Report of the Alliance of Small Island States Meeting of Experts on waste management for Small Island Developing States: enhancing cooperation among SIDS for their sustainable development.

Held at Hotel Nacional, Havana, Cuba, 27 October to 1 November 2003.

ADDRESSING THE CHALLENGES OF WASTE MANAGEMENT IN SIDS

1. INTRODUCTION

The expert meeting on waste management for Small Island Developing States (SIDS) was held at Hotel Nacional, Havana. It brought together experts from all SIDS regions, from a variety of backgrounds such as Government trade officials, from educational institutions, waste management, private business and non-governmental organizations. A large contingent of local participants also attended the sessions. Substantial financial and technical support was provided by the UNDP.

The opening ceremony was chaired by Joaquin Gutierrez, CITMA and Chairman of the Organizing Committee. He made a few introductory remarks and welcomed Dr, Thomas Goreau who made a special presentation on waste management and the impacts on the coral reef.

The keynote address was delivered by Professor Albert Binger, Director, University of the West Indies Center for Environment and Development. He noted that the meeting was intended to bring current information on waste in all its permutations, and this is an important aspect for SIDS to understand their overall vulnerability.

The meeting then heard an address by Bruno Moro, Resident Representative of the UNDP, who welcomed the participants to Cuba and expressed the hope for a meaningful and important outcome to the meeting. He then officially opened the meeting.

The closing ceremony was attended by Jorge Maria Garcia Fernandez, Director of CITMA, who thanked the participants for their efforts, and noted that all SIDS, from the smallest to the larger, have a right and a duty to contribute to the discussions on sustainable development. He commended the report of the meeting, and presented each participant with a personal diploma from the meeting.

The meeting requested the Government of Cuba, through the Ministry of Environment, to submit this report to the Secretary General for circulation as a UN document under the item relating the to the International Meeting to review the implementation of the BPOA.

2. PROCEEDINGS

Presentations were made by Rolph Payet, Vincent Sweeney, Hugh Sealy, Randy Thaman, Thomas Goureau, Theresa Manarangi Trott, Nicole Baker, Jesus Delgado, Julia Brown, Allen Zack, Denise Forrest, Velva Lawrence, Liuba Chabalina, Jorge Alfonso

Ordas and Edison Garraway. Their presentations and their case studies will be available from SIDSNet (www.sidsnet.org). Discussions were held on the presentations, and a special focus was also devoted to the situation of waste management in Cuba. The discussions were far ranging, and the sections found below attempt to synthesize the main points and major conclusions.

3. BACKGROUND

Preparations for the ten (10) year review of the SIDS/Barbados Programme of Action (BPOA) in Mauritius in 2004 are well underway. It was recalled that at the Global Conference on the Sustainable Development of Small Island Developing States (SIDS) in Barbados in 1994, the international commitment to sustainable development that had been articulated two years earlier in the Rio Declaration on the Environment and Development was further concretized into the Programme of Action for the Small Island Developing States.

A principal focus of the BPOA was the deepening of the understanding of vulnerabilities of SIDS with a view to managing these vulnerabilities in ways that are consistent with their sustainable development. Today, the discussion within the Alliance of Small Island States (AOSIS) is focusing on the building of resilience, both as a practical step towards sustainable development, while at the same time seeking to manage vulnerability and exposure.

The international meeting that is being organized in Mauritius in 2004 to review the progress in implementing the BPOA represents another major opportunity for SIDS to explain again to the international community the challenges to their efforts toward sustainable development. The requests for international cooperation in the building of resilience in SIDS are expected to come against the background of assessments of the achievements in implementing the BPOA in the past ten years as well as in recognition of the new challenges SIDS face in engaging successfully with the rapidly changing global economy and the changes in the global climate.

Lessons of past preparatory processes (UNGASS on SIDS, CSD9 and WSSD) have been drawn to make the current process as efficient as possible and allow for maximum participation of stakeholders or their representatives. One such lesson is that information on the implementation of the BPOA must be researched and packaged to inform broad stakeholder participation in national and regional discussions. Clearly, we as SIDS must be better prepared and focused if the International Meeting is to be a success. The level of preparedness and the availability of key information to the negotiators will be crucial.

