Engaging Civil society in Sustainable Waste Management

The status of waste management in Seychelles

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Executive Summary

An increasing amount of solid waste is going to landfill in Seychelles. These landfills are a major source of greenhouse gases contributing to global climate change, particularly with the release of methane into the atmosphere. By helping to reduce the amount of waste being diverted from the landfill, particularly organic waste, Sustainability for Seychelles (S4S) hopes to help to reduce Seychelles' carbon footprint. To this end, S4S was awarded a grant for US$ 150,000 in 20012 from GEF/SGP for a strategic project to "engage civil society in sustainable waste management", as it fits into the GEF thematic area of mitigating climate change.

With the exception of PET bottles, large scrap metal and aluminium cans, almost all of the waste generated by the residential and business sectors in Seychelles goes to landfill. There is an urgent need for civil society organisations and the private sector to become more actively involved in helping Seychelles reduce the amount of waste going to landfill. At the moment, Seychelles Breweries is probably the best model to emulate, with their policy of zero waste to landfill by 2015, and innovative strategies to sort and deal with every kind of waste emanating from their operations. There is a need for more communities and businesses to start thinking along these lines, and participating in national planning to reduce waste going to landfill.

A survey was conducted with 22 representatives from Government Agencies, the private sector, NGOs, charitable foundations and young entrepreneurs who are involved in waste management in Seychelles. Those surveyed could be classed into clearly defined categories, namely waste agency (9%), redeem centres (14%), waste exporters (32%), recyclers/producers (27%), NGOs (9%), charitable foundations (9%) and business with a corporate social responsibility policy aimed at reducing their waste to landfill (9%). Between them, they dealt with 22 types of waste, which was mainly exported (32%) to countries such as China, India, Vietnam, UAE and Mauritius or sold as finished products on the local market (27%).

Generally, waste management companies operated 5 or 6 days a week (36% and 41% of total respectively) and for the most part, were leasing land from Government (45%). Most of the companies that participated in this survey where operating actively (77%) and making a profit (41%). There are nearly 100 people, mostly Seychellois, employed in the waste industry, most of whom are working full-time.

Those interviewed identified a number of positive and negative aspects to the business. In terms of the positive, nearly everyone agreed that there was no lack of raw materials in Seychelles (86%) and that, for the most part, there was sufficient space available to process this waste (64%) by a team of reliable staff (55%). The top 3 challenges/barriers were: high overheads (41%), limited public corporation in terms of sorting waste (36%) and being understaffed to deal with the amount of waste generated in Seychelles (32%).

With the right Government support, there is definitely a future in waste management. Many of those interviewed, where considering increasing their capacity for dealing with waste (32%), working with S4S to improve visibility (27%) and expanding the business by adding new product lines (27%). One of the most common requests from those interviewed was for Government subsidies to help cover the operating cost (45%), as well as tax exemptions (i.e. VAT) when importing equipment and/or selling finished products (36%). For those places with space restrictions, there was a request for suitable land or buildings with long term leases at reduced rates (23%) while those struggling to attract clients needed assistance with marketing and/or public awareness (23%).

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The S4S Waste Management Project

Sustainability for Seychelles (S4S) is a legally registered NGO established in 2007 to promote sustainable island living, and has implemented projects related to climate change, water, waste and energy funded by local, regional and international donors, including the Global Environment Fund–Small Grants Programme (GEF/SGP). S4S has a proven track record of working directly with communities, helping them to compile and implement action plans to address local environmental concerns. S4S seeks to help more communities establish CBOs to enable them to participate more actively and effectively in sustainable development, with a particular focus on a challenging national issue - sustainable waste management.

In 2012, S4S was awarded a grant for US$ 150,000 from GEF/SGP for a strategic project to "engage civil society in sustainable waste management", as it fits into the GEF thematic area of mitigating climate change. The project will bring together partners from CBOs, the private sector and Government to showcase more sustainable ways of managing waste in Seychelles. Strategically, for Seychelles and for the GEF/SGP, this project will serve to expand and strengthen the CBO movement in Seychelles to improve their participation in the GEF/SGP country programme with their own projects. Using the issue of waste as a focal point, the project will showcase a more participatory process for tackling environmental problems through close collaboration and networking between communities (CBOs), the private sector and Government.

The main environmental problem the project seeks to address is the increasing amount of solid waste going to landfill in Seychelles. The project will also contribute to the achievement of several outcomes of the Seychelles' Sustainable Development Strategy (2011-2020) under the thematic areas of climate change and waste. To this end, S4S will be developing a National Sustainable Waste Management Policy and action plan, through a collaborative, participatory process involving Government, the private sector and civil society. As a precursor to this policy, a research brief on the status of waste and waste reduction initiatives in Seychelles is being presented in this report. It contains information based on interviews with Government Agencies, the private sector, NGO's and entrepreneurs involved in waste management so as to get their views on how the system is working and what new options should be considered to accommodate their needs. This aim of the report is to provide baseline information for further discussion of the way forward through public consultation.

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Waste Management and Disposal in Seychelles

As a small island state, Seychelles has an extremely limited land area available for storage of solid waste. Methane from landfills represents a significant contribution to greenhouse gas (GHG) emissions and is 21 times more potent than carbon dioxide. Globally, methane emissions are rising – in 2010 the level of methane in the atmosphere was twice as high as the highest recordings from interglacial periods. In the US, landfills represent the largest source of anthropogenic methane, and this is likely also true for Seychelles. It is therefore critical that Seychelles begins to examine strategies for reducing our methane emissions from landfills.

With increasing economic development, more waste is being produced, and there are no clear national targets for waste reduction and recycling. There are plans for a "waste to energy" plant which will involve capturing methane from the current and new landfills and burning it to produce electricity, but this will not be in place until at least 2014 and the plant will still emit $C0_2$. Some recycling initiatives are in place, but not all have been successful although a few have proved to be financially sustainable with Government assistance.

There is a need for a coherent plan and funding structure to promote waste reduction, stimulate the local reuse of waste on a commercial level, and guide plans for the export of high value recyclables. Some private sector companies, notably Seychelles Breweries, are demonstrating leadership in eliminating waste going to landfill and need to be brought into a national dialogue on dealing with waste more sustainably. Pilot demonstration projects in communities to study options for waste reuse and recycling will help CBOs become more conversant and experienced in sustainable waste management and can be up-scaled on a national level and incorporated into a national waste reduction policy.

Institutions involved in waste management

Up until 1995, the management of the water resources, sanitation and waste were under the responsibility of the Public Utilities Corporation (PUC), but with subsequent Government re-organisation and privatization, solid waste management was removed from PUC's purview and allocated to a new entity, the Solid Waste & Cleaning Agency (SWAC). By 1997, the service of municipal waste collection, treatment and disposal was privatized to one economic operator (i.e. STAR Seychelles) and included beach and road cleaning. SWAC continued to oversee this contract based on the policies laid out in the Solid Waste Master Plan (2003-2010) until 2009 when the Landscape and Waste Management Agency (LWMA) came into existence, operating under the Ministry of Environment and Energy (MEE) during another Government restructuring.

Although LWMA is the main institution involved in waste management, it works closely with the following partners:

- ✓ Community-based groups: These exist only in the context of solid waste management, whereby the community is involved in either clean-up activities or in subcontracting the collection of solid wastes.
- ✓ Government Agencies: At the Government level, the Department of Environment is directly responsible for water resources management, sanitation and waste management. Other Ministries, such as the Ministry of Health, the Ministry of National Development, participate to a lesser degree particularly on National or International theme days (e.g. Earth day, Environment Day etc.)
- ✓ Non-Governmental Organisations (NGO's): There are not many NGO's involved in the area of water, sanitation and waste with Sustainability for Seychelles (S4S) leading the way.

