

PEMPHIS

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Environmental Newsletter
Ministry of Environment and Energy



2015

STUDENTS' NATIONAL SYMPOSIUM ON THE ENVIRONMENT

Part 3:
Waste Management Edition



Minister's Note

The concept of environmental protection has attained the highest importance globally, but the practices of proper waste management is often neglected. All types of waste, from drinking straws to household plastics should be addressed carefully since they contribute significantly to environmental pollution and threatens natural biodiversity. Hence, a people should be made aware of the impact of the improper waste disposal practices, and that negative implementation would lead to chaos. In this regard SSES was a remarkable opportunity to share innovative and enlightening ideas.

Thoriq Ibrahim

Editor's Note

The rapid expansion of our economy and changes in lifestyle have been accompanied along with one of the underlying environmental issues in Maldives, the issue of waste management. Hence, the environment in which we live is very important and it directly affects our lives. It is said that man is the product of his environment. Environmental problems are a global concern. It has no boundaries. One of the main causes of environmental degradation is improper management in the disposal of solid waste.

The concerns raised by the students at the first SSES signals a dawn for a better, healthier and a friendlier environment.

Feedbacks, comments, articles, photos, etc. are welcome at

environment@environment.gov.mv



Vermicomposting as a Sustainable Household Waste Management Method in the Island Level

Aboobakuru School

“ Waste management has become the underlining issue which needs to be tackled in G. Dh. Thinadhoo. Burning of waste has been the only method of disposing all types of waste which create environmental problems as well as health issues in the community. Since Thinadhoo is a densely populated island and produces a vast amount of household waste every day, it is an urgent need for a sustainable waste management mechanism. Therefore, research was made on converting household waste to vermicompost for use in plantations and agriculture.



Vermicomposting: The breaking down of organic material using worms, bacteria and fungi.

- The final product: black, earthy-smelling, nutrient-rich humus.
- Can be used as a fertiliser to grow vegetables and houseplants.

Advantages of Vermicomposting:

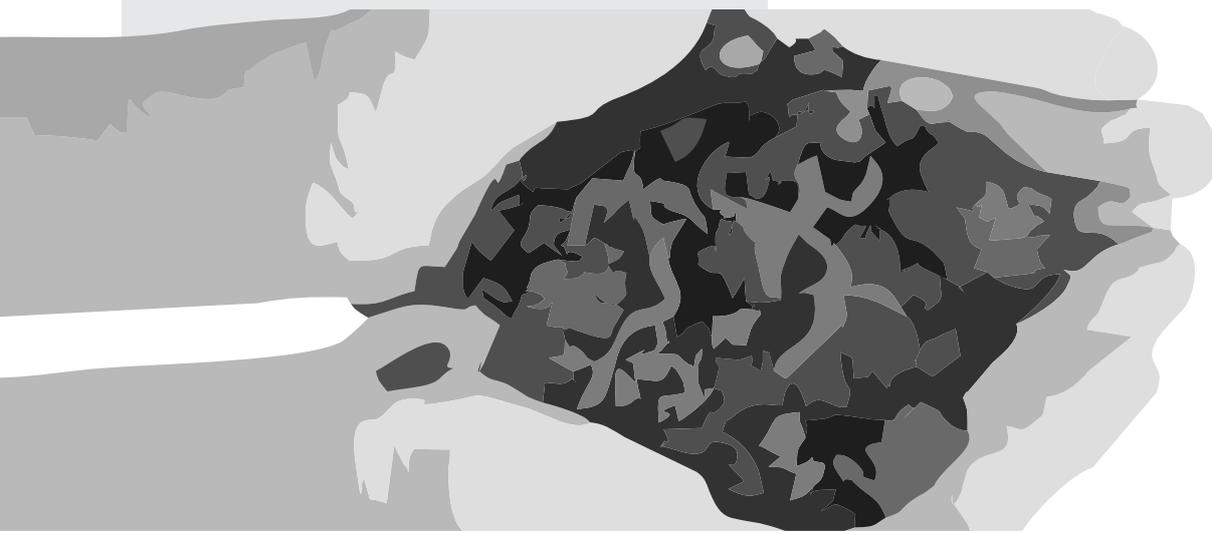
- Money spent on disposing of waste in landfills.
- Reduce methane gas emission.
- Reduce the amount of waste
- Natural way of preparing fertilisers, a high quality organic manure.
- Free from natural input
- No side effects of Vermicompost
- Easy to learn and easy to prepare.
- Suitable for households