Although Waste Management was one of the priority areas of the Barbados Plan of Action (BPOA), there was no elaborated strategy developed to help guide SIDS in the implementation of sustainable waste management systems. Consequently, waste management is now emerging as a major concern for SIDS as the consequences become manifested. It is therefore an urgent necessity for SIDS waste management experience to

be studied, in order to identify approaches that are more socially equitable, less costly to operate, more environmentally friendly and less demanding on the limited land resources.

This Expert Meeting was there organized with support from the United Nations Development Programme Capacity 2015 to bring together a cross section of representative across SIDS to assess the experience with waste management, to make an assessment of the current situation and identify action and associated strategies that are needs to address this growing area of vulnerability for SIDS.

4. THE CURRENT WASTE MANAGEMENT SITUATION IN SIDS

Wastes are inevitable by-products of biological life, which requires material and energy flows through living organisms. Accordingly, the biosphere has many integrated biodiversity-rich ecosystems in which one creature's waste often becomes the food for another, facilitating the dispersal and disposal of naturally occurring wastes. Consequently, when ecosystems are in balance, they have a robust capacity to handle the environmental impacts of naturally occurring wastes.

As humans formed communities, enlarged waste streams became an inevitable by-product of human culture, so much so that Archaeology has sometimes been described as intelligent picking through of ancient rubbish heaps. However, until the industrial revolution, the scope and magnitude of the resulting wastes has as a rule not been sufficient to do significantly more than local or regional ecosystem damage. But now, due to the industrial revolution over the past few centuries, the impact of the wastes produced by our cities, activities, institutions, industries and enterprises, has often stressed the biophysical environment, leading to significant sustainability challenges. Perhaps, the most notable case is that of Carbon-rich emissions associated with the production and use of energy, and the resulting potential for long-term impacts on the world's climate patterns.

The people of SIDS have traditionally depended on environmental and natural resources to make a living, especially through commodities such as sugar and bananas, other agro-based industries, fisheries, minerals, and tourism (which now accounts for one in every four or five jobs in the Caribbean region for example). This has led to a complex pattern of interaction of people, communities, institutions and industries with the environment, as energy and resources flow from the environment into patterns of human use, and as resulting waste materials flow back into the environment.

In turn, the rates and routes of these flows have been largely determined by the economic systems. The resulting interplay between economic and environmental systems has therefore been highly dynamic, with interacting chains of causes and effects that span different nations and often cross-generational boundaries.

Additionally, the economies of SIDS are also dynamic: they develop, expand, transform (and, in some cases threaten to collapse), as new technologies are developed and old ones relocate to other parts of the world, so that patterns of resource demand and pollution

output change accordingly; these economies; the economies of SIDS are also changing as a result of economic globalization as the WTO agreements come into to force and SIDS continue losing access to traditional markets. These evolving economic systems are, in turn influenced by cultural values and underpinned by social and psychological models that influence the ways in which SIDS people understand their options and make their choices. Thus, the sustainability of economic development will be materially affected by a nexus of interacting local, regional and global biophysical, political, economic, scientific, technological, social and cultural factors that affect — and are also affected by — how communities, firms and institutions in SIDS manage their wastes.

The information and experiences exchanged at the meeting defined the existing situation with regards to waste management in SIDS as follows:

- Limited financial resources on the part of the public sector are resulting in less than desired availability of waste management services. For example only a few SIDS are able to afford the investment in sanitary landfill or proper sanitation and sewage treatment facilities, which are the generally accepted method of proper waste management.

- As government revenues become more limited new approaches such as privatization of waste management services are now being instituted. One consequence is that poor communities continue to have less than effective systems of waste management, often time have no options but to either dispose of waste by burning or dumping in drainage systems.

- There is a lack of information that further compounds the waste management challenge. There is also a lack of sharing of information on best practices. There is also a lack of data in qualitative and quantitative terms, further exacerbating the decision making process. Where such information exists there is often limited sharing and dissemination. There is an absence of monitoring and effective use of measurable indicators.