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- ✓ Private Sector: The role of the private sector in this sector has significantly grown in the last 10 years, with many operators in the solid waste management business. The water and sanitation are still run by public entities, although some aspects of water supply and treatment of waste water are undertaken by private operators.
- ✓ Other Groups: Other important stakeholders are those involved in education, especially since issues of water conservation, pollution prevention and recycling are initiatives that can be undertaken in schools and in the work place.

Government Policies regulating waste management

The Government of Seychelles is has a vested interest in improving waste disposal and treatment and the sustainable management of natural resources. The main policy drivers that have been developed to address the issue of waste are:

- ✓ Environmental Management Plan of Seychelles (2000-2010) – This was a comprehensive national plan developed through multi-stakeholder consultation with 10 thematic areas, including water, sanitation and waste.
- ✓ Solid Waste Master Plan (2003-2010) – Nearing end of life, this document sets the main strategy for solid waste management for the Republic of Seychelles taking into account emerging trends, technology as well as country-specific issues. The SWMP 2000-2010 identified 11 areas of interventions with 24 objectives.
- ✓ Sanitation Master Plan (2010-2025) – Currently under development, will contain the main strategy for sanitation services in the Republic of Seychelles. The action in this document complements preliminary actions of the Master plan.
- ✓ Solid Waste Master Plan (2010-2020) - This new plan is being developed to complement the main objectives and programmes of the Seychelles Strategy 2017.

The landfills of Seychelles

Although the majority of the solid waste is managed by STAR Seychelles, there are nearly 300 smaller operators who are engaged in the commercial sector. The municipal waste is collected primarily from communal bin sites around the islands, compacted in specialised trucks and transferred to a controlled landfill on reclaimed land at Providence or Anse Royale on Mahé, Amitié on Praslin next to agricultural lands and at L'Union on La Digue which drains into a coastal wetland and river. All landfills are owned by the Government of Seychelles, but the landfills on Mahé are operated by STAR Seychelles, with the one at Providence receiving on average 45,000 tons of waste per year since 1999 with a maximum of 75,538 tons recorded in 2010. Those on Praslin and La Digue were initially operated by the Praslin Development fund (PDF) but with its dissolution in August 2012, LWMA has taken over. In 2005, it was estimated that the landfills on Praslin and La Digue received 3,500 tons and 670 tons respectively per year. A new landfill is being built on Mahé near the existing Providence landfill and it is being engineered so as to extract the methane for electricity production, as early as 2014.

The author is not aware of any studies to research the impact of landfills on the ecology of the areas in which they are located but it can be expected that the effect would be negative as hazardous wastes are mixed in with other waste in all landfills, with the exception of the one at Anse Royale which is used for residues and inert waste only. Furthermore, the landfills are all located on porous soils raising concerns over leachate.

Trends in waste to landfill

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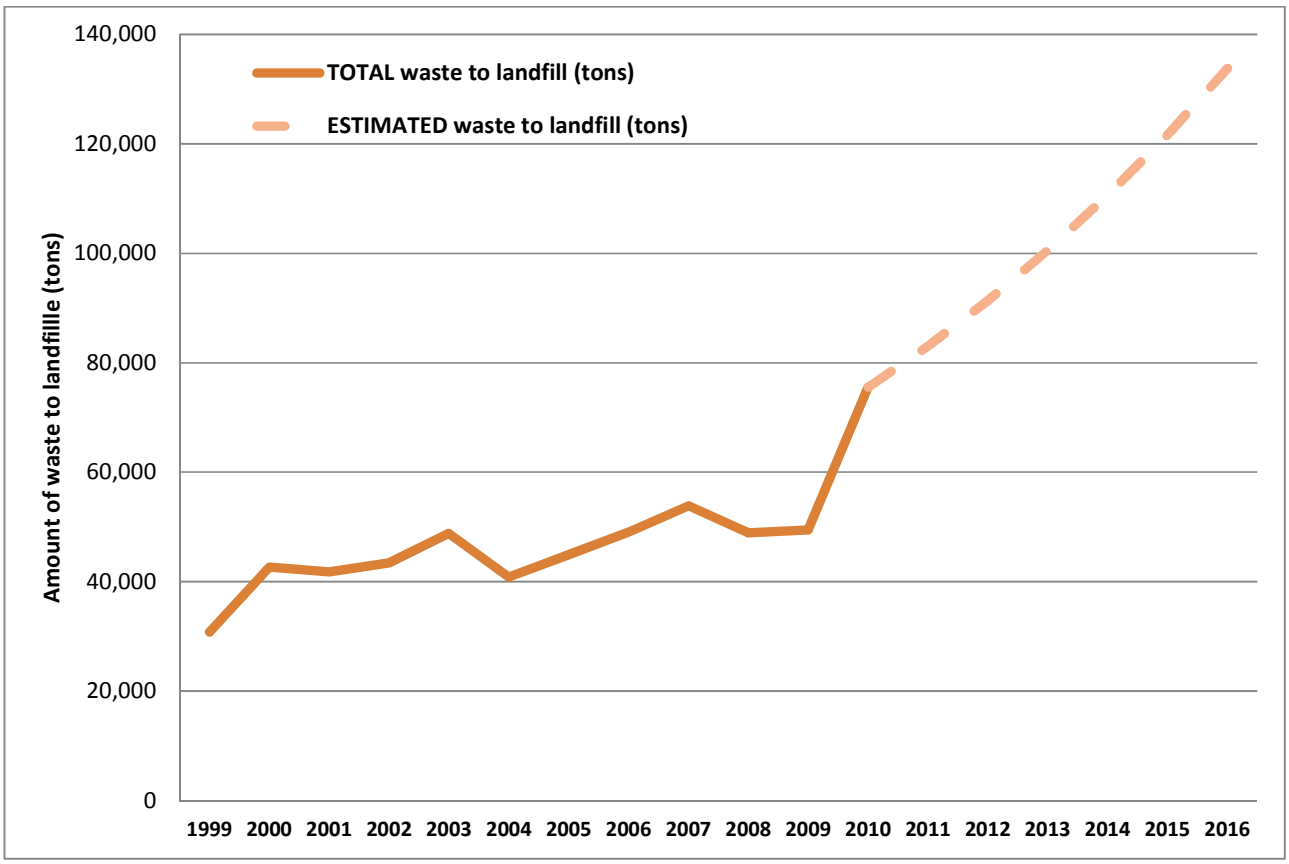
According to the Seychelles Sustainable Development Strategy (2012-2020), we generate on average 48,000 tons of waste per year. This is expected to increase by 40% in the next 10 years which is of great concern given the limited availability of land and lack of capacity to deal with waste, particularly hazardous waste.

Figure 1. Total waste going to the Providence landfill between 1999-2010, with estimated weights up until 2016.



The Seychelles waste stream

In order to manage waste, it is important to identify what is being produced. Over the years, various experts have conducted both quantitative and qualitative audits of the waste composition, with 17 categories being identified in the Seychelles Solid Waste Mater Plan (2003-2010). These are:

1. Vegetation, green, food and kitchen waste including meat and fish
2. Cardboard and paper (e.g. packaging, newspapers, office paper etc.)
3. Plastic film (e.g. plastic bags, food wrappings etc.)
4. Plastic bottles (i.e. PET)
5. Other plastics (e.g. yoghurt cartons, product components, household articles etc.)
6. Textiles
7. Wood (e.g. furniture, off-cuts etc.)
8. Leather and rubber
9. Glass
10. Metal cans (i.e. aluminium drink or food cans)
11. Other metals (i.e. pipes, product components, household articles etc.)

