



Strategic Roadmap for Better Plastics Management in Accra

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SEURECA

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Client: DFID

PO. No.: 8425

Contact and correspondence: IMC Worldwide, 64 – 68 London Road
Redhill Surrey, RH1 1LG UK
TEL: +44 (0)1737 231400
FAX: +44 (0)1737 771107
e-mail: Arielle.Dove@imcworldwide.com

Author: Seureca

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Call Down Manager: Arielle Dove

Quality Assurance: Jonathan Parkinson 04/12/2019

Quality Control Arielle Dove 24/12/2019

Output Approval: Neil Scotland

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Conflicts of interest

There was no conflict of interest in the writing of this report.

Picture

P1: Production of PS containers (Accra, 2019), P2: Maritime Academy Beach (Accra, 2019), P3: Borla-Taxis at IRECOP (Accra, 2019), P4: Plastic aggregation and sorting at Pick It Sorting Centre (Tema, 2019), P5: Recycled plastic pellets at ACARP (Accra, 2019), P6: Waste Pickers at Kpone Disposal Site (Tema, 2019)

EXECUTIVE SUMMARY

The Strategic Roadmap aims to present a timebound plan to implement solutions that will improve plastic management in Accra and its surroundings at all the stages of the plastic chain (importation, production, manufacturing, distribution, consumption, collection and recycling) and for all the different types of stakeholders (international, institutional, private, informal and civil society).

The report categorises and analyses the challenges identified during the Baseline Study (Section 2). The vision and key principles are then defined, which in turn provide a framework for the development of solutions (Section 3). The proposed vision underpinning this Strategic Roadmap is the following:

- To reduce permanently plastic waste leakage into the environment (zero plastic leakage objective);
- To increase circular material use;
- To deliver socio-economic benefits for the local community by creating new jobs and ensuring social equity; and
- To improve the environment stake for all.

Based on the vision and key principles, solutions are proposed to address the challenges in a complementary manner (Section 4). The proposed solutions include the contributions of the different stakeholders, expressed during meetings or during workshops. In particular, the APMP organised three meetings:

1. A two-day workshop on the design of collection systems, the results of which are summarised in the Technical Note #6 available in the Annexes (Annex P); and
2. A one-day workshop on the Extended Producer Responsibility Scheme, with members of the GRIPE; and
3. A presentation of the draft Strategic Roadmap to key institutional stakeholders (26/11/2019, the minutes are available in Annex Q).

Lastly, Recommended Actions (RAs) for the implementation of solutions are identified and presented with a timeline in the Strategic Roadmap (Section 5).

The table below summarises the main challenges identified and the proposed solutions. The proposed solutions are then clustered into different 'recommended actions' (RAs) that could be implemented by different stakeholders and for which a strategy is presented in the Annexes (Annexes A to O). The RAs propose long-term activities to be implemented.

Table 1: Summary of the Strategic Roadmap Challenges, Solutions and Recommended Actions

Topic	Challenges	Solutions	Recommended Actions
1 - The Plastic Chain	<p>Low value in the plastic chain:</p> <ul style="list-style-type: none"> ● Production of low-quality recycled products (flakes and pellets) ● Downcycling of water sachets ● Lack of market for recycled plastic 	<p>Create more value in the plastic chain with a circular economy approach:</p> <ul style="list-style-type: none"> ● Recycle PP and PET flakes into higher-value products ● Upcycle the water sachets and promote alternatives ● Improve the quality of recycled products 	<p>RA#1. Recycle PET RA#2. Recycle PP RA#3. Improve the water sachets model and promote alternatives RA#4. Recycle better: an approach to improve recycled products' quality</p>
2 - Recycling	<p>Lack of recycling options for some polymers and products:</p> <ul style="list-style-type: none"> ● Lack of recycling options for LDPE plastic bags ● Lack of recycling options for PET ● Lack of recycling options for PP films and raffia ● Lack of recycling options for PS ● Lack of recycling options for composites 	<p>Limit the use of some plastic products and improve recycling:</p> <ul style="list-style-type: none"> ● Limit and Promote Alternatives for LDPE, PP films, PS and Composites ● Improve the recycling of PP raffias and PET 	<p>RA#1. Recycle PET RA#2. Recycle PP RA#3. Improve the water sachets model and promote alternatives RA#4. Recycle better: an approach to improve recycled products' quality RA#5. Reduce the use of short-life and difficult to recycle plastics RA#6. Improve recovery and disposal solutions for non-recycled plastics</p>
3 - The informal sector	<p>Lack of transparency and long-term vision of the informal sector plastic activities:</p> <ul style="list-style-type: none"> ● Lack of transparency ● Unsteady business-model with no long-term vision 	<p>Empower the informal sector:</p> <ul style="list-style-type: none"> ● Train and build capacity ● Map and organise the informal sector 	<p>RA#7. Empower the informal sector RA#8. Build capacity RA#9. Develop education and certifications</p>
4 - Logistics	<p>Burden of logistics:</p> <ul style="list-style-type: none"> ● Costly transportation of plastics ● Lack of infrastructure ● Zoned collection of municipal solid waste 	<p>Improve infrastructure and access to equipment:</p> <ul style="list-style-type: none"> ● Improve equipment's lifetime and accessibility ● Create transfer stations, sorting centres and buying centres 	<p>RA#10. Develop infrastructure for collection, sorting and transfer RA#11. Finance plastic management RA#12. Organise the plastic sector</p>