- There is no coordinated approach among SIDS to facilitate the exchange of experiences and the development of new approaches. Donor agencies both bi-lateral and others continue to provide support usually in the form of loan to develop conventional waste systems. This results in the conversion of valuable land resources in waste disposal sites, annual recurrent operational cost, and no chance of any degree of cost recovery despite the economic value inherent in the waste.

- Inadequate handling of waste problems in the SIDS translates into concern of impacts on fresh water resources and in the coastal zone. Fresh water resources and coastal zones areas are vital to the welfare of the SIDS. SIDS in general have limited availability of fresh water resources; the importance of the coastal area stems from it being the major location of economic activity (industry and tourism in particular), and also home to the vast majority of the population, and improper

waste management represents a growing public health threat. In addition these coastal areas are rich in biodiversity and are highly productive ecosystems critical to the food security of the SIDS.

- There is a lack of appropriate legal instruments in some cases, and in other cases there is inadequate enactment and a lack of enforcement, or both. In addition to this there is a lack of enforcement capacity as well as judicial awareness in most SIDS.

- Governments, the private sector, NGOs and local communities do not collaborate adequately on waste management decisions.

- Many SIDS are Parties to international conventions and protocols that mandate the acceptance of imported waste. In some SIDS, ship and airplane generated waste (both solid and liquid) constitutes a significant proportion of the total waste stream requiring management. However, air and sea waste management facilities in most SIDS are inadequate and constitute potential threats to the environment and risks to public health. In addition there is a lack of harmonization of regulations and procedures across regions. It is also clear that SIDS lack effective capacity and mechanisms for the safe management of hazardous waste (agro-chemical, nuclear, POPs, heavy metals etc.).

- There is increasing evidence of public health and ecosystem impacts of inappropriate waste management. Destruction of natural resources from current waste management practices is a result of poor waste management practices leading to pollution of groundwater resources and coastal waters, with associated degradation of critical ecosystems, such as coral reefs, seagrass beds, mangroves and coastal zones, and negative impacts on human health.

Goreau, in his work has made the following references (please see Annex 1.): “Excessive nutrients released to the coastal zone from poor human waste management is the major factor causing coral reefs to be killed by algae. Coral reefs are the most nutrient-sensitive of all ecosystems. They are overgrown by algae at such low levels of nutrients that no other ecosystem would be affected. Water quality standards based on human health permit nutrient levels hundreds of times too high for corals. Much stricter, environmentally sound, nutrient standards are needed to protect coral reefs because natural sources of nutrients are close to the limits that corals can tolerate in most reefs. A strict policy of zero waste nutrient discharge to the coastal zone is needed. When nutrient inputs are reduced, the algae quickly die off. Waste nutrients in the coastal zone not only destroy the ecological and economic value of coral reefs for fisheries, tourism, shore protection, and biodiversity, they represent a wasteful loss of fertilizers that are badly needed on land.

Most plant growth, especially on islands, is well below potential due to lack of nutrients, An integrated nutrient management approach for whole islands and coastal zones is essential to minimize waste and maximize useful production on land and in the sea.

Recycling nutrients on land is readily done using many approaches, whose effectiveness and cost depend on population density and land availability. Effective nutrient recycling would allow much greater production of food and energy on land while preventing destruction of reefs and fisheries. At present no coastal zone management unit knows how much nutrients are entering the coastal zone, where they are coming from, and the effects of natural variations or management of them.

- No SIDS is using currently available state of the art technology, which would allow continuous real-time measurements of nutrients to locate and every source and their magnitude and changes. Developments of these tools are essential to placing coastal zone management on a scientific basis and optimizing useful production in our lands and waters, the very point of sustainable development. They need to be applied not just to the coastal zone but to the whole adjacent land watersheds. Integrated management and recycling of all waste nutrients on land would result in true sustainable development of natural resources in both land and sea. Failure to manage nutrients properly will result in crippling losses as global warming, sea level rise, storm intensity, and pollution rise out of control."