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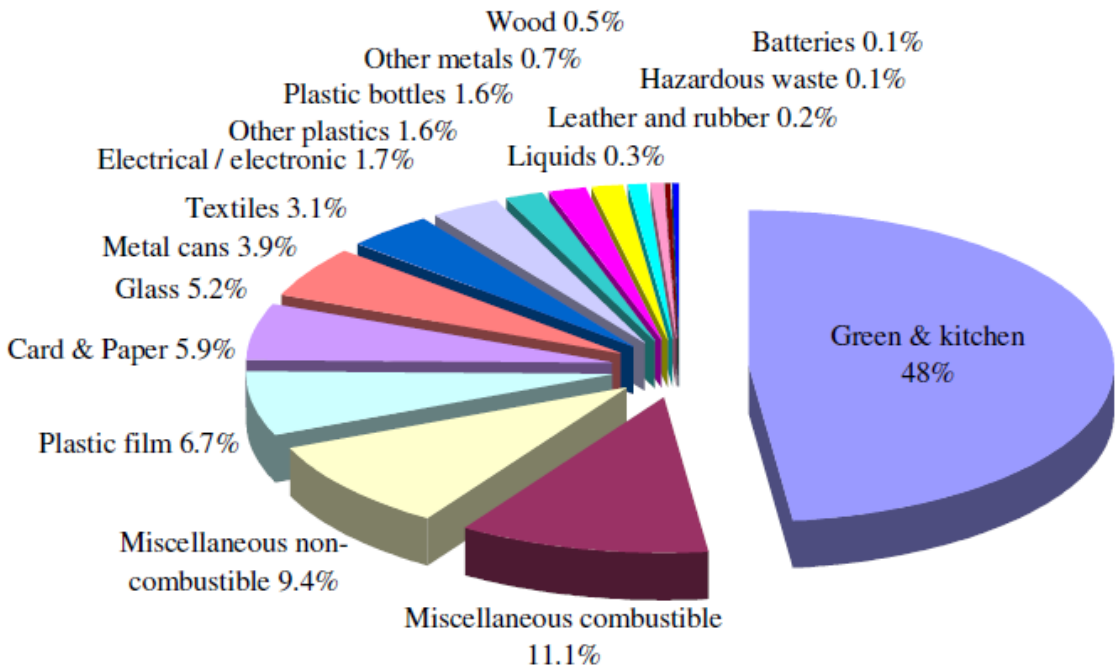
12. Electrical and electronic equipment (e.g. TV, telephones, stereos, computers etc.)
13. Miscellaneous non-combustibles (e.g. brick stones, and other inert materials)
14. Miscellaneous combustibles (e.g. disposable nappies, Tetra pack etc.)
15. Liquids
16. Batteries
17. Hazardous waste (e.g. solvents, pesticides, oils, syringes etc.)

The average composition of waste is shown in the figure below which is based on a quantitative audit conducted by the Solid Waste & Cleaning Agency (SWAC). Nearly half of the waste is green/kitchen waste (48%), followed by miscellaneous combustible waste at 11.1%, miscellaneous non-combustible waste at 9.4%, plastic film at 6.7%, card & paper at 5.2% and glass at 5.2%. The remaining 13.7% consists of; metal cans (3.9%), textiles (3.1%), electronic waste (1.7%), other plastics (1.6%), PET bottles (1.6%), other metal (0.7%), wood (0.5%), liquids (0.3%), leather and rubber (0.2%), hazardous waste (0.1%) and batteries (0.1%).

Figure 2. Composition of municipal waste based on a quantitative audit conducted by SWAC.



SOURCE: Solid Waste Master Plan 2003-2010

While the data from Figure 2 may be slightly dated, the waste composition is unlikely to have changed greatly over the last few years. With a proper sorting scheme, either at household level or district level, much of this can be diverted from the landfill and recycled either locally (e.g. paper waste, tyres, glass etc..) or exported overseas for processing (e.g. scrap metal, batteries, oil etc..).

Although SWAC identified 17 waste categories in their study, only 10 classes are being used by STAR under the existing waste collection system to conduct its annual assessments of waste stream on Mahé. As can be seen from Table 1, most of the waste which is collected by STAR and small contractors is taken to the landfills at Providence or Anse Royale for disposal with a small portion, mainly scrap metal and batteries, being diverted to SAMLO for processing/export.

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Table 1. Description of waste classes used by STAR

Class	Type	Description	Disposal
1	**Solid waste (SWAC)**	– from municipals bins (household waste) – litter bins – commercial & industrial waste producers – hotel waste	Providence landfill
2	**Solid waste (STAR)**	– large industrial and commercial waste producers	Providence landfill
3	**Green waste/ Vegetation**	– does not include green waste mixed in with other waste	diverted to compost plant
4	**Liquid waste**	– liquid waste – sludge – grease	Providence landfill
5	**Mixed solid waste**	– all other waste	Providence landfill
6	**Scrap metal**	– all metal waste	diverted to SAMLO
7	**Putrescent waste**	– abattoir waste, – organic waste from STC and IOT, – veterinary waste	Providence landfill
8	**Special waste**	– oil – batteries – contaminated hydrocarbons	diverted to SAMLO or stored for export
9	**Construction waste**	– construction & general building waste	Providence landfill
10	**Inert waste**	– Glass from Seychelles Breweries – Plastics – Incinerator ash	Anse Royale landfill

SOURCE: Solid Waste Master Plan 2003-2010

Recycling Opportunities – past, present and future

Recycling of biodegradable matter, metal and PET plastic contributes significantly to the reduction of waste ending up in the landfill. A number of businesses have been set up in the last 10 years or so to cope with recyclable waste, either processing said waste locally or exporting them to countries that are willing to buy waste as a raw material in their manufacturing process. A series of interviews were conducted in April, May and June 2013 with these businesses to see what is working, what isn't and how Government could assist to improve the viability of the recycling/waste export business so as to divert the maximum possible waste from the landfills.

Results of the survey on waste management in Seychelles

As previously mentioned, this research brief on the status of waste and waste reduction initiatives in Seychelles contains information based on interviews with Government Agencies, the private sector, NGO's and individuals involved in waste management. The aim is to get their views on how the system is working and what new options should be considered to accommodate their needs so as to provide baseline

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information for further discussion of the way forward through public consultation with relevant stakeholders.

A list of potential candidates to interview was compiled using data from the MEE, information provided by the S4S Waste Task Force and personal knowledge of the author. Table 2 shows a list of organisations from which representative were interviewed as part of this survey. The interview transcripts are included in Annex 1. These organisations divert over 600 tons of waste from the landfill each month, either by processing the waste locally or exporting it overseas.

Table 3 is a list of other organisations that were identified as potential candidates but the author could not interview representatives either because of a conflict in schedules given the limited time available in which to conduct the interviews or because the author was unable to make contact with a representative with the information provided by the Ministry of Environment and Energy, the S4S Waste Task Force or the telephone directory.