Topic	Challenges	Solutions	Recommended Actions
		<ul style="list-style-type: none"> Develop source segregation and separate collection 	RA#13. Conduct IEC
5 - Coordination	Lack of stakeholders' coordination: <ul style="list-style-type: none"> Lack of coordination between institutional stakeholders Lack of coordination among plastic chain actors 	Enhance stakeholders' coordination: <ul style="list-style-type: none"> Clarify the roles and responsibilities of the institutional stakeholders and enhance coordination Enhance transparency and coordination in the plastic chain 	RA#7. Empower the informal sector RA#12. Organise the plastic sector RA#14. Strengthen the legal and institutional framework
6 - Knowledge / Data Management	Lack of expertise and public education, and poor data management <ul style="list-style-type: none"> Lack of knowledge and expertise Lack of public education and sensitisation Poor data management 	Train, Inform, Educate and Communicate <ul style="list-style-type: none"> Build capacity to increase the knowledge and know-how in plastic management Develop education and certifications Implement IEC campaigns Monitor data on plastics management 	RA#8. Build capacity RA#9. Develop training courses and certifications RA#13. Conduct IEC RA#15. Monitor data on plastic management
7 - Financial Resources / Legal Framework	Lack of financial support and insufficient legal framework <ul style="list-style-type: none"> Lack of a consolidated and effective legal framework and limited public resources Lack of stakeholders' commitments and limited financial support 	Reform the legal framework and develop supportive financial mechanisms <ul style="list-style-type: none"> Strengthen the legal framework and public financial support Develop financial mechanisms and encourage stakeholders' commitments 	RA#8. Build capacity for the actors of the plastic chain RA#9. Develop training courses and certifications RA#14. Strengthen the legal and institutional framework

The recommended actions should be implemented by different stakeholders and supported by financial resources. The following table presents the roadmap (stakeholders, resources, timeline, risks, mitigations measures) for the implementation of the RAs.