G.Dh. Thinadhoo & Waste:

- Number of Households: > 1860
- Population: > 10,000
- Waste management an issue
- 9 tonnes of waste per day
- No proper waste management system
- Open burning is practiced, which leads to many aesthetic and health problems
- Breeding of houseflies

Closure:

- A home vermicomposting system saves resources and reduces your waste-disposal costs.
- With worms handling the organic materials, other refuse such as cans and bottles stay cleaner and become much easier to recycle.
- Offensive odours are minimised, nutritional values are utilised, and the end product of the system is a valuable soil amendment and fertiliser.
- Worms are useful.
- So, Vermicomposting in households can be a solution for the problem for a great extent in Thinadhoo.



The role of biodegradable components to reduce waste

Ihavandhoo Madharusaa

“ Aim: Educating the residents on how to minimise waste to reduce the negative impacts of waste on the environment and to educate residents on safe and cost-effective methods of waste disposal at home.

The fact that biodegradable waste can be re-used needs to be advocated among the residents. They need to be made aware that biodegradable waste can be used to make fertilizer, to produce gas and electricity.

Suggested Ways to Reduce the Volume of Waste:

- Production and Tapping of Bio-gas from municipal biodegradable waste
- Utilise biodegradable wastes to produce fertilisers



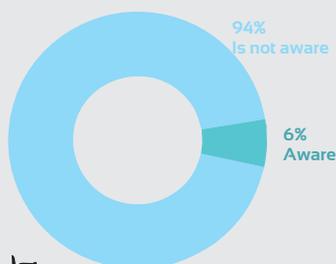
Challenges in effectively managing the issue of waste

- Lack of facilities and resources
- Laws and regulations formulated are not enforced properly
- Lack of awareness regarding proper waste management

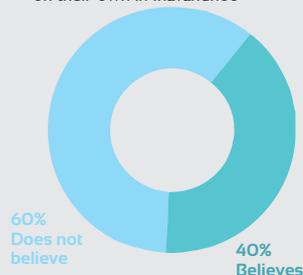
Suggestions

Full enforcement of the rules and regulations formulated to tackle the issue of waste
Awareness campaigns

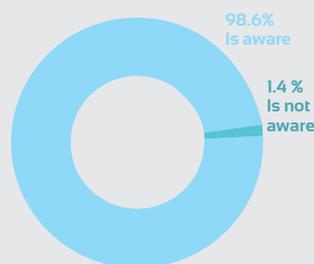
Awareness Regarding "Bio-gas" in Ihavandhoo



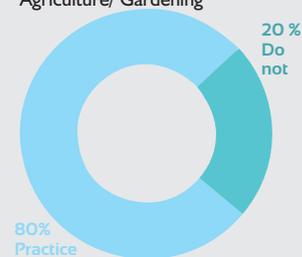
Percentage of residents who believe Biogas can be produced on their own in Ihavandhoo



Awareness Regarding the production of fertilisers from Waste in Ihavandhoo



The percentage of the population in Ihavandhoo who practices Agriculture/ Gardening



Effects of open burning of municipal and industrial waste

Imaduddin School

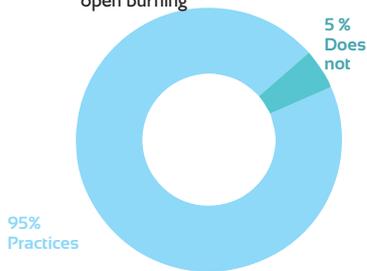
“ Research was carried out with the objective to find out the waste disposal methods in the islands of Maldives. The research mainly focuses on open burning of industrial and municipal wastes. 60 islands were randomly chosen and studied for the research.