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Table 2. List of organisations from which representative were interviewed as part of the survey on the Status of Waste Management

Name of Organisation	Location	Contact Person	Telephone	Email	Type of Waste Management
Shop 4 hope	Victoria	Ashvin Seeboo	2727007	aseeboo@myt.mu	Second-hand shop
APANA	Baie Lazare	Lucy Luc	4361107	lucrluck@intelvision.net	glass recycling
Navins paper recycling	Providence	Navin Naidoo	2779889	navinsrecyclingpaperindustry@gmail.com	Paper recycling
Surya Enterprise	Providence	Sanjay Naidoo	2511329	sanjaynaidoo@gmail.com	scrap metal & car batteries
Leevac Trading	Providence	Mr. Loizeau	2512587	metaluco@seychelles.sc	scrap metal & car batteries
Seychelles Breweries	Le Rocher	Russell Finesse	2510077	russel.finesse@diageo.com	All waste – CSR policy
Regenerate	pending	Justin Houareau	2545515	jkhoareau@gmail.com	Biodiesel
De-Recycling	St. Louis	Donald Ernesta	2514892	derecycling@live.com	PET/Aluminium can/glass redeem Centre
Deenu's Redeem centre	Praslin	Johnny Accouche	2713727	n/a	PET redeem Centre
LWMA landfills	Praslin & La Digue	Barry Joseph	2722781	bjoseph@gov.sc	Landfill on Praslin & La Digue
Lemuria Resort & Spa	Praslin	Marie Noella Simeon	2516282	Hkm@lemuriaresort.com	All waste – CSR policy
Melvin's Electronic Repair	Belonie	Melvin Andoise	2774572	n/a	Electronic repair shop
Samlo and sons	Providence	Prageeth Lakmal	2516918	samlo@seychelles.net	Metal recycling
Sustainability for Seychelles	Victoria	Michele Martin	2519135	martinzanlwi@gmail.com	glass recycling
Harini Company Limited	Providence	Rengassamy Kandan	2523355	harini@seychelles.net	PET shredding & exportation
Providence Redeem Centre	Providence	Geethalaskshmi Kandasamy	2713727	harini@seychelles.net	PET collection & sorting
STAR dust	Providence	Regina Sinon	2521054	Regina.sinon@starseychelles.com	Compost section
Kaju Studio	Takamaka	Juliette Zelime	2583428	kajustudio@gmail.com	inner tubes
MEC Pty Ltd	Le Roche	Johnny Savy	2717114	mec@seychelles.net	tyres
Red Cross Society Seychelles	Providence	Cedrick Francourt	2618992	rcss_logistics@hotmail.com	household items
LWMA	Victoria	Lena Desaubin	2722599	ldesaubin@gov.sc	General waste management
Star waste oil	Providence	Stephan Dupouy	2529999	stephan.dupouy@starseychelles.com	waste oil

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Table 3. List of other organisations that were identified as potential candidates but could not be interviewed for the survey on the Status of Waste Management

Name of Organisation	Contact person	Contact Info	Type of Waste Management
Auto Barn	?	2588888	car & spare parts
Ink doctor	?	2716465	ink cartridge recycling
Island Construction Company	Mr. Bijoux	2522314	?
Scrap and Metal Pty Ltd	Mr.C.Udaya Kumar	2729193	metal recycling
Cable and Wireless Seychelles	Terry Servina	2520476	telecommunication equipment
recycling focal point (MEE)	Beven Vidot	2723884	MEE FOCAL POINT
STAR landfill	Gerard Anacoura	2521056	landfill on Mahé
Waste Fund focal point	Berry Antat	2722877	MEE FOCAL POINT

1. Waste management by category

The organisations listed in Table 2 can be divided into clearly defined categories of waste managers, although there is some overlap in cases where the business has multiple areas of interest. These categories are:

- ✓ **Waste Agency**
  - LWMA Mahé (headquarters)
  - LWMA Praslin and La Digue
- ✓ **Redeem Centres**
  - Deenu's Redeem centre
  - Providence Redeem Centre
  - De-Recycling
- ✓ **Waste Exporters**
  - De-Recycling
  - Surya Enterprise
  - Leevac Trading
  - Samlo and sons
  - Harini Company Limited
  - Star waste oil
- ✓ **Recyclers/Producers**
  - Navin’s Paper Recycling
  - Regenerate
  - Melvin's Electronic Repair
  - STAR dust
  - Kaju Studio
  - MEC Pty Ltd

- ✓ **Non-Governmental Organisations (NGOs)**
  - Atelye Pour Aprann Nouvo Artizana (APANA)
  - S4S
- ✓ **Charitable Foundations**
  - Shop 4 Hope
  - Red Cross Society Seychelles (RCSS)
- ✓ **Corporate Social Responsibility (CSR) policy**
  - Seychelles Breweries
  - Lemuria Resort & Spa

The majority of those interviewed (32%) where involved in exporting waste to other countries for processing, recycling waste locally for reuse or sale on the local market (27%) or operating as waste redeem centres (14%). The remainder where waste management agencies (9%), NGOs (9%), charitable foundations (9%) or companies required to recycle as part of their Corporate Social Responsibility Policy (9%).