Table 2: Recommended Actions Roadmap

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>RA#1. Recycle PET</p> <ol style="list-style-type: none"> 1. Recycle PET into food-grade pellets 2. Recycle PET into non-food-grade pellets. Two potential uses identified: braids and textile. 3. Recycle PET into flakes at an industrial scale 	MESTI / private actor operating or investing in the plant	Private investments	Feasibility study: 3 months Permits, registration, EIA, plant construction: 1 year to 3 years depending on the plant	Insufficient quantity of PET for the cost-effective development of a plant Labels in PVC that prevent PET from being recycled into food-grade rPET Absence of food-grade rPET standards and thus impossible use of rPET in local bottling production	Recycling of PET into flakes for export Strengthening of the collection system for plastics Development of standards for labels' production Development of standards for rPET
<p>RA#2. Recycle PP</p> <ol style="list-style-type: none"> 1. Recycle PP raffia bags into long-lasting products 2. Limit the use of PP films 3. Improve recovery and disposal solutions for non-recycled PP films (cf. RA #6) 	<p>Recycling of PP raffia bags and alternatives development: private sector (for ex: GPMA)</p> <p>Recovery facility: MESTI / private actor operating or investing in the plant</p>	<p>Recycling of PP raffia bags: grants, loans, private investments</p> <p>Alternatives development: grants, loans, private investments</p> <p>Recovery facility: private investments</p>	<p>Feasibility study for recycling: 3 to 6 months Permits, registration, EIA, plant construction: 1 year</p> <p>Identification and development of alternatives: 6 months</p> <p>Recovery facility feasibility study: 3 to 6 months Technology identification, detail design engineering permits, registration, EIA, plant construction: 1 to 3 years</p>	<p>Lack of financial support (small grants/loans) for recycling and development of alternatives Importation of PP films in finished products Lack of commitments from PP films users for alternative materials</p>	<p>Development of an investment plan and mobilisation of financial resources Development of an EPR system incl. difficult to recycle plastics</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>RA#3. Improve the water sachets recycling model and promote alternatives</p> <ol style="list-style-type: none"> 1. Establish standards for the production of water sachets 2. Increase the use of alternatives (dispensers, 15/10/5 L water bottles, filters) 	<p>Standardisation: NASPAWAP / GSA</p> <p>Alternatives: Water bottling companies and companies proposing filters</p>	<p>Development of standards: public funding, international financing</p> <p>Increasing the use of alternatives: costs supported by the private sector</p>	<p>Development of standards: 6 months</p> <p>Increasing the use of alternatives: 6 months</p> <p>Spreading the use of mobile units: 1 to 5 years</p>	<p>Resistance to change by water sachets producers</p> <p>Less employment for water sachets street vendors</p> <p>Reduced activity for water sachets producers (loss of jobs)</p>	<p>Development of a change management plan</p> <p>Assessment of economic and social impact on the water sachets sector</p>
<p>RA#4. Recycle better: an approach to improve recycled products' quality</p> <ol style="list-style-type: none"> 1. Develop the production of long-lasting products made of recycled plastics 2. Produce recycled pellets of high quality 3. Promote recycled products 	<p>Recyclers, GPMA and GSA</p>	<p>Private investments, grants, loans, public funding</p>	<p>From 6 months to 2 years depending on the plastic polymer / the proposed product</p>	<p>Lack of financial support (small grants/loans) for better recycling</p> <p>Lack of demand for recycled pellets and products</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Inclusion of recycled products in public tender</p> <p>Development of a branding strategy and promotion of r-pellets' quality</p>
<p>RA#5. Reduce the use of short-life and difficult to recycle plastics</p> <ol style="list-style-type: none"> 1. Design easily recyclable products (eco-design) 2. Develop and/or promote alternatives to short-life and difficult to recycle plastics 3. Change the habits of the plastic chain actors 	<p>Upstream design, alternatives and behaviour change: Recyclers, GPMA and GSA</p> <p>Banning: MESTI</p>	<p>Costs supported by the private sector</p> <p>Banning: public funding</p>	<p>Upstream design: 6 months' minimum</p> <p>Development of alternatives: 3 months to 1 year depending on the product</p> <p>Behaviour change: 3 months' minimum</p> <p>Banning: 1 year minimum,</p>	<p>Resistance to change by manufacturers and producers</p> <p>Design decided at headquarters for international companies</p> <p>Reduced activity for manufacturers and producers of banned</p>	<p>Development of a change management plan</p> <p>Assessment of the economic and social impact of banning</p> <p>Support of international financing institutions</p> <p>Support of the local and national government</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
4. Ban some short-life and difficult to recycle plastics			long legal process	products Reluctance of the government to ban harmful products if their production provides employment to the population	Clear commitment of the government to fight plastic pollution and support to businesses having a circular economy approach
RA#6. Improve recovery and disposal solutions for non-recycled plastics 1. Develop plastics recovery 2. Improve the disposal of waste	Recovery facility: MESTI / private actor operating or investing in the plant Disposal: MSWR	Recovery: private investments, public funding, international funding Disposal: public funding, international funding, PPP scheme	Recovery facility feasibility study: 3 to 6 months Technology identification, detail design engineering permits, registration, EIA, plant construction: 1 to 3 years Assessment of disposal sites in Accra and improvement plan: 6 months to 1 year Disposal site rehabilitation: 1 year to 3 years Implementation of a new landfill: about 5 years	Lack of large public funding for disposal improvement Difficulties in finding appropriate sites location for disposal & recovery facility	Development of an investment plan and mobilisation of financial resources Support of international financing institutions
RA#7. Empower the informal sector 1. Map, organise and engage the informal actors (associations and cooperatives, use of digital tools, etc.) 2. Create a plastic hub (incl. to	Mapping and organising, capacity building: NGOs or organisations working with the informal sector (Environment 360, WIEGO) Hub: MESTI / actor interested	Mapping and organising: public funding, grants Hub creation: private investments, public funding	Mapping: 3 months Organising: 6 months to one-year minimum Hub creation: 1 year Capacity building	Lack of financial support (grants/ public funding/ private investments) Difficulty to reach informal actors	Development of an investment plan and mobilisation of financial resources Use of local organisations to reach informal actors

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
support the formalisation of businesses) 3. Build capacity and educate	in leading the creation of a plastic hub		implementation: 3 months to 1 year		
RA#8. Build capacity 1. Implement training sessions 2. Create a knowledge centre (cf. RA#15)	MESTI / actor interested in leading the creation of a knowledge centre	Public funding, grants, international funding	Identification of needs and development of a training programme: 3 months Capacity building implementation: 3 months to 1 year Knowledge centre: 1 year	Lack of financial support (grants/ public funding / international funding)	Development of an investment plan and mobilisation of financial resources
RA#9. Develop education and certifications 1. Implement education courses (degree/master) and certifications in plastic management 2. Create a knowledge centre (cf. RA#15)	MESTI, Ministry responsible for education/actor interested in leading the creation of a knowledge centre	Education and certifications: public funding, international funding Knowledge centre: public funding, international funding, grants	Education and certification: 1 year Knowledge centre: 1 year	Lack of financial support (grants/ public funding / international funding) Fragmentation of leading stakeholders (MESTI/ ministry responsible for education)	Development of an investment plan and mobilisation of financial resources Clear definition of roles between the MESTI and ministry responsible for education
RA#10. Develop infrastructure for collection, sorting and transfer 1. Create transfer stations 2. Create sorting centres, buying centres	MESTI, MSWR / private actors involved in plastic collection	Public funding, international funding, private investments	From 1 month to several years depending on the size of the infrastructure	Lack of a coordinated approach	Definition of a clear strategy for plastic collection infrastructure needed, together with the different actors involved in collection
RA#11. Finance plastic	EPR scheme: manufacturers	Public funding, international	EPR scheme: 6 months	Resistance from private	Consultation with private

