

21. Challenges in Waste Management faced by an Island State - A case study in Seychelles -

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Seychelles is an archipelago of 115 islands with a landmass of 455 km² situated in the Indian Ocean and part of the Small Island Developing States (SIDS). SIDS are different in term of culture but share the same challenges. Energy and ecosystem management is essential for their survival as the environment impact directly the survival of the local population. Especially, the islander situation of Seychelles puts the Island State in precarious situation due to waste management issues. The waste production is increasing due to a change of consumption habits especially concerning the raise of plastic consumption. The paper focuses on literature review associated with interviews of some local stakeholders and actors of waste management and a questionnaire of local inhabitants in order to understand the current situation of waste management in Seychelles, and discuss the role of NPO and NGO.

During the questionnaire, the inhabitants showed a certain level of awareness and a consensus on waste issue like illegal dumping is widespread whatever the educational background of the respondents. Through The role of NPO and NGO in education on environmental and waste management for residents is an essential tool for the implementation process of the waste management policies and is as much beneficial for local government than for inhabitants.

Key Words : *Waste Management, Awareness, public involvement, remote islands, Behavioral, Seychelles.*

1. INTRODUCTION

Small Island Developing States (SIDS) are different in term of culture but share the same challenges. Energy and ecosystem management is essential for their survival as the environment impact directly the survival of the local population. Especially, the islander situation put some of these SIDS in precarious situation due to fossil energy dependency, waste management issues and ecosystem management issues. However, the source of information concerning waste management on SIDS is scarce as few researches focus on these issues in SIDS.

The role of policies and governance is what is usually mentioned when we talk about the waste management implementation. The unexpected crucial role that NPO and NGO have in the implementation of waste management policies and the importance of local government communication can be

overseen during this process due to multiple issue like a lack of communication and marketing position in waste management agencies, few support to NPO and NGO due to organization or budget issue, etc.

What is the global situation concerning the behaviour of inhabitants of SIDS toward waste? How NPO and NGO can be profitable to the waste management implementation process? What can be learn from the case of Seychelles? This paper discusses the above questions through field surveys.

2. STUDY AREA

(1) Seychelles' History

To understand Seychelles waste management system, it is important to understand the short history of the Island State and of its inhabitants. Many other countries have a high degree of community building taking roots in an ancestral tradition with a common and long history. The

story around Seychelles is not ancient and the community building is rooted by forced relationship between communities from the slave periods.

Seychelles was completely inhabited before 1770 when the French colonization of the Islands started. The French colonist from the Quincy Era surrendered in 1801 to the Great Britain. The population was essentially composed of slaves imported during the British colonial era. After the colonial area, Seychelles took its independence the 29th of June 1979 and communities related to some immigration waves have been arriving from China, India and neighboring countries like Madagascar.

The development based on the tourism industry and the fisheries boosted the stability of the new “socialist country”.

Seychelles is a Welfare society and the state has an influence on every subject. Seychelles is directed by a Command Economy. The place that the government have, might also be a reason why the population is passive in term of community empowerment.

Seychelles independence was a turning point of the country’s history, and the following coup-d’état the following year of independence shaped the system that still exist today.

(2) Seychelles’ Economy

Tourism is the backbone of Seychelles’ Economy. The impact of tourism on the waste management is significant as Seychelles is welcoming more visitors than the actual population of Seychelles per year.

The direct contribution of Travel and Tourism in Seychelles is about 22%. Cumulated with the indirect contribution, that make tourism the main currency provider. As shown in Table 1, GDP is totally dependent of this sector as with the indirect contribution, the percentage of the economic impact of tourism on Seychelles’ GDP.

Table 1: Tourism contribution per capita¹⁾

	2016 USDmn	2016 % of total	2017 Growth in %
Direct contribution to GDP	358,8	22,0	7,4
Total Contribution to GDP	947,4	58,1	6,4

(3) Seychelles’ Demography

The number of Seychellois living in Seychelles is 94,228²⁾. Seychelles demography starts to show a tendency that will lead to an inverted pyramid chart. The population decreased subsequently after the independence in 1979 and a drop can be seen from 1990 to 2000. In recent years, the number of children per family raised from 2.01 children per family in 1999 to 2.78 children per family in 2016. In Seychelles there is provision for the termination of pregnancy under the TOP Act 1994 which can explain the drop of the fertility rate³⁾. The stable growth of population due to family planning organization is associated with the low rate of immigration.

3. SEYCHELLES’ SITUATION ON WASTE MANAGEMENT

(1) Current situation on waste management

A system of 2 different collection systems exist in Seychelles. The first one is for commercial/industrial entities. They must apply for a collection of commercial/industrial waste permit and follow the sorting process of commercial waste. Concerning the collection of inhabitant’s wastes, the collection process is more straightforward⁴⁾. The waste is directly collected from municipal collection point and directly sent to the landfill. Some of the waste is diverted from the landfill like metal goods and tyres.