2. A brief history of waste management

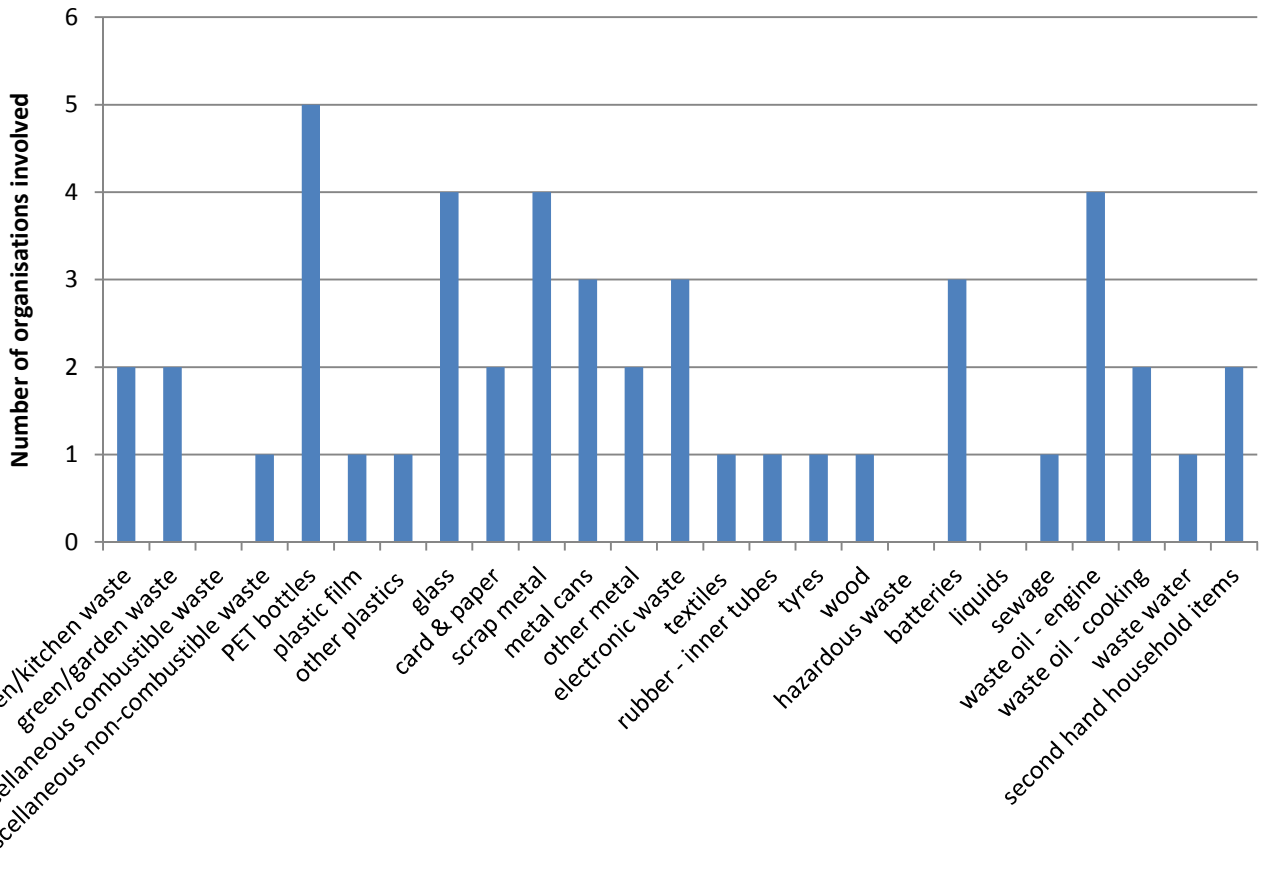
Culturally, Seychelles has a long history of recycling, as the majority of the population are descendent of slaves and nothing went to waste. Today, people tend to throw things away with little thought to the environmental impact or monetary costs. Fortunately, local entrepreneurs have started to recognise that waste is a problem with a profitable solution and have taken steps, albeit small, to make a difference. In the 1970s, Seychelles Breweries set up a system whereby they would pay 10 cents for all intact bottles returned to the factory. In 1980, Mr and Mrs Savy started up a tyre re-treading company that is still operational today, diverting a significant amount of rubber tyres from the landfill. Some 9 years later, the RCSS was established in Seychelles and while it does not deal with waste per say, it provides low income families with second-hand items that may have lain neglected in someone's home or gone to the landfill so as to make space for something new and shiny in your home. In 1996, STAR (Seychelles) won the tender to manage waste in Seychelles and things really took off as the Government realised there was an urgent need to reduce waste production in Seychelles. While STAR may not have necessary made great strides in recycling, it has diverted roughly 350 tons of waste oil and 100 tons of green waste annually from the landfill and provided opportunities for smaller businesses, such as the scrap metal exporters Samlo and Sons, to set up in 2000. Further changes in Government policy, meant that new opportunities opened for small business such as Harini Enterprise who in 2002 worked with private companies such as Seychelles Breweries, Seychelles Marketing Board (SMB), Sodepack and Plaisance Bottles to collect plastic PET bottles for shredding and exportation. In 2005, De-Recyling started recycling tomato ketchup bottles from SMB and later expanded to PET collecting and exporting aluminium cans. Surya Enterprise also set up in 2005 to export scrap metal and old car batteries while in 2007, Navin's Paper Recycling started to address the large quantities of paper and card waste generated by local offices. In 2009, the Seychelles Round Table with the support of the owners of the Teemoljee Arcade, set up a first second-hand shop despite people insisting that no Seychellois would be seen dead buying someone else's junk – turns out they were wrong! Unfortunately, the Shop 4 Hope did not last very long as the Arcade was demolished for renovation. In In 2009, Sustainability for Seychelles received funding to expand on the glass recycling programme that Seychelles Breweries had established in the 1970s and with a 2012 directive from the Diageo head office, Seychelles Breweries began implementing a 'zero waste to landfill' policy as part of their

corporate social responsibility. Today, entrepreneurs continue to surprise us with their ingenuity. Take Juliette Zelime of Kaju Studio, who is producing bags and other products from the inner tubes of tyres as well as used gunny bags or Justin Hoareau of Regenerate who hopes to set up a business that will make biodiesel from vegetable oil.

3. Types of waste being processed/ recycled/exported

Using the 17 categories of waste generated by SWAC under the Solid Waste Master Plan (2003-2010) as a baseline, Figure 3 shows which waste categories are being dealt with in Seychelles by the organisations surveyed.

Figure 3. Categories of waste being recycled/processed/exported by organisations surveyed



For the most part, waste was processed locally and then either exported overseas (32%) to countries such as China, India, Vietnam, UAE, Mauritius to name but a few, or sold as finished products on the local market (27%). Exported waste included: shredded PET bottles, crushed aluminium cans, bales of card and paper, bales of scrap metal and other metal waste, electronic waste, heavy duty batteries, drums of waste oil and containers full of plastic housing used for TVs and other electronics. The processed waste on the other hand, consisted of green waste converted to compost, old gunny bags and inner tubes of tyres made into bags, backpacks and purses, used car tyres that are re-treaded, glass crushed and stored for future use and eventually waste oil will be converted to biodiesel. In some case, the waste was simply sorted and sent to different parts of the landfill (22%) or in the case of

redeem centres and Seychelles Breweries, sorted and sold locally in a niche market (18%). In the case of the 2 charitable foundations, second hand items were sorted, cleaned and sold or donated to families in need.

4. Operating a waste management company

The various organisations surveyed operate (or operated) 5 or 6 days a week (36% and 41% of total respectively), as they tended to employ fulltime staff. A minority operate once a week (e.g. Deenu's Redeem Centre) or by demand (e.g. Leevac Trading and STAR dust). In the latter cases, the organisation employed causal labour or part-time staff. Kaju Studio and Regenerate were still in the planning stages and as such had no fixed operating hours.

For the most part, the people involved in waste management were leasing land from Government (45%) and had built a warehouse/office on the site at their own expense (32%). A smaller number (32%), such as Navin's Paper Recycling and Seychelles Breweries actually owned their own premises. In the case of Shop 4 Hope the premises had been donated by the private sector for a short period of time, while APANA and the RCSS received grants with which to build their current premises.

Most of the companies that participated in this survey where operating actively (77%) and making a profit (41%). This consisted mainly of the waste exporters and the redeem centres, although redeem centres are subsidised by the Government of Seychelles, so they would probably only break even if this support was revoked. Navin's Paper Recycling is operating at a loss and survives through subsidies from Mr Naidoo's other business interests, despite his family's insistence that he give up his passion for paper pulp. APANA, S4S and RCSS rely heavily on donor funds and Government support to operate. Unfortunately, S4S had to discontinue the glass recycling project in September 2012, after Government denied an application for additional ETF funds to cover the cost of glass collection and crushing. Shop 4 Hope was active for 12 months and was able to operate due to the generous support from the owners of the Teemoljee Archade, who provided a rent-free space. Shop 4 Hope proved that there is a great need in Seychelles for a second-hand shop that can benefit low income families, who refuse to accept hand outs from RCSS. Kaju studio and Regenerate, while still in the planning stages, prove that there are opportunities for young entrepreneurs to join in the battle against waste.