Aim: To increase general awareness of the public about the negative health effects that are caused due to open burning of industrial and municipal wastes.

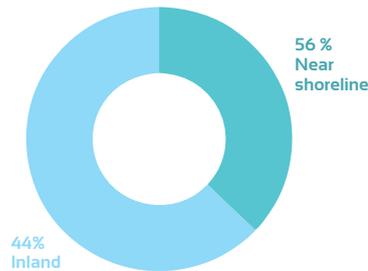
Open burning: is any open flame exposed to the environment, where pollutants produced from the fire are emitted directly into the surrounding air.

“People with Asthma or Hypersensitivity to certain changes in the external environment face greater issues when exposed to smoke and dust.” - Dr. Mohamed Ismail- Respiratory Specialist

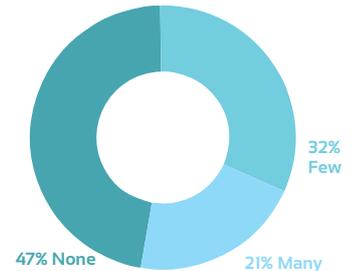
Islands that practice open burning



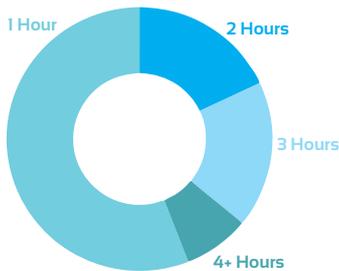
Area where waste is normally burnt



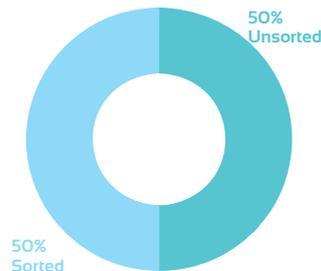
Islands that reported complaints



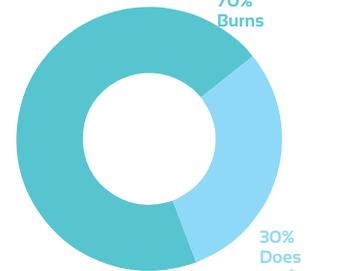
Duration of the waste burnt



Islands that sort waste before burning



Islands that burn plastics



Dangerous substances released during Open Burning

- Carbon Monoxide
- Particulate Matter
- Lead
- Dioxins and Furans
- Carcinogens

Another addition to our food pyramid "Plastic"

Iskandhar School



The plastics we throw into the ocean break down into microscopic particles. These particles are consumed by creatures such as plankton, which gets eaten by small fish. These fish are fed on by predators higher up the food chain, such as tuna. We fish the plastic laden tuna, which we eat on a daily basis.

Effects of plastic on Environment:

- Thousands of marine animals and more than 1 million birds die each year as a result of plastic pollution

The challenges:

- Lack of proper knowledge, social responsibility and ownership
- Geographical problems



Aim: To make people more aware on the effects of plastic and its significant impact on the environment

Suggestions to solve the issue:

- Find an alternative to plastics
- Educate and aware
- Installation of water fountains which provide mineral water
- Discourage the use of plastics.
- Display signs and banners on roads and schools



Playing our Part

Jamaaluddin School

“ Maldives is a coral atoll based nation where fishing and tourism are the main sources of income in which both are essentially ocean-related. We intend to create awareness about ocean pollution and to understand the role of the students in protecting the ocean.

In the past, the lifestyle of the Maldivians was simple that there was negligible impact on the environment. But a recent change in the socio-economic development and growing population has brought noticeable changes in the environment.