- The planning, development and implementation of public awareness, education and information programs tend to be insufficient and ad hoc. The impact of such interventions is not assessed for their effectiveness

- In addition to the lack of public awareness, there is inadequacy in the education system combined with emigration of skilled labor. The complexity and fragility of SIDS ecosystems and the need for improved knowledge of the impact of wastes on ecosystem processes and biodiversity requires greater public awareness and education.

- Environmental education in the formal education system is weak and environmental issues are not adequately integrated into the curriculum of primary and secondary school.

- In all SIDS there is a high degree of capacity limitation at the systemic, institutional and individual levels. Particularly noteworthy at the systemic levels is the inadequacy of the policy, legislative, regulatory and enforcement framework. In addition, there are limited sources of financing available for waste management, and only limited external resources are available. Limited capacity and onerous requirements of funding agencies also negatively affect SIDS in their ability to access international funding and to formulate appropriate plans and projects. This further increases the dependence on external, often non-SIDS entities for project development and implementation, who may lack experience and understanding of the needs of SIDS communities and may have different vested interests. At the institutional level there is a lack negotiating skills and technical expertise to backstop project development and management. At the individual level there are few people with the requisite management and technical skills.

- The human resource capacity of the agencies involved in waste management is limited by the inadequacies of the formal education system, and also by the emigration of many skilled workers to the developed economies.

- Careers in waste management may not be perceived as attractive.

- There are few examples of good partnerships between Governments and the private sector in effective waste management in SIDS, in all cases the poor communities are under served and thereby more susceptible to diseases..

- There is no practicing of integrated waste management in any of the SIDS. However in some SIDS appropriate systems for effective waste management have been developed and demonstrated. There is a range of technologies that are available, but not implemented, such as co-composting, anaerobic waste treatment system, composting toilets.

5. ANALYSIS OF THE PRESENT SITUATION

Consistent with Agenda 21, SIDS in common with countries around the world, are attempting to integrate environmental policy and economic development in a climate of increasing global competitiveness. The economic recession of the 1980s spurred a rethinking of approaches to dealing with waste. This has resulted in the view that waste is a sign of inefficiency, something to reduce and avoid rather than conceal. And in the opening session, of this meeting this view was expressed that barriers to waste reduction in particular were more "attitudinal" than technical. As population and economic growth result in the generation of greater volume of waste continuation of the present trend will mean increased threat to public health risk, and degradation of critical ecosystems and with them the key services and goods thy provide for the survival of SIDS.

SIDS share a number of characteristics that affect their ability to institute policies for economic development including: limited internal markets; lack of economies of scale; very high transportation costs resulting from relatively small quantities; grave vulnerability to natural disasters; significant difficulties in attracting foreign direct investments; limited availability of human and institutional capacity; and the high cost of domestic capital. For SIDS to remain competitive they will need to do a better job than other countries of integrating environment protection and economic development policies and strategies. This means that the existing attitudes in SIDS in which waste is regarded as a nuisance for disposal and not as a resource needs to be dramatically altered. One of the challenges is thus the restructuring of mindsets that prevents SIDS from seeing waste as a resource, as a subject for management and for integration with other sectors of the economy. Limited available land is a critical constraint for some waste management technical options in SIDS, and is thus a driving force for the adaptation of integrated waste management (IWM) paradigm.

Increased private sector participation has been widely accepted as a way to improve service delivery. However limited contract management skills and private sector capacity is increasingly resulting in privatization approaches that are inappropriate, and can compromise access to IWM by poor, rural and isolated communities. In addition the limited financial resources and capacity in SIDS to do effective privatization is weak, and the outcomes have failed to meet expectations. Paramount among these unmet expectations is equity of access for the poorer segments of the populations. There are few examples of good partnerships between Governments and the private sector in effective waste management in SIDS. Future public-private partnerships to support waste management should ensure that there is equitable participation of the local private sector and civil society. And, poor communities are not discriminated against.

SIDS remain vulnerable to solicited or unsolicited proposals from promoters of untested and inappropriate technologies. However, in many cases SIDS lack the technical capacity to evaluate these proposals. There is seldom recognition of the economies of scale in such applications as incineration and recycling are economically viable, thus result in waste of limited resources, and may also result in the application driving unsustainable practices, further undermining the adaptation of potentially beneficial innovations in SIDS.