5. Employment opportunities in waste

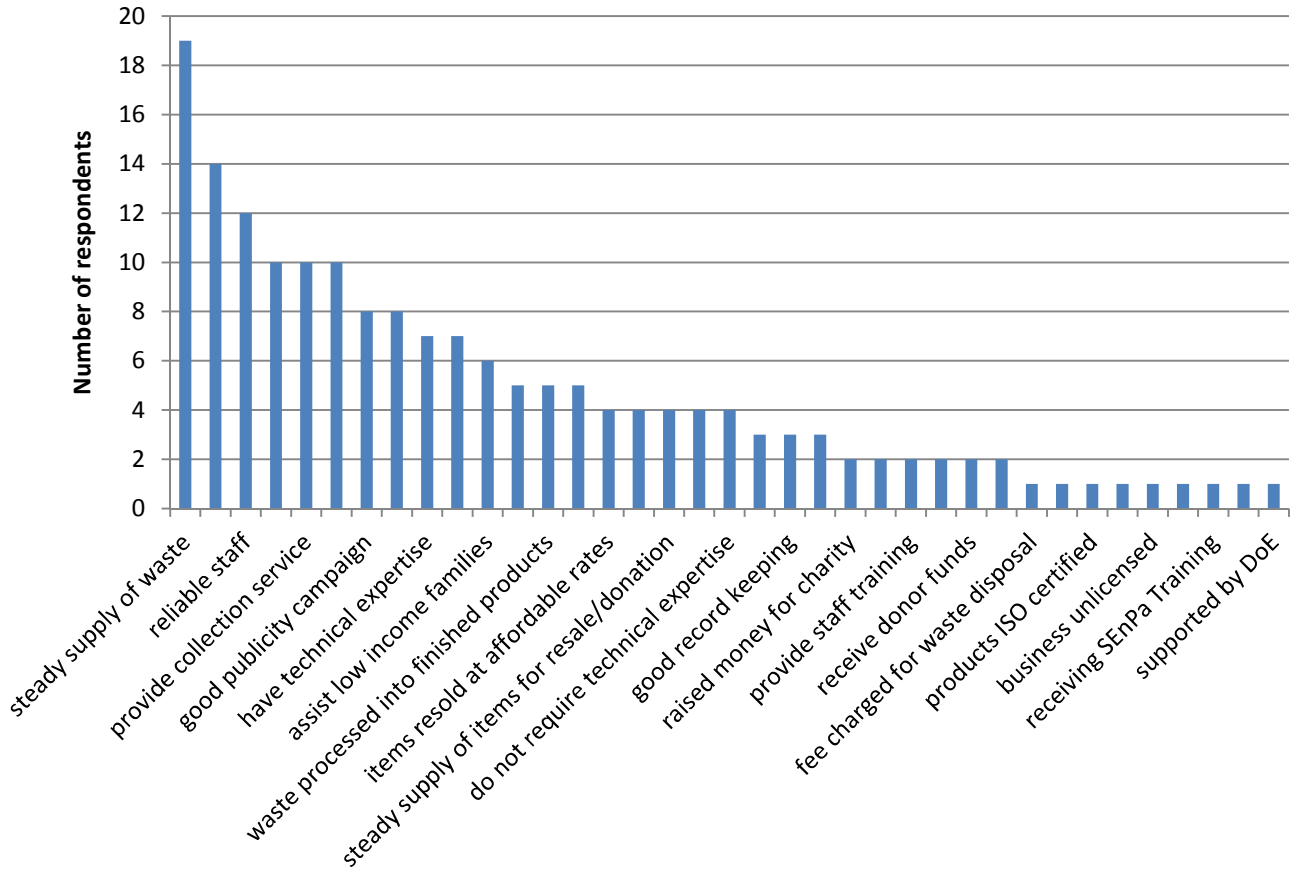
Although some foreign workers are employed in waste management, most of the organisations that participated in the survey employed Seychellois staff, as much of the work done sorting and processing waste did not require technical skills or expertise. In fact, 50% of the companies surveyed employed 100% Seychellois, while 36% employed a majority of Seychellois staff.

Nearly 100 people are or where employed in waste management based on the info provided during the interviews. Of these, 76 are in full time employment, 10 are part-time workers while the remainder worked on a voluntary basis.

6. The good

Nearly everyone agreed that there was no lack of raw materials in Seychelles (86%) and that, for the most part there was sufficient space available to process this waste (64%). Given the difficulties of sorting waste, the successful companies had built a team of reliable staff (55%) and were equipped with good quality machinery (45%). For sufficient quantities of waste, a collection service was offered (45%) or the company had a prime location to facilitate waste delivery (45%). They also benefited from a good publicity campaign (36%) as well as word of mouth advertising (36%). Other positive aspects of waste management have been summarised in Figure 4.

Figure 4. The positive aspects of waste management according to the organisations surveyed



7. The bad

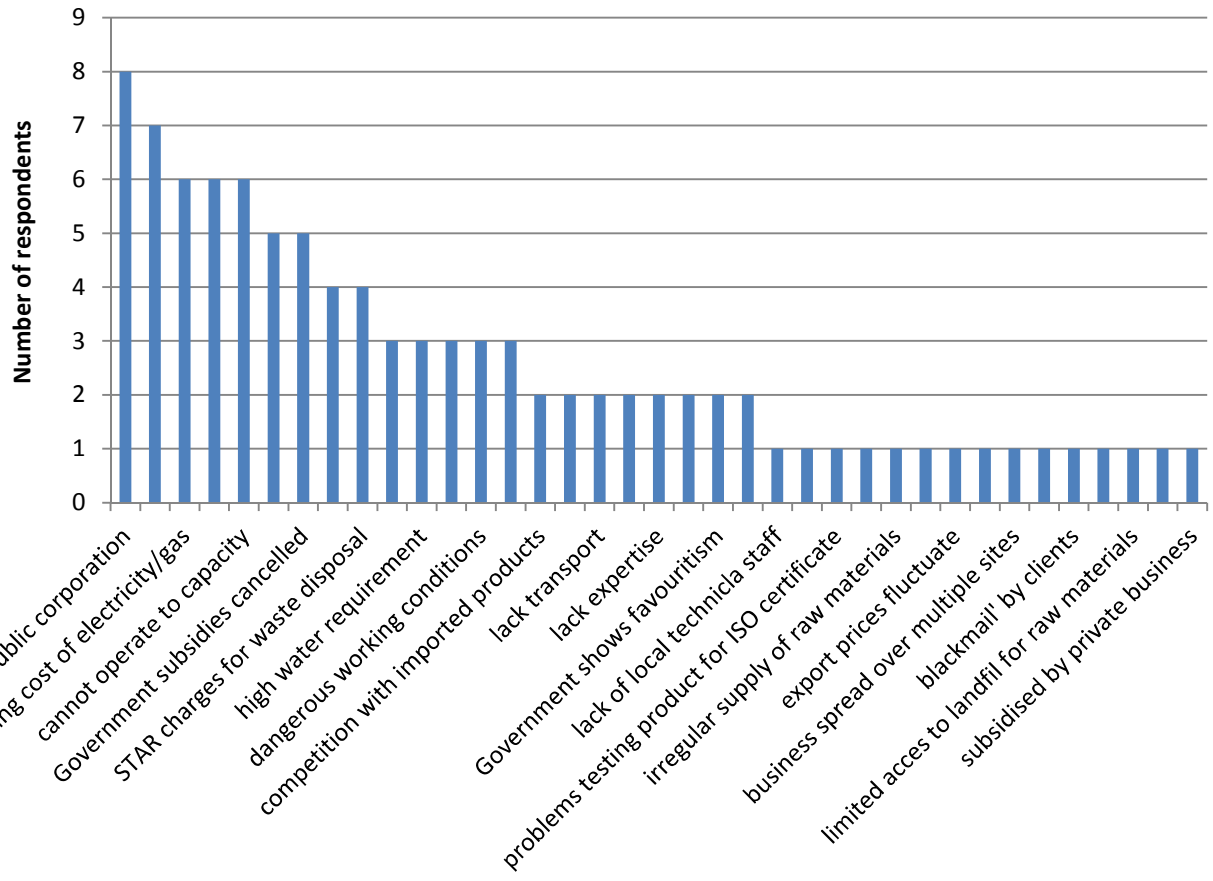
Although a number of challenges where identified, those interviewed, for the most part, had very few complaints. It is not clear if that is because there really wasn't any problem or if they were concerned about the consequences for voicing out against the Government who had granted them the tender to operate. The most common complaints were:

- high overheads, particularly with regards to utility bills (41%)
- limited public corporation in sorting waste (36%)

- understaffed (32%)
- increasing cost of electricity/gas (27%)
- limited operating space restricting expansion (27%)
- cannot operate to capacity due operating constraints (27%)
- lack basic resources (23%)
- Government subsidies cancelled (23%)
- poor marketing of finished products (18%)
- STAR charges for waste disposal (18%)

Other negative aspects of waste management have been summarised in Figure 5.