With a land area of 157.3 km², there is a limited land area for storage of solid waste on Mahé Island, the main Island of Seychelles. The landfill management is one of the main issues faced by the Land and Waste Management

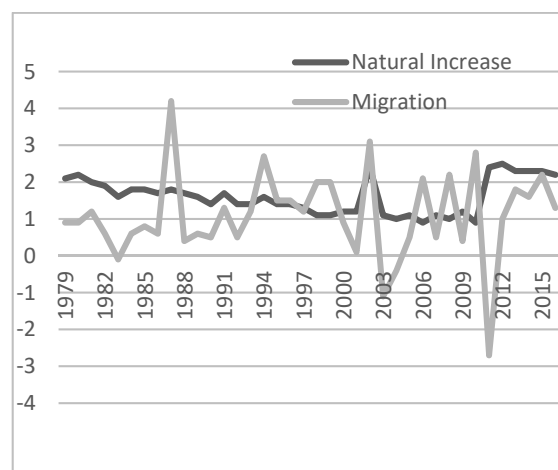


Figure 1 Population growth rate in Seychelles²⁾

Agency (LWMA). It has been operated entirely by company STAR from 1995 to 2018, under the supervision of the LWMA⁵⁾. Concerning the landfill in Seychelles, the following 20-year contract ended and has been replaced by a competitive contractor services allowing people to join as a business the waste management. The waste management has been heavily dependent on foreign expertise.

Many levies to organize the waste management have been put in place to fund the different organizations in charge of this task⁶⁾.

- **Consolidated fund**

The Consolidated fund is an overall State Budget. In 2016 the consolidated fund was about 6,564,229,000 SCR. This budget is shared with other agency and the Landscape and Waste Management Agency (LWMA) is funded for 2.3% of this global amount. The final amount is about 151,434,000 SCR.

- **Waste management Trust Fund**

Established in 2007 under the Public Finance Act, it has for primary objective to finance the levy system for Pet Bottle and Education.

- **Environment Trust Fund**

Also defined in the Public Finance Act, the Environment Trust Fund is a fund of 6,000,000 SCR. This amount comes for more than 20 years, the government had a private company taking care of the waste management from the pickup of the waste to the dumping of the waste in the landfill. This French based company call STAR had an exclusive contract with the government until May 2018 when the 20 years contract ended. The government decided to not renew the contract with the company and instead, opened to concurrence the waste market. They extended for one year the contract with STAR, implementing at the same times the “contractor”.

Seychelles have enacted the “ENVIRONMENT PROTECTION ACT” the 1st March 1995⁷⁾. The Act is divided in 9 points as follow: a) Standards, b) Water quality management, protection of surface water, ground water and soil, c) Air, d) Noise, e) Ozone Protection, f) Coastal Zone its management and protection, g) Waste, h) Minimization of waste, and i) Hazardous substances.

(2) Interview survey for stakeholders

On February 2019, a series of semi structured interviews were directed with employee of Ministry of Environment, Energy and Climate

Change (MEECC) and LWMA. The choice of semi-structure interview allowed us to reach some information outside of the planned questions. 4 employees of MEECC and LWMA have been interviewed.

LWMA is working for cleaning contract, inspectorate (contractor and waste collection activities), and landfill management. During the interviews in LWMA, because of the small size of the population, corruption issues between contractor and commercial businesses have been raised.

One interviewee raised also the human resources issue faced by the LWMA. 17 persons are employed in LWMA office and 10 persons are employed in the landfill to oversee the operation. The LWMA is struggling with a scarcity of human resources making the work of employee of LWMA very complicated to do. In his opinion, the waste issue has always been there, but in the past, it was contracted with 10 years’ contract, so people haven’t been focused on waste subjects in general.

Another interviewee also mentioned that the concept of Waste Management as a tool of conservation and environmental protection is a new concept. The LWMA has been created in 2009, and for his opinion, it has been a very new process for Seychelles.

(3) Questionnaire survey for citizens

The questionnaire on waste management in Seychelles was conducted in March 2019 on Mahé Island. The questionnaire has been conducted for randomly selected 43 citizens in main area of Seychelles, around the main bus station of Victoria, and 2 main beaches where local are gathering regularly

46.5% of respondents are female and 53.4% are male. The main age group is the 31 to 50-year-old. Concerning the housing profile, Seychellois have a high rate of living a detached house (65% of respondent). 86.05% of the respondent is using collection points to dispose of their waste.

