. There is a possibility however that more Samoans would return to retire at home, especially from New Zealand as a result of a recent policy change in the pension scheme of that country. Such a situation could drastically increase the population growth rate thereby creating further pressure on the country's limited resources and environment. Samoa cannot continue to rely on emigration to relieve population pressure on the environment. More drastic measures may need to be considered and the sooner it identifies and prepares for these measures, the better equipped it will be to implement such measures without too much disruption to its ongoing social and economic development programmes.

Improve community access to health services and facilities - There has been a remarkable improvement in community access to health services and facilities since independence. Thirty two health clinics/centers existed up to 1992. Another three were recorded by the end of 1994. The upgrading of the Tuasivi hospital (Malietoa Tanumafili II) in Savaii, the opening of the first ever private hospital (the Medcen hospital) and the operation of nine private health clinics (one recently opened at Salelologa, Savaii) are no doubt, a welcome relief to the over-tapped resources of the Motootua National Hospital. Despite these improved facilities, the shortage of doctors and medical supplies continue to deprive certain sectors of the population, especially in rural areas, of the essential treatment and care they deserve.

In the 1998–1999 Statement of Economic Strategy, the following vision for Samoa's medium term development was identified: 'Samoa to lead the region in structural and public sector reform, good governance and increasing per-capita incomes, growth in employment and improved health and education standards while incorporating social and cultural values and environmental sustainability'¹⁶. In the 1998–1999 budget statement, a \$7.3 million allocation for the Senior Citizens Pension scheme was included. Although just recently introduced, it is the first such scheme operating in any of the small island developing States of the Pacific. These senior citizens are also entitled to receive free medical treatment in public hospitals. But despite the impressive work the government had done to date in this area, there is still

much to be done to improve health care and services especially to rural populations. District centers are often left without a qualified doctor or nurse for weeks. Mentally handicapped people need special care and treatment that they do not have at present.

Protection of the quality and supply of fresh water

Degradation of watershed areas, largely through deforestation, overexploitation and inefficient use of existing supplies have been identified as the main factors affecting the efficient use and management of Samoa's water resources. Some would argue that Samoan's attitude towards water, as 'a gift of God to be had free' was a more problematic reason. Be that as it may, there seems to be no easing up on the deforestation that has been going on in some of the country's main catchment areas despite substantial injection of local and donor funding for water supply development and watershed protection.

Compared to other Pacific Island countries, Samoa is well served by a water supply system with about 90% of the population having access to piped water¹⁷. However, the maintenance of the water supply and the quality of fresh water remain a serious environmental issue to the present date. Despite recent public awareness raising campaigns, water use per capita in Samoa remains exceptionally high and unsustainable in the long term. In Apia alone, water use is estimated at 480 liters per capita per day compared to about 200 in Suva and 75 in Nukualofa. Although the Samoa Water Authority has recently introduced a water metering programme, it is not expected that the programme will have any immediate impact on the rural population where attitudes are more difficult to change for various reasons. The following assessment provides an overview of recent activities and programmes of government that are considered of relevance to the objectives of NEMS.

Increase public access to clean water - As of 1997, only three water treatment plants, all on the island of Upolu, were in existence in Samoa. According to an analysis of water management strategies by the Health Department and Samoa Water Authority, 'except for public awareness, strategies relating to issues such as tariff, treatment, policies and water standards were either inadequate, ineffective or inappropriate'¹⁸.

Protect the quality and sources of fresh water - Agricultural land clearing and waste disposal are some of the more serious threats to the quality and sources of fresh water. The high demand for agricultural land in the Apia urban area has resulted in village encroachment into the Vaisigano and Fuluasou water catchment areas where soil erosion and heavy sedimentation are common occurrences during rainy seasons. The decision to increase daily water production by more than twice the performance level of the water treatment system in order to respond to the high public water demand compounded the problem of poor water quality. As a consequence, about 11,000 cubic meters of untreated water is being pumped into the system on a daily basis.

To date, the Forestry Division of the Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM) continues to lead efforts in the conservation of water catchment areas, especially those in urban Apia. SWA has concentrated largely on development and improvement of the water supply system although in recent years, there has been some encouraging signs of closer cooperation with the MAFFM in the protection of the water sources. This kind of cooperation needs to continue and strengthened through the participation of other key agencies of government such as the DLSE, Pulenuu Office and Health Department.