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>management</p> <ol style="list-style-type: none"> 1. Develop an Extended Producer Responsibility (EPR) scheme 2. Implement structural funding for infrastructures and major investments 3. Implement public financial mechanisms for better waste/plastics management 4. Develop access to finance for small and medium enterprises 	<p>and producers, GRIPE / MESTI</p> <p>MESTI / Ministry of Finance/actor interested in leading the creation of a plastic hub</p>	<p>funding, private investments, grants, loans</p>	<p>minimum for the design of the system and 1 year for implementation</p> <p>Infrastructure funding: 1 year to 5 years depending on the infrastructure</p> <p>Public mechanisms: around 1 year and above, depending on the legal process</p> <p>Access for SMEs (hub creation): 1 year</p>	<p>stakeholders to additional financial commitments</p> <p>Lack of implementation of governmental commitments</p>	<p>stakeholders for the development of financial mechanisms and enforcement measures</p> <p>Clear definition of roles and responsibilities of institutional stakeholders</p> <p>Development of a fair and transparent system</p>
<p>RA#12. Organise the plastic sector</p> <ol style="list-style-type: none"> 1. Coordinate plastic actors' activities (for both formal and informal sectors) 2. Organise plastic collection by both formal and informal actors, including separate collection by service providers 3. Connect plastic producers/manufacturers to plastic recyclers and encourage commitments (funding, purchase of recycled materials, 	<p>Coordination: MESTI / NGOs or organisations working with the informal sector/association of the private formal and informal sector</p> <p>Plastic collection: ESPA / MESTI</p> <p>Connexion: UNDP Waste Resource Recovery Platform</p>	<p>Coordination: public funding, international funding</p> <p>Plastic collection: private investments, public funding, loans, international funding</p> <p>Connexion: supported by plastic actors</p>	<p>Coordination: 1 year and above</p> <p>Plastic collection: 3 months minimum for piloting, and above until all users in a zone receive separate collection</p> <p>Connexion: ongoing (UNDP waste resource recovery platform)</p>	<p>Lack of leadership to coordinate activities and create a connexion</p> <p>High costs of separate collection (equipment, logistics, sensitisation, etc.)</p>	<p>Definition of a coordination strategy with clear roles and responsibilities of stakeholders (especially associations of plastic actors)</p> <p>Definition of a clear strategy for plastic collection with the different actors involved in collection</p> <p>Development of a business</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
etc.)					plan for separate collection
RA#13. Conduct IEC 1. Conduct IEC campaigns 2. Create a knowledge centre/platform	IEC: MESTI / MSWR (implemented via the assemblies) Knowledge centre: MESTI, Ministry responsible for education/actor interested in leading the creation of a knowledge centre	Public funding, international funding, grants	Definition of an IEC plan: 3 months Implementation: 6 months to 1 year, to be conducted annually Knowledge centre: 1 year	Lack of financial support (grants/ public funding / international funding) Fragmentation of leading stakeholders (MESTI/ ministry responsible for education)	Development of an investment plan and mobilisation of financial resources Clear definition of roles between the MESTI and ministry responsible for education
RA#14. Strengthen the legal and institutional framework 1. Clarify the roles and responsibilities of institutional stakeholders and define modalities for coordination 2. Develop a comprehensive and coherent legal framework to fight plastic pollution and improve plastic management 3. Strengthen enforcement and compliance	MESTI	Public funding, international funding	Clarification: ongoing in the National Plastics Management Policy Comprehensive legal framework and enforcement: depends on the legislative document to be developed (Act, Directive, etc.)	Lack of enforcement and lengthy process to reform the legal framework	Consequent consultation with stakeholders to ensure understanding of the new legal framework Definition of a strategy for enforcement and allocation of additional human and financial resources
RA#15. Monitor data on plastic management 1. Generate reliable official data about plastics management	Official data: MESTI / MSWR Knowledge centre: MESTI, Ministry responsible for	Public funding, international funding, grants	Definition of a data management strategy: 6 to 12 months Implementation: 6 months	Lack of financial support (grants/ public funding / international funding) Fragmentation of leading	Development of an investment plan and mobilisation of financial resources

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
2. Create a knowledge centre/platform	education/actor interested in leading the creation of a knowledge centre		to 1 year Knowledge centre: 1 year	stakeholders (MESTI/ ministry responsible for education)	Clear definition of roles between the MESTI and ministry responsible for education

As part of the project, the team will initiate specific activities during the Accra Plastics Management Pilot (APMP) timeframe, mobilise the stakeholders on these recommendations and provide them with additional support for launching the recommended actions (technical support, engagement, etc.).