Since, most of the causes are related to humans dumping different "types" of waste in to the ocean that results in harm to living resources, action both at individual and national level should be taken to protect the ocean from plastic pollution.



Estimated decomposition rate of common marine debris

Aluminum Can: **200 years**
Foam Buoy: **50 years**
Styrofoam Cup: **50 years**
Plastic Bag: **10- 20 years**
Plastic bottle: **450 years**
Tin Can: **50 years**
Fishing Line: **600 years**
Disposable Diaper: **450 years**

Aim: To create awareness on ocean pollution and to understand the role of the students in protecting the ocean.

In 2014 there were as many as **5.25 trillion pieces** of plastic in the ocean.

Total Weight: **269,000 tonnes.**

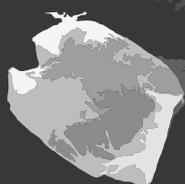
Total Number of tar balls found in a research carried out in 2009 in Maldives: **25626**

Challenges:

- Education and awareness
- Difficulties in managing solid waste
- Weak regulation and legislation
- Costs

Recommendations:

- Better strategies and monitoring
- Better sewage management system
- Immediate reporting
- Increased monetary value of natural resources
- Avoid products with excess packaging



Challenges in Managing Waste in the Maldives

Kalaafaanu School

“ Waste management has become one of the greatest environmental challenges in Maldives, and the problems are more pronounced in small island states that are spread over a large geographical area where space is limited, making it difficult to implement waste management strategies.

After collecting data from published researches by related authorities, we then interviewed some members of the Island Councils and a lecturer (researcher) from MNU. We got 40 participants including students and local people, to fill in a questionnaire. The whole presentation was based on the data collected and literature reviews.

As per our findings about challenges in managing waste in Maldives, we believe that there is lack of cooperation among authorities and community. In addition, locals should be educated about safer waste disposal methods, as the methods they are using now in most islands are hazardous to the environment. Moreover, as resources are limited in Maldives, the 3R's can help to reuse what is available and recycle waste. In conclusion, a properly integrated waste management system is desperately needed in Maldives and can be established by overcoming the challenges.”

Aim: Identifying the challenges faced in managing waste in the Maldives and finding ways on how to overcome such challenges.

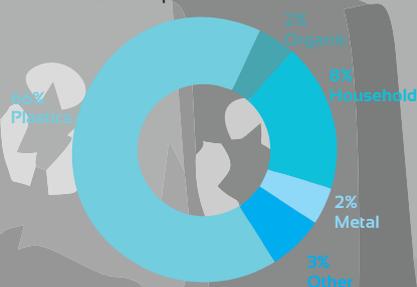
Objectives:

- Minimise the impact of waste on the environment
- Minimise and manage waste in a sustainable manner
- Make people more aware about the consequences and safer disposal methods

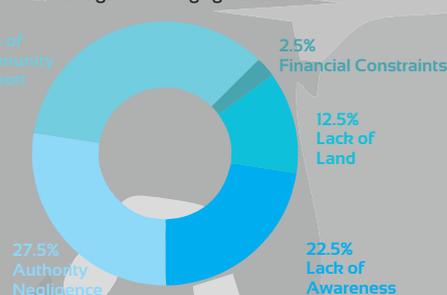
Environmental impacts of improper waste management:

- Windblown litter such as plastic bags and paper enter the marine environment
- Damages roots, causing vegetation die-off and accelerated coastal erosion
- Burning of plastic waste sends poisonous fumes into the air, and are constantly inhaled by humans

Waste composition of Maldives



Challenges in Managing waste in Maldives



Study conducted by Kalaafaanu School Students

The three R's of the Environment

Maaen'boodhoo Madharsaa



We are living in an age of Science and Technology. We are quickly running out of space to achieve anything. But we don't know what's happening around us. The fact is that global warming, deforestation and other earthly ills. To create a pollution free environment, we should know about the three R's of the environment: reduce, reuse, and recycle.