Protection of the sea and marine resources

Zann (1991)¹⁹ concluded that Samoa's reefs and lagoons are among the most degraded in the Pacific. He attributed this to: a) overfishing due to increasing demand; b) use of effective and modern, but non-selective fishing techniques; c) use of destructive techniques such as poisons and dynamite; and d) loss of fishing habitat through reclamation, coral sand mining and drainage. The above problems are continuing and are likely to be around for several years into the future although it is encouraging to see the growing concern amongst citizens to have these problems addressed and resolved. Of particular significance is the initiative taken by a number of villages to set up village fish reserves wherein management action such as bans on the use of chemical, explosives and poisons are imposed and monitored by the villages themselves. Other management actions include controlling the use of nets; banning the dumping of rubbish in the sea; and the establishment of small marine protected areas within traditional fishing grounds²⁰.

Increase the harvestable stocks of fish and other marine resources - MAFFM records indicate that although there were some fluctuations (including the lowest of 320 mt in 1990), annual landings of tuna steadily increased from 650 mt in 1975 to 2005 mt in 1996/97. Inshore fisheries also increased from 48 mt to 66 mt during the same period although it peaked to 280 mt in 1986. 1997/98 figures showed a 100% increase on 1996/97. Annual landings of bottomfish, on the other hand decline from 900 mt in 1975 to a dismal 40 mt in 1996/97.

It is not clear if there are other reasons for the overall decline in the inshore fisheries of Samoa. However, Zann claimed that the inshore fisheries of Samoa have been fished beyond sustainable levels as indicated in the four-fold decline in commercial landings between 1986 and 1997. In fact, the tuna resource is probably the only undersfished fisheries in Samoa. When fishing effort was increased between 1974 and 1985, the landings of tuna and pelagic fish increased significantly²¹. According to King (1989)²², the Maximum Sustainable Yield for deep water snappers in Samoa was estimated at about 88 mt/year to be harvested by only 14 alias all year round. In 1997, there were 200 alias (increased from 74 in 1975) and 800 fishers (increased from 296 in 1975) engaged in the motorised offshore fishery in Samoa. The above statistics do not tell a good story for Samoa's sea and marine resources. Unless there is greater commitment to monitoring and controlling the use of the marine resources both for commercial and domestic uses, Samoa's fisheries resources faces an unsustainable future.

Conserve and protect marine breeding and feeding areas - Samoa, through the efforts of the Fisheries Division of the MAFFM has done exceptionally well in involving village communities in the protection of the marine environment. The establishment of village fish reserves could help reverse some of the concerns about the rapid degradation of the marine environment due to overfishing, destructive fishing methods or pollution from land based activities. Between 1996 and 1997, 22 village fisheries reserves were established under the Fisheries Division's community-based project on the management of subsistence fisheries in Samoa.

Today, there are 64 villages participating in the programme, 59 of which have established village reserves. In addition to the village fish reserve programme, the Samoa/IUCN Marine Protected Area Project involving the Safata and Aleipata districts is also making a significant contribution to the protection of important breeding and feeding areas for marine species. Aleipata islands and beaches are known to be popular breeding areas for certain species of marine turtles, while Safata comprises some of the most important mangrove resources in Samoa. The Saanapu/Sataoa Mangroves Conservation Area is looking at ways in which

village communities can benefit from the non-consumptive use of these mangroves and the sustainable management of fisheries resources by the local communities.

The lessons learned from the above three projects are well worth replicating in other parts of the country. This will be possible as government continues to acknowledge and support the critical role of village communities in the management of marine resources and support them in these efforts.

Management of wastes

Despite its growing reputation as ‘one of the cleanest places in the Pacific’, there are serious threats to Samoa’s environment arising from the lack of proper waste management and control. Samoa still has no public sewerage disposal system although a feasibility study for such a system has been completed²³. In addition, only 15% of the households (all in Apia urban area) have access to public rubbish collection and disposal while about 43% either bury or burn their wastes at home. There are still a large number of households who dump their rubbish at sea, especially in rural villages.

The World Bank had estimated that Samoa generates about 0.4–0.5 kg of waste per capita per year. However, only 30–40% of the estimated 10,000 tonnes of waste generated is collected. It is also conceivable that population will not only increase in the next ten years, but that the amount of waste generated on an individual basis will also increase. This will add enormous pressure on government to find other options for waste disposal. Unfortunately, such options may be extremely limited. Some serious efforts will need to be made to recycle biodegradable wastes and to reduce or recover resources from solid waste. Awareness programmes aimed at encouraging the reduction of waste at source are required and cash or promotional/marketing incentives may need to be looked at by government to encourage greater recycling of waste.