In general, the level of awareness is very high concerning environmental matters in the survey. Seychellois seems to have a habit of talking about environmental matters and conservation, then 60% of the respondents answered “yes” to the question “Do you know how your district dispose of your waste” and 88% of the respondents answered “yes” to the question “Did you hear about waste problem before?”. During crosstab analysis of the results

a correlation between the level of awareness of the management system and the education level has been highlighted

When we asked about the main issue concerning waste in Seychelles, respondents with high school diploma or less tend to answer that there are not enough facilities and a bad attitude towards the environment, and no answer that it is the lack of recycling. However, some respondents with more than a high school diploma are responding that the main issue is the lack of recycling facilities. There is a consensus about the issue of illegal dumping whatever is the educational background of the population

4. VOLUNTEER INFLUENCE ON WASTE MANAGEMENT

(1) NPO and NGO in Seychelles

NPO and NGO are registered under the Association Act with the Registration Division Department of Seychelles⁸⁾. A major engagement platform exists under the name of Citizens Engagement Platform Seychelles (CEPS). This platform exists for 25 years and was named before the LUNGOS (Liaison Unit of Non-Governmental Organizations of Seychelles)⁹⁾.

This kind of NGOs helps as a liaison between the civil society and the government agencies. A strong civil empowerment exists in Seychelles and has been developed since the Independence in 1979. A new resurgence of environmentally oriented NPO is rising in Seychelles with the rise of Marine Debris and the change of consumption goods habits.

(2) The Ocean Project Seychelles

The Ocean Project Seychelles is a Non-For-Profit and a Non-governmental organization created in 2015¹⁰⁾. The organization was created from 2 project co-led by the founder in association with the government. The first one was a campaign called “Free from Plastic Bags” and had for purpose to lobby the Seychelles’ government to introduce the ban for plastic bag.

Following this first campaign, the founders of “The Ocean Project Seychelles” co-led another campaign called “Marine Debris Challenge”. It consisted of 7 clean-up activities and following the success of these 2 campaigns, they decided to register the association under the Non-for-Profit Organization law of Seychelles.

The association is particularly present on social media platform and they organize with the association of other NGO and in collaboration with the government many activities related to marine education in general. Their role in environment education has been mentioned with all stakeholders interviewed in Seychelles and some people who already participated in each cleaning where in fact involved with The Ocean Project Seychelles.

From the hearing from the NGO, the last cleaning session happened the 28th of June 2019 and it was co-led by the French School of Seychelles. The cleaning was organized for 65 students and 7 teachers, and the Ocean Project Seychelles provided the gloves, bags and a scale. The students picked up 200kg of trash in 2 hours of cleaning session.

5. DISCUSSION AND CONCLUSION

All island states experienced common issues concerning the waste management. The isolation due to a geographical situation, surrounded by water, make the waste management complicated to optimize in term of cost. With a limited land available, it is also important to reduce the amount of waste before the final disposal. This issue is especially pressing in both developed and developing country.

The Island State of Seychelles faces the same limitation as other developed and developing countries in term of waste management. The issue of space is a great challenge on a limited area surrounded by water.

The change of waste type puts a heavy burden on local governments because from waste with a high content of green waste, there is now waste with a high content of plastic. The way to recycle plastic is unfortunately too expensive to treat and there is not enough plastic production to make the recycling business of plastic profitable.

Furthermore, in all communities, one interviewee told that there is a decreasing level of awareness concerning the waste issue.

About Seychelles, this developing island is facing a change of consumption habits (raise of plastic consumption and electronic product). And with very limited disposal area, they must mitigate fast these issues before being overwhelmed by the waste. However, the citizens are passive in term of community empowerment. The main challenge will be to

organize a sound community involvement based on these specificities.

Seychelles seems to face a limitation in term of investment in waste management. The size of the population is a limitation in term of incentive to create businesses related to recycle and finally, waste management sustainability might be harder to reach as it depends heavily on government funding.

Before investing in innovative technologies to treat waste, a need in restructuration of the waste management entity might need to be considered. A need of communication in waste management in Seychelles is highly recommended.

The participatory approach of waste management needs to be prioritized, especially with younger generation, and a certain amount of involvement in waste management and educational program would be beneficial for both policies implementers and inhabitants.

During the interview in Seychelles, it has been pointed out that politic influence rapidly and greatly the waste management policies. The environmental policies seem to be socially based instead of efficiency based. It also influences a lot of political debate as Seychelles is a small country with a small population. Everything can impact the political agenda and waste management seems to be a triggering subject for politics. The solution might come

from people involved in NGOs in Seychelles as they can be apolitical and uniting instead of dividing the communities in Seychelles.

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