The following activities have already been completed by the APMP team:

1. Study on the **digital tools** that could be used to coordinate the activities of the actors of the plastic chain (available in Annex R).
2. **Study on the legal framework with recommendations** to determine which reforms/amendments / legal texts could strengthen the legal framework and its implementation (available in Annex S).

The following activities have been launched and will be completed by 31 January 2020:

3. **Preliminary feasibility study for a PET plant**, to assess the potential for the production of recycled PET pellets locally in Ghana.
4. **Support to the GRIPE on the topic of Extended Producer Responsibility (EPR)**, in order to provide financial support to plastics management.
5. **Support to large distributors in Accra for the implementation of alternatives to single-use plastic bags** as a pilot to reduce the distribution of free single-use plastic bags. A workshop with the main supermarkets of Accra will take place on 3 December 2019 to engage them on the topic of the distribution of single-use plastic bags to consumers.
6. **Support to three plastic collectors** for the improvement of their plastic collection scheme in Accra.
7. **Development of a roadmap for the creation of a plastic hub** (vision, mission, strategic actions, cost estimates) that would support actors of the plastic chain and create synergies.
8. **Study on the potential solutions and alternatives for each polymer, including cost estimates**, that could be of use for the actors of the plastic chain and institutional stakeholders to improve recycling and lower plastic pollution.
9. **Development and implementation of a training programme** on key subjects, including Information, Education and Communication (IEC). The programme of the training sessions is available in Annex T.
10. **Development of a roadmap for the implementation of an IEC strategy** to raise awareness about plastics pollution and educate the population on good solid waste and plastics management practices.
11. **Development of an investment plan (high-level cost estimates)** for some activities identified by the APMP team as key for the better management of plastics in Accra and its surroundings.

Lastly, it should be noted that, in addition to the activities and deliverables mentioned above, one key meeting/workshop will be organised by the APMP team in January 2020 with potential investors and donors about solutions that would require financial support (for ex: public institutions, private sector actors, international financial institutions).

ACRONYMS & ABBREVIATIONS

AMA	Accra Metropolitan Assembly
APMP	Accra Plastics Management Pilot
CSO	Civil Society Organisation
DFID	Department for International Development
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
ESPA	Environmental Services Providers Association
IEC	Information, Education and Communication
GRIFE	Ghana Recycling Initiative by Private Enterprises
HDPE	High-Density Polyethylene
LDPE	Low-Density Polyethylene
MESTI	Ministry of Environment, Science, Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MSW	Municipal Solid Waste
MSWR	Ministry of Sanitation and Water Resources
NPMP	National Plastics Management Policy
PA	Polyamide
PET	Polyethylene Terephthalate
PP	Polypropylene
PS	Polystyrene
RA	Recommended Action
SWM	Solid Waste Management
TMA	Tema Metropolitan Assembly
UNDP	United Nations Development Programme

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1 INTRODUCTION

1.1 Project Context

The Accra Plastics Management Pilot (APMP) started in February 2019. It is funded by the Department for International Development (DFID) with the main objective of tackling plastic pollution in Accra, Ghana. The project should be a catalyst to initiate, enhance and fund pilot projects; and act as an integrator to coordinate the efforts of the various initiatives, in order to have a structured and global approach towards plastic management.

The Accra Plastics Management Pilot focuses on Accra and its surroundings (including Tema and other neighbouring areas where industries and companies are based). It targets plastics management and in particular single-use plastics. The Accra Plastics Management Pilot is organised into four main activities that should be completed over the twelve (12) months' duration of the pilot:

1. **Facilitation and Partnership Support**, which aims to strengthen collaboration, between five types of stakeholders - national governmental stakeholders, international organisations, private sector, informal sector and civil society organisations
2. **Technical Support and Action-Innovation**, which aims to assess the current situation in Accra and define a strategy and a roadmap
3. **Investment**, which aims to analyse investment needs and identify potential sources of financing
4. **Replication and Scaling-up**, which aims to develop best practices and a methodology in order to enable the replication and scaling-up of this approach in Ghana and other countries.

1.2 Objectives of the Report

The Strategic Roadmap aims to present solutions that will improve plastic management in Accra and its surroundings at all the stages of the plastic chain (importation, production, manufacturing, distribution, consumption, collection and recycling) and for all the different types of stakeholders (international, institutional, private, informal and civil society).