The relocation of the rubbish dump from Vaitoloa mangroves to Tafaigata was a welcome decision for the people who lived and depended on the fisheries of the Vaiusu bay for their livelihood. However, plans for the rehabilitation of this area have been dragging and the fisheries resources of the area are therefore likely to remain unsafe for consumption for some time yet.

Samoa must follow the examples of the more developed countries where sorting of waste is very much part of the household chore. It should not be left to the rubbish collectors to do this task although there will be a need for them (the collectors) to provide specifically made compartmentalised trucks that would enable the separation of waste during collection. Landfills like Tafaigata may only be successful in “hiding” waste from the public eye but could have other unpleasant effects that may not be quite obvious to the unsuspecting observer. Leachate to the water table, foul smell and the attraction of disease-carrying insects are some of the problems to be wary of. Government will do well to keep a close watch on these potential problems at Tafaigata.

Conservation of biological diversity

According to Taulealo (1993), the protection and conservation of the terrestrial environment was a top priority for Samoa, with implications for its land, water, forest, plant and animal resources. He went on to say that the main option for future action was to promote, encourage and support community efforts for long-term conservation of the remaining areas supporting unique ecosystems. Seven years hence, it is fair to say that Samoa can be pleased of its

achievements in this area. Of particular importance is the increasing involvement and participation of the village communities in the protection and management of natural resources and the closer cooperation between government agencies and local communities that has emerged as a result of conservation initiatives. A brief review of some of the NEMS objectives relating to the conservation of biodiversity provides a measure of progress in recent years.

Arguably the loss of forest resources is the single greatest threat to Samoa's terrestrial ecosystems. Between 1978 and 1990, the Forestry Division of MAFFM estimated that about 3,000 hectares of forest were lost each year. Twenty percent of all forest loss was attributed to logging and 97% of such logging was occurring on Savaii. In 1994, the Forestry Division predicted that all remaining merchantable forests in Samoa would be gone by the end of the century, if current rates of deforestation continued²⁴.

Although there have been no latest releases from the Forestry Division to support this, the prediction of 1994 has basically come true except for small pockets of forests that have been set aside for conservation purposes by the village communities. Efforts by government to establish forest plantation of fast growing exotic species to satisfy local demand for timber products have been hampered by lack of funding and poor quality land. Plantation forests have also been seriously affected by natural phenomena such as cyclones and fire. The significant increase in timber imports at the present time is an indication of the inability of the forest industry to meet local demand largely due to the scarcity of forest resources.

The forest policy for Samoa, approved by Cabinet in 1994 (Iakopo, pers comm), recognised the considerable imbalance in supply and demand within the forest industry and subsequently identified options that would help address this problem without seriously affecting the country's environment and remaining natural resources. Some of these options include: i) easing the pressure on remaining forests by placing an immediate halt to all indigenous forest logging; ii) reduction of tariff on imported timber; iii) increased efforts to replant and rehabilitate deforested lands; and iv) encourage conservation of remaining forest areas by local communities.

Unfortunately, like many other policies of government, the resources made available for the implementation of these policies fell far short of what was required. As a result, logging of indigenous forests has continued, albeit at lower rate. There is still a high demand for local timber due to the high retail price of imported timber and reforestation targets are not met due to limited government and donor funding. Compared to the marine areas, only a few communities have established forest reserves on their lands.

Although there is still a lot of work to do yet, Samoa has reason to be proud in its efforts to protect national biological diversity. The following summary highlights the key achievements and progress of the last eight years:

- a) Establishment of protected areas - Park et al (1992)²⁵ identified 14 key sites throughout the coastal lowlands of Samoa as the very minimum number of areas requiring protection. Five of these sites now have protection status.
- b) Marine reserves - Samoa has progressed exceedingly well in the establishment of fisheries / marine reserves in the past four years. With support from the Fisheries Division, 59 of 64 villages currently involved in a Community-based subsistence fisheries management programme have established village fish reserves wherein village management actions to protect these areas are encouraged and enforced. The interest and

momentum gained through this programme suggests that more villages would want to become involved in the protection and management of their coastal and marine resources in future. The time is right for MAFFM and other interested parties to assist the expansion of this community-based approach to the conservation of resources under customary jurisdiction.