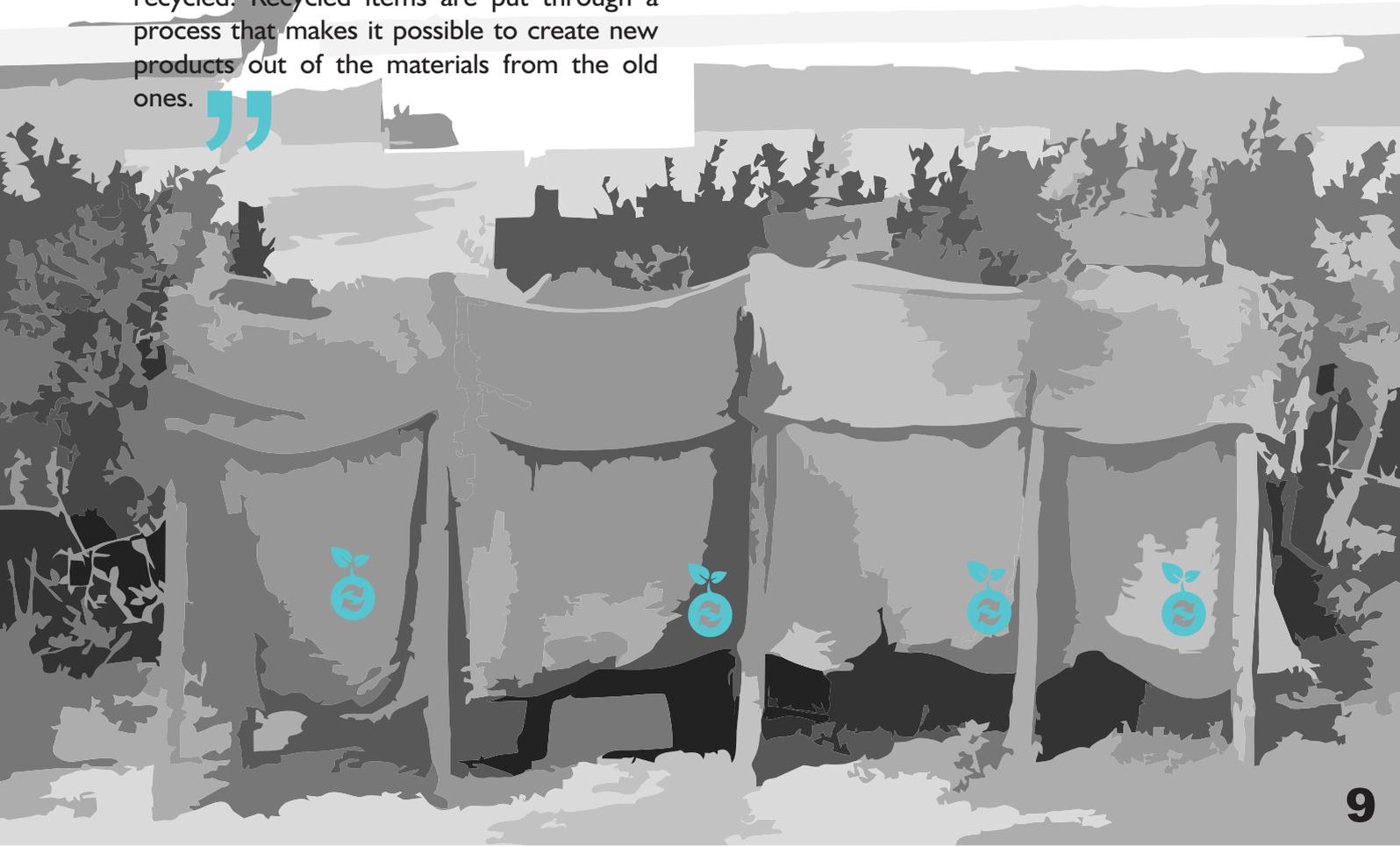
1. Reduce: "Reduce" means using fewer resources in the first place. "Reduce" is a comparative word. It says: cut back from where you are now.