This report categorises and analyses the challenges identified during the Baseline Study, in order to propose solutions (Section 2). The solutions are developed in line with a defined vision and on key plastic principles recognised internationally (Section 3). The solutions proposed intend to address the challenges in a complementary manner and to be concrete (Section 4). Lastly, specific actions to be implemented are identified and presented with a roadmap (Section 5).

It should be noted that:

- The recommendations proposed are based on meetings with the different stakeholders and also the workshops organised by the APMP team. The APMP team organised one two-day workshop on collection (available in Annex P), one-day workshop on extended producer responsibility and a presentation of the draft Strategic Roadmap to key institutional stakeholders (26/11/2019, minutes available in Annex Q).
- Some of the activities are to be conducted in the APMP's remaining implementation time (end of January 2020). These are clearly listed in the Recommended Actions.
- The National Plastics Management Policy (NPMP) is in the approval process. A draft version was made available in February 2019 to the APMP team. This report does not intend to replace or revise the NPMP, as it is not yet available in its final version, but aims to propose a complementary approach.

2 PLASTIC MANAGEMENT KEY CHALLENGES

During the Baseline Study conducted from February to July 2019, the APMP team identified challenges that are related to:

- The current system of waste management;
- The stakeholders' involvement in waste, plastic and environmental management;
- The regulatory framework;
- Plastic pollution;
- The plastic chain (import, production, manufacturing, distribution, consumption, collection and recycling).

The assessment led to the identification of seven main challenges related to different topics:

Table 3: Main Challenges Identified

Topic	Challenges
1- The Plastic Chain	The low value in the plastic chain.
2- Recycling	The lack of recycling options for some polymers and products.
3- The Informal Sector	The lack of transparency and long-term vision of the informal sector plastic activities.
4- Logistics / Infrastructure	The burden of logistics.
5- Coordination	The lack of stakeholders' coordination.
6- Knowledge / Data Management	The lack of expertise and public education, and poor data management.
7- Financial Resources / Legal framework	The lack of financial support and insufficient legal framework.

These seven challenges are presented in detail in the subsections below.

2.1 Low Value in the Plastic Chain

The plastic chain (import, production, manufacturing, distribution, consumption, collection and recycling) is composed of different stakeholders. It was assessed during the Baseline Study and found to be functioning and quite active. An extended network of enterprises, associations and individuals work in areas from production to recycling. However, the analysis revealed that there was not enough value created along the chain, especially at collection and recycling /end market levels.

Production of Low-Quality Recycled Products (Flakes and Pellets)

The collected plastic can be transformed and sold in three different forms: flakes¹, pellets² and finished

¹ Flakes - meaning that the plastics are shredded (sometimes washed and dried too). It is often an intermediary product as flakes may need to be transformed into pellets. For the manufacturing of some recycled products using a melting process, the transformation of flakes into pellets may not be required. In this case, the flakes can directly be sold to a manufacturer. Otherwise, the flakes need to be sold to a recycler (extruding into pellets) or to a manufacturer also performing extrusion.

² Pellets - meaning that the flakes are extruded (sometimes agglomerated too). The pellets produced can be sold to manufacturers for the production of new plastic products. Some manufacturers are also recyclers, as they have the extruding machine to transform flakes into pellets.

The analysis of the plastic chain reveals that numerous recyclers (producers of flakes and pellets) do not produce pellets but only flakes. This is due to the high costs of the equipment and production (electricity) and to the need for technical know-how (not taught in Ghana, hence a need for international staff from China, Lebanon, India, etc.). As a result, recyclers, which are usually small-scale companies and often informal, will sell products with little added value. The value will be captured by the manufacturers, which are usually large-scale formal companies, also doing recycling (owning extruding machines).

This situation is seen with two polymers in particular:

- PET, for which no recycling process from flakes to pellets exists in Ghana. Therefore, flakes or bales are exported abroad by local recyclers
- PP, for which flakes are produced by local recyclers while production of finished products is performed by local large manufacturers that have the equipment and international staff.