Figure 5. The negative aspects of waste management according to the organisations surveyed

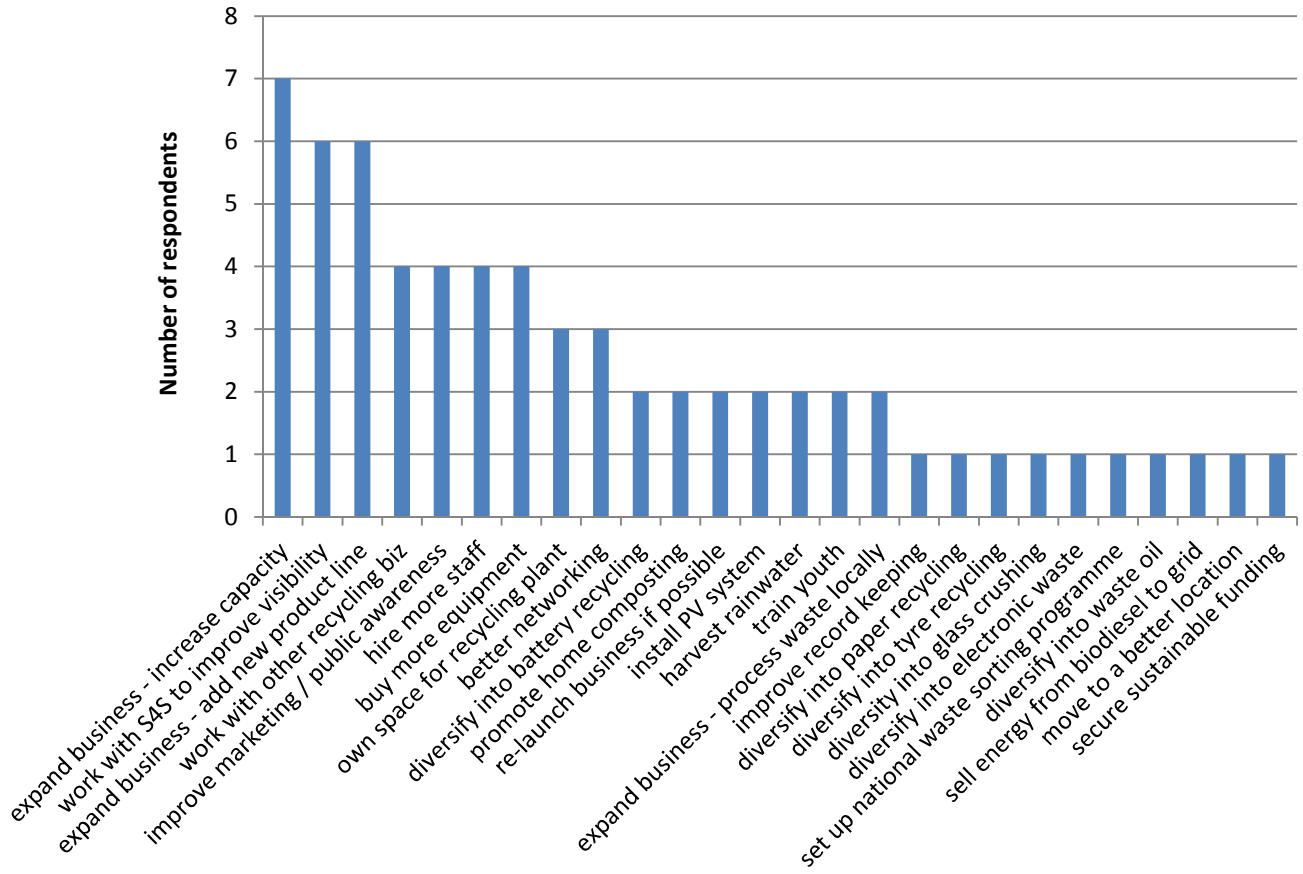


8. The future

With the right Government support, there is definitely a future in waste management. Many of those interviewed, where considering increasing their capacity for dealing with waste (32%), working with S4S to improve visibility (27%), expanding the business by adding new product lines (27%), working with other local recyclers (18%), improve their marketing and general public awareness (18%), hiring

more staff (18%) or buying more equipment (18%). Other ideas for future plans in waste management have been summarised in Figure 6.