The close linkage between increasing urbanization, changing patterns of consumption, decreasing self-sufficiency and increasing dependency on, and import of, polluting and waste laden imports, requires different approaches by the public sector Increasing population densities are overloading waste management systems. Increased access to water based sanitary systems and a concomitant increase in domestic wastewater generation has stressed freshwater resources both in terms of quality and quantity. Additionally in the absence of proper sewage treatment systems that has significantly increased the quantities of water borne and sediment-rich nutrient loads reaching in the near shore and aquatic environment, threatening critical ecosystems. The pollution of groundwater and surface water resources in SIDS and in coastal areas by physical processes, chemical and biological waste and saltwater contamination and intrusion constitute a critical health and environmental issue, particularly in smaller islands and coral atolls

Tourism an important economic factor, but places additional stress on waste management and ultimately could help destroy the very ecosystems on which it depends.
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SIDS are vulnerable to trans-boundary wastes including land based and shipborne sources from outside their EEZ, international trafficking in toxic and radioactive waste, and airborne acid rain and greenhouse gas pollution from fossil fuel causing global sea level rise. Low lying island states are literally drowning in wastes that are not of their making. At the global level trans-boundary threats of improper waste management constitutes a serious challenge for SIDS, which is further exacerbated with the failure of SIDS to ratify international instruments that could provide resources. In some cases SIDS have either not ratified, or are unable to honor their obligations under relevant international treaties related to the environment and waste management. But, it should

also be recognized that many of these instruments were negotiated in an atmosphere devoid of SIDS, and that there may be serious loopholes detrimental to SIDS.

There is a need to develop and implement public awareness and education programs that are appropriate to the specific needs of SIDS and focused on specific behavior changes in target communities. The planning, development and implementation of public awareness, education and information programs tend to be insufficient and ad hoc. The impact of such interventions is not assessed for their effectiveness

Current waste management practices seldom reflect peculiar social and cultural attitudes in SIDS towards innovations in waste management, such as wastewater reuse, eco-sanitation and biogas. Cultural values and attitudes constitute both a constraint and an opportunity for the implementation of IWM.

Lessons Learnt

In the course of the meeting and as a result of discussions on developments since the adoption of the BPOA, the following lessons learned were identified:

- There exists a range of proven appropriate integrated waste management (IWM) systems and approaches in SIDS that have replicability.

- The implementation IWM systems bring about significant improvements in service provision and in public health and environmental quality.

- A team approach is need to effectively negotiate agreements for waste management contracts – a range of skills is needed – and therefore cannot be effectively done by one person - do not build systems around individuals. This was cited a major weakness in the contracting private entities for waste management tasks.

- The public sector has a critical role in creating an enabling environment for effective private sector participation, and in the regulation of agreement with the private sector.

- There is need to facilitate effective NGO and community participation, and to engage and empower local communities to deal effectively with waste management.

- There are several examples of waste management choices such as incineration that have resulted in the preclusion of more integrated and sustainable approaches. Technological choices that do not allow for any synergistic links to other aspects of the economy or environment or livelihood systems should be considered as the last option.

As SIDS decision makers consider the development of more effective approaches to achieve sustainable waste management it is necessary to consider:

a) there are different stages of economic development in SIDS

b) there are wide ranges in technical and institutional capacities
c) there are cultural differences
d) governance systems, land tenure

Which means one solution will be unlikely to be effective in all SIDS. This is a clear message that international institutions should take fully into account.

Conclusion -- The Need For New Approach

All SIDS have a waste management challenge that has particular impacts depending on the geographical and economic situation of the island. There are common aspects to these impacts that would allow for synergies and cooperation, recognizing that SIDS have different levels of development and capacity, both in general and in specific waste management capacity.

The most common aspect of waste management isn SIDS is the need for a new approach to waste management; this was the unanimous opinion of the Meeting. This new approach must be synergistic with livelihood, environmental sustainability and economic development. The Meeting felt there was no option for SIDS in waste management other than to pursue an integrated waste management paradigm.