2. Reuse: We can "reuse" materials in their original form instead of throwing them away, or pass those materials on to others who could use them too! Remember, one man's trash is another man's treasure!

3. Recycle: Many of the things we use every day, like paper bags, soda cans, and milk cartons, are made out of materials that can be recycled. Recycled items are put through a process that makes it possible to create new products out of the materials from the old ones.



Aim: To create a well disciplined society in terms of environmental awareness and stewardship, and to incorporate the 3Rs of waste management in our everyday lives.



Waste management in Thinadhoo School

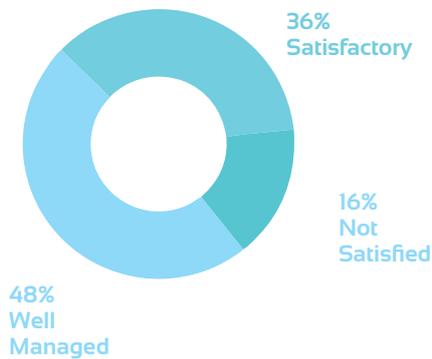
Thinadhoo School

“ Our Recycling Program of the Nature Club, is a very happening event in our school. Every week on Clubs Day, Nature Club members collect reusable and recyclable materials from the school compound, and use them in making different things. Paper recycling is also one of the most widely held programs in our school.

Survey was carried out to review the effectiveness of our waste management activities.



Survey regarding the effectiveness of our Waste Management activities



Aim: To promote eco-friendly and innovative methods of farming methods in Thinadhoo.

Objectives:

- Examine the current situation of farming in Fuvahmulah
- Find out ways to promote eco-friendly farming methods

Event: Recycling and Reuse of Papers

- Waste papers from the schools are collected and reused/recycled.



Event: “Clean Thinadhoo”

- Nature club students helped to clean the Thinadhoo Beach and the School area.



Event: Event decorations

- Decorated the school for the school prize day of 2014.



Event: Products out of recycled materials

- Envelopes and Bags are made out of recycled paper.
- Caps are made from used drink packets



Event: World Ocean Day

- An information and facts board was made out of recycled papers.



Challenges in Managing waste in A.A. Atoll

A.A. Ukulhas School

“ Waste management has always been one of the most challenging environmental issues in the Maldives. It is a serious problem for which the islanders of this nation have been struggling hard to find a solution for. A good majority of the islands do not have a proper waste management system. Recently, however, with the help of UNDP and other organizations, the government has been able to start a few reliable waste management projects in some of the islands, and thankfully, these few projects have been successfully completed and are currently running efficiently. ”

Main challenges

- Insufficient funds
- Lack of land and labour
- Lack of awareness

Conclusion

- Waste management – a major issue faced
- Solutions need to be thought of, discussed, and implemented
- All the related bodies need to join hands to bring a solution

Aim: The main aim of this programme is to research the current situation of waste management in the Maldives.

Objectives:

- To present the challenges currently faced by the islands of North Ari Atoll in managing waste efficiently.
- Recommend programs that could be carried out in school-level and even at national level to overcome the challenges faced.

Ways to overcome the challenges

- Provide free training to unemployed people
- Extra training to currently employed people
- Make proposals to willing NGOs
- Requesting environment related organisations
- Fund raising programmes at an Island level



Out of Sight Out of Mind

Villa International High School

“ In Male' household waste is collected mostly by foreign labourers and carried to the vessels transporting waste to K. Thilafushi. An estimated of 400 tonnes of waste; 70% organic & 30% recyclable waste, is dumped to Thilafushi daily from Male'. **Due to lack of proper supervision & machinery, there is no official segregation of waste.** However, workers manually separate waste, without adequate safety measures. While most metals and few plastics are exported, a majority is openly burnt in Thilafushi, **producing carcinogenic smoke.**