Figure 6. The future of waste management according to the organisations surveyed

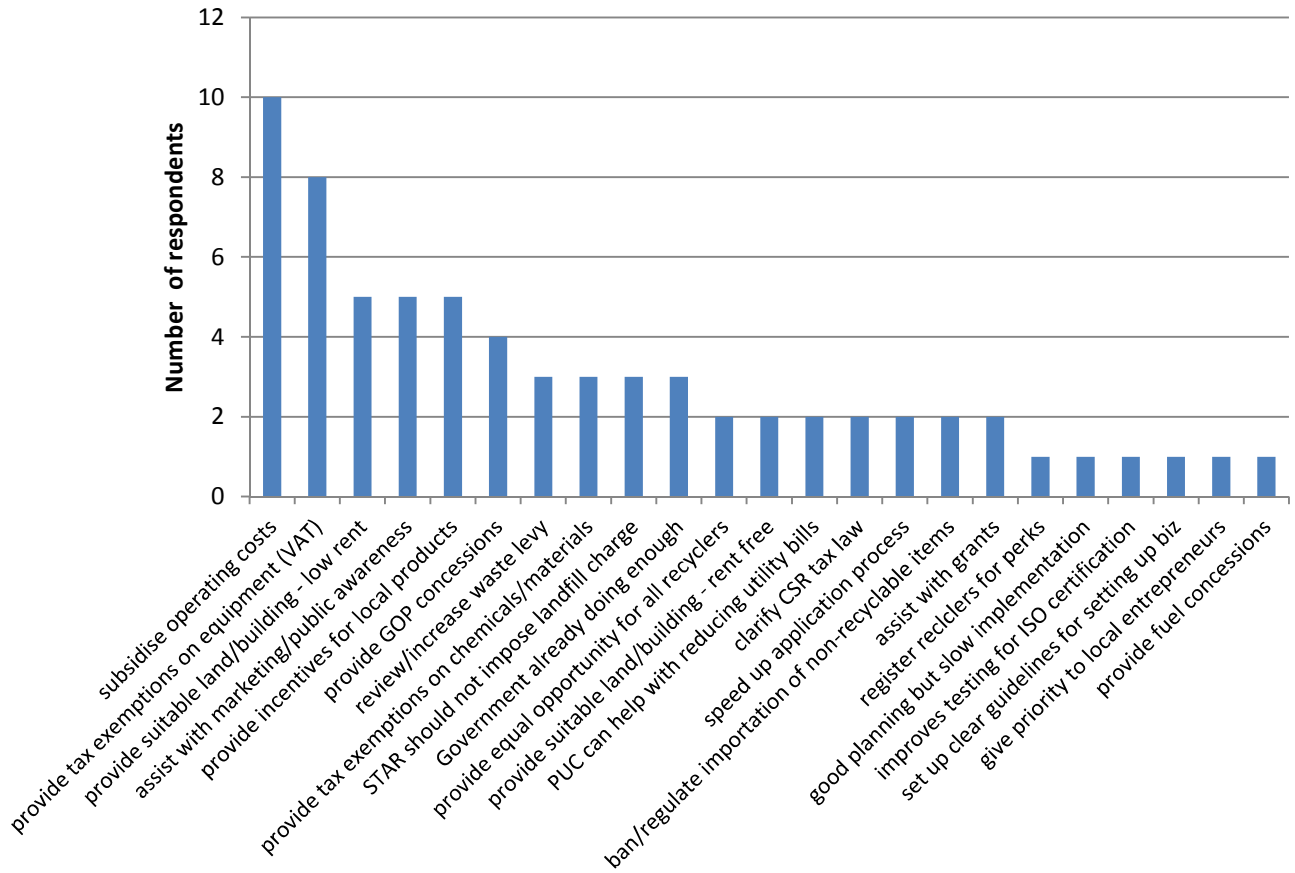


9. A helping hand from Government

For waste management to work in Seychelles, Government assistance is required, if not to sustain the business given the small volume of waste being dealt locally, then at least to get it off the ground. One of the most common requests from those interviewed was for Government subsidies to help cover the operating cost (45%), as well as tax exemptions (i.e. VAT) when importing equipment and/or selling finished products (36%). For those places with space restrictions, there was a request for suitable land or buildings with long term leases at reduced rates (23%) while those struggling to attract clients needed assistance with marketing and/or public awareness (23%). Businesses such as Navin's Paper Recycling, Melvin electronic repair shop, Seychelles Breweries etc. were competing with cheap imported products and hoped the Government could provide incentives for local products (23%), such as Navin's recycled eggs trays, Melvin's second hand televisions and Seybrew's locally produced beverages. While most of the work in waste sorting did not require specific skills, those involved in processing waste required technical staff to manage operations and where struggling to find qualified

Seychellois to do the job. As such, they were hoping that Government would consider approving GOP concessions (18%) so they could operate to capacity. There was also a request to review the waste levy (14%) being imposed on PET bottles and aluminium cans, either to increase the value of the levy or to extend it so it include imported PET products. MEC Pty suggested adding a levy of the disposal of old tyres as they could be chopped into smaller, more manageable chunks for recycling or disposal. Tax exemptions on imported chemicals and raw materials (14%) was another hot topic, particularly for Navins's Paper Recycling, Kaju Studio and Seychelles Breweries. There were some complaints from recyclers that STAR imposed a landfill charge when they needed to dispose of non-recyclable materials – they felt this should be waived (14%). Some felt that Government was already doing enough but it is difficult to gauge the accuracy of the statement as the companies who said so where either benefiting from government subsidies or relied on being awarded a Government tender to operate. Other ideas for future plans in waste management have been summarised in Figure 7.

Figure 7. Suggestions on how Government can help waste managers



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Recommendations

Globally, waste management is a profitable business with an infinite source of raw material. Unfortunately, as an island state, Seychelles is unable to compete with global markets given our isolation and the high cost of exportation. Yet, we need to take a serious look at waste management as we have limited land on which to dispose of said waste safely. There is a great interest by local entrepreneurs, who are keen to jump at the opportunity to invest in a recycling plant but because of the high initial investment, these plans sit on the back burners and remain a pipe dream. If we are to significantly reduce the amount of waste going to the landfill, then these entrepreneurs require support from the Government and subsidies, the latter of which could be funded by the Environmental Trust Fund and/or the newly imposed CSR tax. While some business may have particular constraints (see annex 1), for the most part they seem to have the same requirements. Below are a number of recommendations based on some of the feedback received while conducting the waste management surveys:

- ✓ There is a need for a coherent plan and funding structure to promote waste reduction, stimulate the local reuse of waste on a commercial level, and guide plans for the export of high value recyclables.

- ✓ There is a need to showcase private sector companies, notably Seychelles Breweries, who are demonstrating leadership in eliminating waste going to landfill, in a national dialogue on dealing with waste more sustainably.

- ✓ There is a need for pilot demonstration projects in communities to study options for waste reuse and recycling so as to help CBOs become more conversant and experienced in sustainable waste management. These projects can then be up-scaled on a national level and incorporated into a national waste reduction policy.

- ✓ There is a need for clearly defined waste reduction targets for various categories of waste with a defined timeline for achieving said target.

- ✓ There is a need to promote waste sorting at source, particularly at household level where schools and community centres could be used as potential collection points for inert waste. This is based on the assumption that a regular collection schedule will be imposed so as to ensure the cleanliness of the compounds in question as well as general public health and safety and that the waste will be diverted away from the landfill.

- ✓ There is a need to review the existing waste levy being imposed on PET bottles and aluminium cans, either to increase the value of the levy or to include imported products for recycling. Other waste categories should also be considered under the policy, particularly when it comes to disposal of bulky items such as tyres.

- ✓ There is a need for a registry of all businesses involved in recycling waste either for export or for local processing into finished products which can be sold locally or internationally. There should be clear guidelines for setting up a waste recycling/processing/exporting business and the application process should be simplified to facility entry into this field for new entrepreneurs. This registry should be

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overseen by a single Government Agency to minimise bureaucracy but it is important to ensure that there will be no favouritism particularly when it comes to tendering particular contracts.

- ✓ All registered recyclers should be exempted for paying landfill fees to STAR if they need to dispose of non-recyclable waste

- ✓ Depending on individual requirements, registered recyclers should be provided with a suitable plot of Government land on which to operate with long term leases at preferential rates. In fact, there should be a designated recycling zone on the reclaimed land, either at Providence or one of the other islands, where such operators can be based.

- ✓ All registered recyclers should benefit from tax exemptions which may need to be reviewed on a case by case basis. This should include:
  - GOP concessions
  - VAT exemptions
  - CSR tax exemption
  - Tax exemptions on imported equipment for processing waste
  - Tax exemption on imported raw materials/chemical for processing waste
  - Tax exemptions on fuel and/or gas

- ✓ Government needs to provide incentives for local products from recycled waste by either imposing a tax on imported items (e.g. tyres), regulating importation or banning them altogether (e.g. plastic egg trays or cartons)

- ✓ A National Waste Awareness campaign is urgently required with input from all stakeholders including Government agencies, private sector, NGOs and the general public. It should deal with behavioural change (e.g. littering), but also inform people of recycling opportunities in Seychelles. S4S already has already produced a leaflet which provides some basic information and contact details (see annex 2)

- ✓ There is a need for a 'sustainability centre' where people can visit and see recycling in action. It can also provide an outlet for small recyclers such as Kaju Studio or Shop for Hope who need to keep their overheads low if they are to break even as well as provide a venue for technical training for young entrepreneurs. Sustainability for Seychelles is already in the process of developing the outline for such a centre which will serve as a demonstration site and training centre to showcase multiple aspects of sustainability in the context of Seychelles e.g. energy conservation and efficiency, renewable energy , sustainable building design and construction methods, re-use and recycling waste, conservation of water and rainwater harvesting and home gardening.

References

GEF/SGP Strategic Project Proposal for "engaging civil society in sustainable waste management" 2013-2015
Sanitation Country Profile 2004
Seychelles' Solid Waste Master plan 2003-10
Seychelles' Sustainable Development Strategy 2012-2020

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