This need stems from the necessity to avoid duplication of effort and to efficiently use the limited financial and institutional resources, in SIDS. For this to happen there is need for coordination across sectors to attain a holistic integrated waste management (IWM) approach. This would include the management of wastewater, solid waste and air pollution. It was recognized that all SIDS are characterized by large coastal zones, and are constrained by land availability. The critical issue of the fragility and protecting sensitive ecosystems, such as coral reefs and coastal zones, to biological, physical and chemical pollution can only be achieved through a IWM paradigm. This means that waste is viewed no longer as a nuisance but a resource from which social, economic and environmental benefits are to be derived (please see Annex 2.). The presentations from the SIDS experts helped to illustrate the growing vulnerability of the SIDS, which was well demonstrated by recent negative developments in many SIDS that relied on inappropriate waste management technologies. The presentations further identified the urgent need for SIDS to take comprehensive action to institute integrated waste management in order to reduce future vulnerabilities.

The process of economic and environmental globalization is putting in place standards to discourage economic actives that have significant negative impact on the natural environment. Manufacturers are being tasked to meet new standard of waste disposals in order to access exports markets in the OECD countries. Hence it is extremely important for SIDS to become fully aware of the implications of initiatives such as ISO 14000. On the surface the ISO initiative is voluntary; however, they should be regarded as assets to and may become de facto requirements for access to wider export markets and in dealing with investment banks, insurers and governments.

Outside of the manufacturing and industrial sectors where vested interest represents the driving force for improved waste management, there is no real coordinated effort of the

part of SIDS to explore different approaches to waste management beyond those prescribed for larger countries. Growing experience across the SIDS are revealing that waste management systems based on the technology and systems used in the developed countries have a number of limitations and not well suited to the needs of SIDS. The dominant approach to waste management in the developed countries can be characterized as regarding waste as a nuisance and the appropriate response is disposal.

Implementation of this approach depends on having significant transportation assets as well as physical space for the development of landfills and wastewater treatment facilities. As the vast majority of SIDS do not have the resources to invest in the requisite transportation assets, nor the physical space to develop the facilities. Furthermore the nature of the waste and the geographical and social conditions that are typical SIDS allows for the consideration of technologies that are not considered mainstream in the developed countries, these include fermentation technologies ranging from anaerobic and aerobic fermentation, to thermal conversion process such as thermal gasification, and low temperature pyrolysis, and other water purification processes such as reverse osmosis, and light sterilization, show the potential for SIDS to develop a different approach to disposal as the means of waste management.

These systematic integration on these technologies into the integrated management of waste would based on the information and discussions of the Meeting be significantly more beneficial to the SIDS by allows the greater percentage of waste material to be used a raw material for the production of for example, fertilizers, energy, irrigation water, etc. at costs below those associated with the proper disposal of the existing waste (sanitary land filling, dumping and conventional sewage treatment system). Adaptation of new approaches also have the potential to make possible improved waste management across the entire population thereby further contributing to reduce public health risks, damage d to sensitive ecosystem, and pollution of ground water resources that is occurring in most SIDS.

6. RECOMMENDATIONS

In assessing the present situation and the lessons learned, the Meeting recommends that: national government:

I). As a priority adapt the integrated waste management para digm in order to :

1) reverse or halt degradation of key natural resources upon which livelihoods and survival depends
2) address the growing threat to public health from waste
3) address limited financial support and limited human capacity

Transition to IWM requires SIDS to address the following key challenges:

1) encourage Governments of SIDS to recognize the importance of the waste management problem and to commit to IWM, in the form of increased budgetary allocations and mobilization of international and domestic resources

2) initiating behavioral change at the community and individual level and public awareness and education on the waste management problem, through involvement and empowerment of local communities and to capitalize on local endogenous strategies for waste management
3) protect and encourage sustainable resource use practices that minimize the wasteful use and pollution of terrestrial, freshwater and marine resources and recognizing that waste is a resource
4) move away from fragmented sectoral waste management and commit to IWM, thus avoiding ad hoc approaches to privatization, and ensuring the involvement of all stakeholders
5) improving the capacity for project formulation, implementation and evaluation,
6) developing capacity across all sectors, through appropriate programs of formal and informal training, education and public awareness
7) overcoming reluctance to share and publicize information and creating a culture of collaboration and information sharing between agencies, departments, institutions and SIDS regions
8) enact and enforce local legislation and become party to and implement international conventions that support IWM principles and practices
9) promote good governance and enhance political will in relation to IWM, which includes increased transparency, accountability, communication and awareness of the issues, and the enactment and enforcement of the necessary supporting legislation
10) more effective mobilization of external and domestic resources, particularly those available through the multilateral environmental agreements (MEAs) and identification of appropriate economic instruments to support IWM