- c) Community leadership - If there is one single factor responsible for Samoa's success in protecting its biodiversity, it is arguably the conviction that the owners and users of the resources – the local communities – must play a leadership role in the protection of such resources. Samoa has learned from the mistakes of the past few years, when local communities were for all intents and purposes, considered 'threats' to conservation. That these same communities are now driving the conservation movement is a major turn around from the conventional way of thinking that the establishment of protected areas was a sole responsibility of government. Only time will tell if community control and stewardship of protected biodiversity would stand up to continuing pressure from resource exploitation and unsustainable development. Attaining immediate benefits (financial or otherwise) from some of these community-based protected areas would help fend off the pressure on the rest of these areas. On the other hand, early losses to some protected areas could have a snowballing effect on the rest of the projects.
- d) Species conservation - Although 136 plant species are considered candidates for threatened status²⁶, no plant species have yet been designated as threatened in Samoa. This is a major set back for community and government efforts to conserve biodiversity particularly as the threats to some of these plant species from logging and agricultural land clearing are real and continuing. A decision as to whether there was a need to review the Protection and Conservation of Wild Animals Regulation 1993 was to have been made about four years ago. That decision is still pending. This Regulation imposed a five-year hunting ban on both species of flying fox and three species of pigeons. It also provided absolute protection to 30 species of birds and the sheath-tailed bat. The five-year hunting ban provided under the 1993 Regulation expired in 1998, hence, the flying fox and pigeon species that were accorded protection under this law no longer have this status but are once again subject to indiscriminate hunting.

Samoa has led the Pacific with its bird conservation and awareness programme. The Manumea symbolised the pride and joy that the Samoans have in its bird resources especially those that are found only in these islands and nowhere else. That pride and joy could soon be destroyed if the legal mechanisms that once provided legal protection for the Manumea and other indigenous bird species are not restored and enforced. The above achievements clearly signal an unprecedented commitment by government and local communities to the conservation of the country's biological diversity. These efforts are certainly an indication of the contribution these sectors can make given the will and resources required. One can only be optimistic that what we have seen to date in terms of village interest and support is only the beginning of a longer term involvement by this important sector of our community in nature conservation.

Capacity building

Environment protection is dependent on the capacity and resources of the agencies responsible for the planning and management of the country's environment resources. For Samoa, the main agencies are DLSE, Watershed Protection and Management Unit of the Forestry Division, and the Environmental Health Unit of the Health Department. DLSE has primary responsibility for the protection of the country's natural environment and should therefore remain a key player in any initiative affecting the environment. It must have the

necessary capacity and knowledge to carry out its mandate and a broad range of skills to be able to deal with the diversity of multi-sectoral issues that often characterise environment and resource management initiatives.

The increasing significance that the government has placed on the environment can be gauged from the growth in the DEC and the amount of government funding provided in support of environment and conservation efforts. From a small unit of five staff (including two expatriates) and a budget of less than S\$50,000 in 1991, DEC has grown to thirteen highly trained professional local staff and an operating budget exceeding \$2 million in 1999 - 2000. Funding for watershed management remained stable at about \$300,000 per year between 1997 and 1999 although there has been a significant reduction in 2000. Except for a huge reduction in 2000 (more than 50% of previous year), allocation for waste management and environmental health also remained at an average of about \$500,000 and \$300,000 per year respectively. Although there are also government funding to other agencies with environmental responsibilities (e.g. Forestry, Tourism, Fisheries), support to the key agencies reflects the high priority the government has accorded the environment in recent years.

Samoa's environment eight years since Rio

The pessimists will say that despite all the funding and public awareness campaigns, Samoa's environment has not really shown any sign of improving. This is a valid observation, for there are aspects of the environment that have clearly deteriorated in recent years.

A number of rivers and streams have dried up in recent years pointing to the degraded status of upland catchment areas and / or overuse of the water resources for certain development projects. The dried river beds are now being used as rubbish dumps by some "less environmentally friendly" people and are an eye-sore for passers-by. This rubbish and other debris end up in the sea during the rainy season when flash flood of muddy water becomes a common sight in these previously dried and exposed riverbeds.

Stray dogs and cats give Samoa a bad name, they pose a health risk to visitors and locals alike. The population of stray animals does not appear to be abating despite genuine efforts by the Visitors Bureau and the Animal Protection Society and others to get them off the streets. More needs to be done. It is time that government should look at addressing this problem at source - at the families where these animals are breeding and living. Getting rid of the strays on the streets of Apia is a welcome beginning but is just "scraping the tip of the iceberg". Getting rid of the unwanted animals at where they are born will not be easy but any success achieved would have a far greater impact than just dealing with a few homeless animals on the streets.