Although some entrepreneurs are interested in the recovery of materials from waste, we are faced with the challenges of bringing a change to the lifestyles and attitudes of the people living in Male' City as a large part of this issue could be solved simply by reducing the waste produced. We recommend the individuals and schools to reduce and reuse waste and to segregate the waste in the households itself, so that the amount of waste burnt could be reduced. To conclude, there is no proper waste management system in Male' City and waste is simply being dumped at K. Thilafushi. ”



Long term impacts of reclamation of islands using waste as fill materials

Arabiyya School

“ Waste management is a serious issue, not only in Maldives but also in most of the other nations worldwide. For ages, in Maldives, waste was dumped to the sandy beaches and to the crystal clear water, but now we have found new ways to dispose the waste. In most of the islands, the waste is burnt but a very small proportion of this waste is recycled.

In 1992, an effective method to dispose the waste of Male Atoll was found by developing “Thilafalhu” to now known “Thilafushi”. Likewise, some other islands have developed the idea of reclamation of the beach using waste material. **But did we give a thought about the consequences that we will have to face in the future because of reclamation of islands and beaches using waste material?**”

Problem Statement:

- Since 99% of the nation sea, the demand for the land is ever rising
- With the change in lifestyle and population, waste management has become an issue in Maldives.

Land reclamation by using waste as fill materials.
Example: Naifaru and Hinnavaru



Land reclamation using waste and sand as fill materials.
Example: Male’



Waste management in Thilafushi, Present Situation:

- Hazardous wastes including batteries are not segregated before burning
- Plastic bottles and metal are not segregated before burning
- Personal protection equipments are not used by the workers
- Recycling: neglected
- Waste Management Regulation is not enforced
- Statistics of the waste are not very well accounted.

Negative impacts of land reclamation using waste as fill material

- Deteriorates groundwater quality
- Can contaminate trees and plants grown in the area due to bioaccumulation, which can cause negative health effects when consumed
- Can cause respiratory illnesses
- With the contamination of groundwater; chemicals can easily sweep to the sea and cause negative impacts to marine life
- Can release hazardous gases to the atmosphere
- With the increase of vectors; vector-borne diseases may increase
- Degradation of aesthetic value due to bad smell.

Suggestions

- Establish a rigid waste recycling system
- Establish a complete waste management system
- Enforce the set waste management regulations
- Establish a good bookkeeping system for waste statistics
- Stop land reclamation using waste as a fill material

MONTH IN REVIEW

December 2015

01: SAARC workshop on energy based livelihood.

Expected outcome: Propose policy recommendations on improving access to clean energy and energy technologies for enterprise development enabling rural women and the marginalised to enter the market materialise their needs for economic empowerment and agency.



05: Maldives proposes 'Climate Resilient Safer Island' programme @ COP-21:

"Safer islands', which prioritise sustainable development while being mindful of the dangers of climate change, are the ultimate solution. Minister Thoriq Ibrahim –



05: AOSIS Countries hold discussions @COP21



06: Installation of solar measurement stations @Ibrahim Nasir International Airport.

ESMAP phase II "Renewable Energy Mapping for the Republic of Maldives"



10: Italy provides MVR 67.7m for Maldives #ClimateFund



13: Good service practices in Refrigeration and Air-conditioning Workshop @Laamu Atoll.

Organized by MEE in collaboration with Horizon Fisheries Private Ltd and Maldives National University.



21: "LED SAVES" photography exhibition @National Art Gallery

Inaugurated by Minister of Health Ms Irthisham Adam.

31: Waste Management of Male' region handed over to Waste Management Corporation



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Published by:

Environment Department,
Ministry of Environment and Energy,
Green Building, Handhuvaree Hingun, Maafannu,
Male', Republic of Maldives.

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Layout & Design by:

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