II). Formulate national strategies that guide the transition to IWM systems, supported by and in cooperation with their regions and other SIDS, as well as other interested partners .

The meeting identified the following key elements relating to national level strategies:

1) policy formulation:
    - adoption, as appropriate, of polluter pays principle and precautionary principle, including rigorous use of EIA
    - policies that make waste management a critical national priority in national sustainable development planning
    - policies for monitoring groundwater and surface water quality
    - policies for monitoring impacts on the environment (terrestrial, coastal and marine)
    - policies to address hazardous waste (toxic, POPs, medical waste, etc) and special waste (batteries, reconstituted cars, etc)
    - ratification of MEAs (Stockholm Convention on Persistent Organic Pollutants (POPs), Rotterdam Convention on Prior Informed Consent (PIC), etc) and the enactment of appropriate enabling legislation to meet their obligation, particularly in key areas such as port facilities for waste reception

- policies to sensitize and increase public awareness and develop public education programs
- policies that take account of gender and age differential impacts
- policies to foster appropriate research and development
- separation of regulatory and operational responsibilities to avoid conflict of interest
- strengthening the capacity of the judiciary for more effective enforcement of waste management legislation
- as you develop policy there is a need to make appropriate linkages to existing legislation and to include scheduled revisions and updating of such legislation
- develop appropriate fiscal policies and incentives to support IWM, identify appropriate tariff regimes and the use of economic instruments to create sustainable revenue streams
- facilitate partnerships between governments, NGOs, local communities and the private sector
- supports research and development into waste as resource, as well as developing new markets for potential products
- increase the availability of information on best practices as well as on negative consequences of improper waste management
- facilitates the identification, adaptation and application of appropriate IWM technologies, in particular those that have been proven for other SIDS, as well as focusing on indigenous designs
- establish environmental trust funds dedicated to waste management specifically for the maintenance and use of IWM
- engages all key stakeholders

III). Establish Type II partnerships with donor and SIDS - SIDS collaboration to develop capacity at individual, institutional and systemic levels in order to :

- develop project conceptualization skills
- enhance project management skills
- increase technical cooperation among developing countries (TCDC), including internships, exchange of professionals, cooperation programs
- train personnel in SIDS relevant waste management techniques, including monitoring, evaluation and surveillance, and in hazardous waste
- information management and communications skills
- qualitative and quantitative characterization of the waste stream
- integrate IWM into formal education systems and the development of curriculum materials, programs and re-training of teachers, and in-country scientific analytical skills
- institute leadership programmes for middle and senior level managers, including conflict resolution and inter-personal skills
- develop negotiating skills(contracts)
- develop capacity for enforcement and awareness within the judiciary
- develop advocacy skills within NGO's
- develop appropriate legislation

- develop financial management skills
- on the job training and certification for plant operators and professionals

IV). Implement governance structures to fac ilitate:

- development and enactment of new or updated legal instruments, with particular reference to the management of hazardous waste
- establish or strengthen institutional frameworks (legal, operational), that allows for public sector, NGOs, local communities and private sector partnerships, that also includes Intergovernmental Organizations (IGOs) and research institutions
- development of mechanisms to facilitate stakeholder participation in all aspects of IWM
- establish or strengthen independent regulatory and enforcement agencies
- development of guidelines for accountability, transparency, performance targets and indicators, that also delineates clearly defined roles and responsibilities for all actors
- structures to ensure continuity of political commitment to IWM

7. SUGGESTED STRATEGIES FOR IMPLEMENTING RECOMMEDNATIONS

In order to proceed with the implementation of the recommendations the Meeting identified the following strategies:

- undertake surveys of existing regulation and policies, to identify gaps, and to ensure the harmonization across sectors and regions of IWM policies
- undertake reviews of existing standards
- undertake surveys of institutional and systemic capacity, human resource requirements and gaps
- characterize the waste stream – sources and types of waste, spatial and temporal
- undertake surveys of best practices and appropriate technologies
- develop cooperative approaches to strategic planning in regions and across SIDS
- integrate contingency plans for dealing with extreme pollution events due to human or natural disasters

Critical inputs that are required were identified as:

- standards and targets, including the adoption of environmentally sound marine water quality standards, that should be used for private and public IWM and that could be used as guidelines for regulators
- development of guidelines for integrated waste managenent appropriate to SIDS
- development of public education and outreach to include some best practices and the links to issues such as public health
- identification of financial resources – domestic and external
- a critical review of gaps in international instruments

- scientific and policy documents that are more accessible to and usable by the general public, that are more easily understood
- scientific documentation on the environmental, health and economic impacts of waste
- information on the impacts of imported waste
- information on military waste in particular nuclear, biological and chemical waste and munitions

Priorities and responsible entities identified are:

- national political commitment
- special authorities should be established or strengthened under national coordinating mechanisms, to deal with areas such as port waste facilities, water quality and wastewater management, etc
- identify appropriate private sector partnerships
- regional and inter-regional cooperation
- mechanisms to provide for independent oversight of private public partnerships and alternative delivery systems, or both, which should involve NGOs and local communities
- delineate clear distinctions between regulators and implementers
- greater collaboration between SIDS and R&D institutions, in particular for the purpose of capacity building, training, R&D and monitoring IWM within SIDS
- integration of waste management strategies into other relevant sectors – water, agriculture, tourism, industry, fisheries and trade

Implementation of the new integrated waste management paradigm for SIDS should begin with:

- unified statement by AOSIS leaders on IWM at Mauritius
- establish national IWM coordinating committees or mechanisms
- includes the involvement of and development of meaningful partnerships with tourism, agriculture, shipping, military, commerce and industry
- maximizing the use of information and communication technology
- development of data access protocols that will facilitate the effective sharing of information and expertise among SIDS
- the use of competitions as a means of engaging and empowering local communities and enhancing IWM awareness, and the promotion of environmental clubs
- mechanisms for sharing information on best practices and of negative consequences on the environment and public health of improper waste management, financial mechanisms, policies, appropriate technologies, curricula and education programs, private sector contracting, including through the sharing of web based curricula and training programs and distance learning modes
- greater collaboration and cooperation among SIDS research institutions
- development of a policy toolkit for SIDS, coordinated by SIDSNet.

- ensure that SIDS international negotiators are informed of the critical threats posed by waste and of the potential negative impacts to critical ecosytems.
- ensure that in the international negotiations the impact of imported waste is considered.
- establishment of a transboundary network to provide an early warning system on tracking hazardous waste and ensuring preparedness
- detailed analysis of cost recovery measures and the introduction of such measures
- use of regional integration processes as catalysts for deepening collaboration and cooperation on waste management issues [– such as CSME, PICTA/PACER etc]
- development of programs for the conversion of bio-degradable waste to useful products and services through processes such as composting, co-composting, anaerobic fermentation systems, etc.
- take action to put in place mechanisms to access existing international funding.
- the need to establish mechanisms for evaluating technologies.
- develop collaboratively the capacity for the use of forensic waste analysis to identify and track sources of pollution and the responsible entities
- develop communication and education strategies in order to effect changes in personal behavior.
- need to look at waste management in relation to other sectors and to carry out waste audits based on the waste stream and characterization.
- need scientific documentation of the impacts of waste on ecosystems and human health.
- strengthening of policy for watershed management, soil conservation, inland and forest protection and replanting, coral reef and marine area management and restoration of degraded ecosystems in SIDS as a means of reducing the waste of scarce water and soil resources, reducing the need for fertilizers and addressing the serious problems related to the sedimentation and pollution of freshwater and near shore marine ecosystems.