Disposing of household and industrial wastes is still a problem for Samoa, one that is likely to be around for sometime yet. Monitoring of existing dumping sites is required to ensure that any problems arising are identified and resolved without too much delay. Additional and alternative sites may need to be identified to cope with the expected increase in the volumes and different types of waste.

Apart from the above concerns (and a few others mentioned elsewhere in this paper), I am of the opinion that Samoa has made much progress in addressing the major environmental concerns it has, and continues to face in recent years. For the pessimists, the following facts are worth pointing out: i) Samoa has a very short history in environmental protection, starting in late 1990 when the Division of Environment and Conservation was formally established as

part of the DLSE under the Lands and Survey Act of Government; and ii) With the environment, the gap between the cause and effect can be quite long. The environmental problems we are seeing today may have been caused by actions taken several years before. By the same token, any beneficial effects of what we are doing to address these problems now may not become obvious until several years later.

As stated earlier, there is still a long way to go yet to secure a safe and healthy environment for Samoa. Nevertheless, there is reason to be confident in the commitment of Samoa's government to environment protection as can be measured from the following achievements since Rio:

- a) Government capacity and support for environment protection has increased many-fold compared to the pre-UNCED period.
- b) There has been a major shift from the conventional government-owned / managed protected areas to community ownership and management of conservation areas.
- c) Villages and local communities are leading conservation initiatives with little support from government. More than 60 community-based conservation areas and reserves have been set up since UNCED. Many more villages have announced bans on hunting or clearing of forest on their lands and the use of destructive devices to fish in their reefs and lagoons.
- d) There has been a remarkable increase in public awareness and support for environment protection at all levels.
- e) Government agencies and NGOs with environmental interest are working together to coordinate their efforts relating to the protection and management of the country's environment.
- f) Despite the problems with the stray animals, there is general appreciation of Samoa as one of the cleanest places in the Pacific.
- g) Citizens have recognised and used their right and role as private "watchdogs" for government policies relating to the environment and are becoming active participants in the environmental debates.
- h) There has been a major increase in the number of schools and students doing research and projects on environmental themes.
- i) Laws have been passed to regulate and control the taking of certain fish species and outlawing the use of certain fishing gear.
- j) Samoa has become party to a number of regional and international agreements relating to the environment.
- k) Political support for environment protection has increased considerably.
- l) The general public are participating in clean up campaigns and projects at their own free will.

A comparison of the above achievements and certain objectives and proposed activities of the NEMS would confirm that although not specifically guided by NEMS, the government had in fact and by default, followed and implemented the same priorities as identified during the NEMS process. In this context, it is fair to say that the NEMS has been a useful priority setting and identification exercise that has enabled later programmes to invest more of their resources in projects and activities rather than more research and preparatory work.

Conclusion

While Samoa has made interesting headway in the past few years in the protection of its environment, the absence of a population policy for the country is a major setback, since long term plans for the management of the environment must take into account population issues.

There is a need to know how the current and future age structures of our population will create future demands on the environment and critical resources such as water, land and biodiversity.

We also need to do a better job in forecasting the possible outcomes of current human activities, including population trends, per capita resource use and resource distribution. While our population growth has remained relatively low for years, a change of immigration policies by countries like New Zealand or even American Samoa could drastically change all that. We need to have a better understanding of how such changes would impact on local peoples' livelihoods and on the environment they depend on. Population programmes will require the support of political, indigenous, religious and traditional authorities, and will require adequate funding to support their implementation.

More effort is needed to rehabilitate logged over land and to ease the pressure on existing forested areas. Additionally, water catchment areas are in dire need of protection, from land clearing and road development that are occurring therein. A better understanding of the linkages between various forms of development and their impact on water resources is required to stem the pressure on our vulnerable water catchment areas and reserves. Government efforts to reduce the wasteful use of water need support from the local population. A prerequisite for the sustainable management of water as a scarce and vulnerable resource is the obligation to acknowledge its full cost during the planning and development of all projects.

Samoa's efforts to protect its environment need to be linked to those of other nations through organisations such as the United Nations. Agenda 21 reflected a global consensus and political commitment at the highest level on environment and development and dealt with the pressing problems of today and the need to prepare for the challenges of tomorrow. Samoa is well on its way to preparing for the challenges that are likely to affect its environment in future; but there is a long way to go yet. However, if the progress achieved since Rio is anything to go by, then I have the greatest confidence that the Samoan government and its people would continue to aspire for a cleaner, safer and healthier environment in the future years.

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