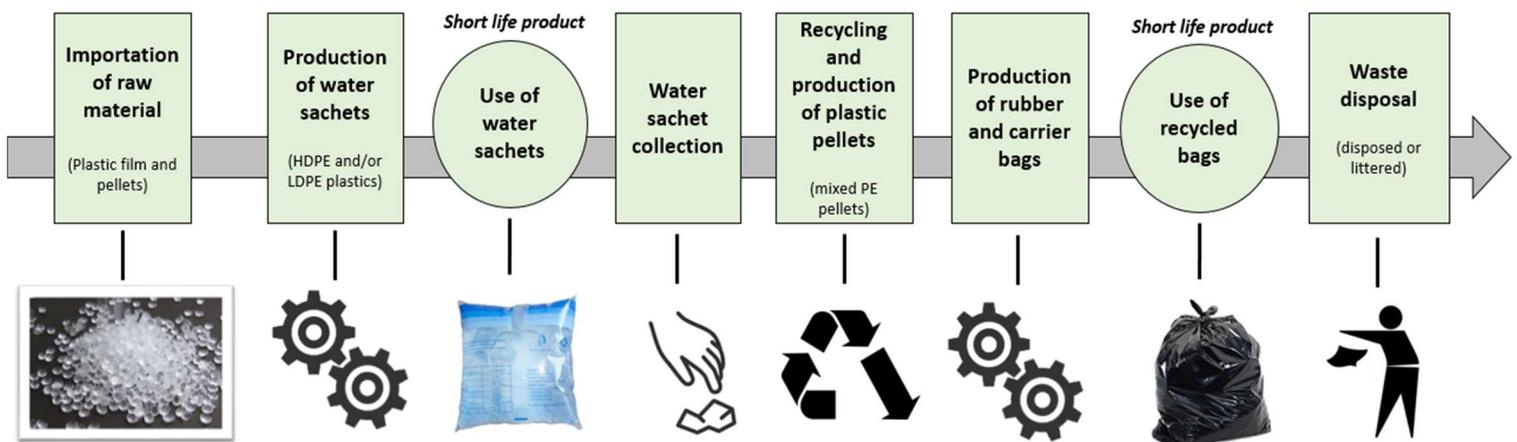
Lastly, it should be noted that there is no local production of food-grade recycled pellets in Ghana. Therefore, the recycled pellets cannot be used in the food industry.

2.1.1 Downcycling of Water Sachets

In Ghana, the recycling of plastics into finished products mostly is downcycling⁴ for LDPE and HDPE from water sachets, with consequences for the environment, as the new products are short-life and low quality.

Indeed, the water sachets (made of LDPE / HDPE) are recycled into black plastic bags. Black plastic bags are short-life and low-quality products for which no recycling solution is currently implemented in Ghana. One cause of this downcycling is the low quality of pellets obtained from water sachet recycling. As there is no standard for water sachets production (made of LDPE / HDPE, with different proportions depending on the manufacturer), the obtained pellets are of low quality (uneven density). A direct consequence is that the opportunities to use the recycled PE pellets are limited as the manufacturers need constant quality in their production. This reduces the recycling and economic model potential of the water sachets. Therefore, while water sachets provide an affordable, reliable and accessible source of potable water to the population, they are also an important source of pollution. The graph below illustrates the water sachets life cycle.

Figure 1 Water Sachets Life Cycle



³ Finished products - which are made with pellets (virgin and/or recycled). Some can be made directly out of flakes. The finished products are produced by the manufacturers.

⁴ Downcycling refers to recycling where the recycled material is of a lower quality and functionality than the original product (A. Pires, 2018)

2.1.2 Lack of Market for Recycled Plastic

As described above, the following plastics are recycled with little value:

- PET and PP are recycled into flakes, the value is captured by the manufacturers that own extruding machines and produce valuable new products either in Ghana (for PP) or abroad (for PET).
- HDPE and LDPE water sachets are downcycled into low-quality pellets, that are used to make short-life black plastic bags.

Overall, the analysis reveals that there is a lack of demand for recycled products in Ghana, due to the following factors:

1. The quality of the recycled products is low and not steady;
2. The investment and production costs are high (equipment, electricity);
3. The supply of recyclables is unstable (informal collection, limited cash-flows of aggregators⁵); and
4. The technical know-how is not available in Ghana (lack of training/education, need to import knowledge from abroad).

As a consequence, the manufacturing of plastics products in Ghana barely uses recycled flakes or pellets. This is particularly visible in the local manufacturing of non-food-grade products, as these industries do not use recycled pellets but prefer to import virgin pellets that are costlier. For example, the following products are made of virgin pellets:

- PP - cosmetic boxes, detergent container;
- PET - soap containers, hand-washing containers;
- HDPE - shampoo bottles, detergent container, gallons, pipes, crates, pallets.

2.1.3 Conclusion

The various issues encountered along the plastic chain are all linked to each other: in order to invest and incorporate more recycled plastics in their production, the manufacturers of valuable and durable plastic products need to have a stable supply chain of quality recycled material. A stable supply chain and quality recycled product require substantial investment, that can only be secured by a stable demand for recycled plastics.

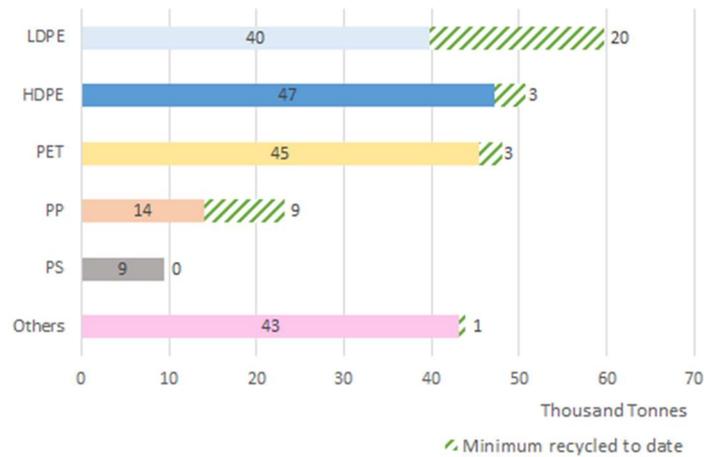
2.2 Lack of Recycling Options for some Polymers and Products

The Baseline Study revealed that the different types of plastics are not recycled in the same proportions. In particular:

- LDPE is well recycled, but still, a lot to be recycled remains, especially the plastic bags.
- PET is barely recycled.
- PP is well recycled, but still, some materials remain, especially PP films and PP raffia.
- PS is not recycled.
- Other plastics (including composites) are not recycled.

The diagram below illustrates the different situations mentioned above.

⁵ As defined in the Baseline Study, aggregators refer to the people buying recyclables in order to gather larger volumes to make profit out of the selling of these volumes.

Figure 2: Production and Recycling of Plastics (Estimations⁶ by the APMP team, 2018, tonnes)

It should be noted that the graph above is not representative of HDPE recycling. Indeed, the analysis of disposal sites and plastic hotspots reveals that there is a low volume of HDPE items in the waste. Therefore, HDPE is well recycled, and this graph most likely under-represents HDPE recycling. The results of the waste characterisation at disposal sites are available in the Baseline Study.

2.2.1 Lack of Recycling Options for LDPE Plastic Bags

As mentioned previously, LDPE is collected and recycled in Accra and its surroundings in significant quantities (60 tonnes per day minimum). But LDPE collection and recycling mostly concern the water sachets. These are downcycled into black plastic bags that are not collected by the waste pickers or recycled because they are usually dirty and of low quality. In addition, clear plastic bags made of virgin LDPE are also not collected or recycled.

LDPE plastic bags are light material, dirty (used to pack waste) and difficult to recycle. The recyclers are not interested in buying these items that would generate high cleaning and transportation costs. At the same time, the waste pickers are reluctant to collect these items because they have little value but also because they are a vector of diseases (some black plastic bags reportedly contain human waste).

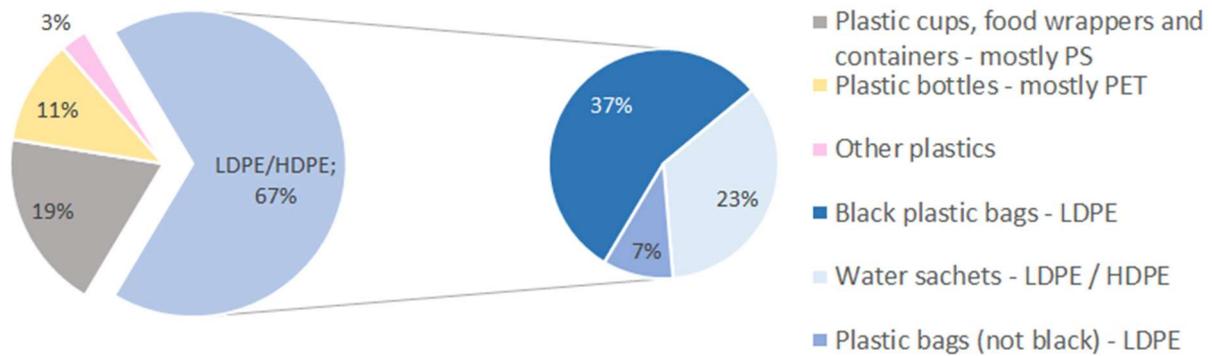
As a consequence, plastic bags are one of the main items found on the Accra-Tema coastline (I. Himans, 2013⁷) as shown in the graph below.

⁶ Estimations for recycling is not exhaustive and arise from the different meetings between the plastic actors and the APMP team. The estimations for plastics generation are from different sources (imports, waste generation). The methodology use dis defined in the Baseline Study.

⁷ Pokua Himans, I. (2013). Assessment of marine debris and water quality along the Accra-Tema coastline of Ghana. Ugspace.ug.edu.gh. Available at:

http://ugspace.ug.edu.gh/bitstream/handle/123456789/5326/Irene%20Pokua%20Himans_Assessment%20of%20Marine%20Debris%20and%20Water%20Quality%20Along%20the%20Accra-Tema%20Coastline%20of%20Ghana_2013.pdf?sequence=1

Figure 3: Plastics in Marine Litter (Himans, 2013)



It should be noted that the study conducted in 2013 revealed the presence of numerous water sachets. Yet, in contrast with black and clear plastic bags, these are quite well collected and recycled. A large number of water sachets are consumed in Accra and its surroundings.

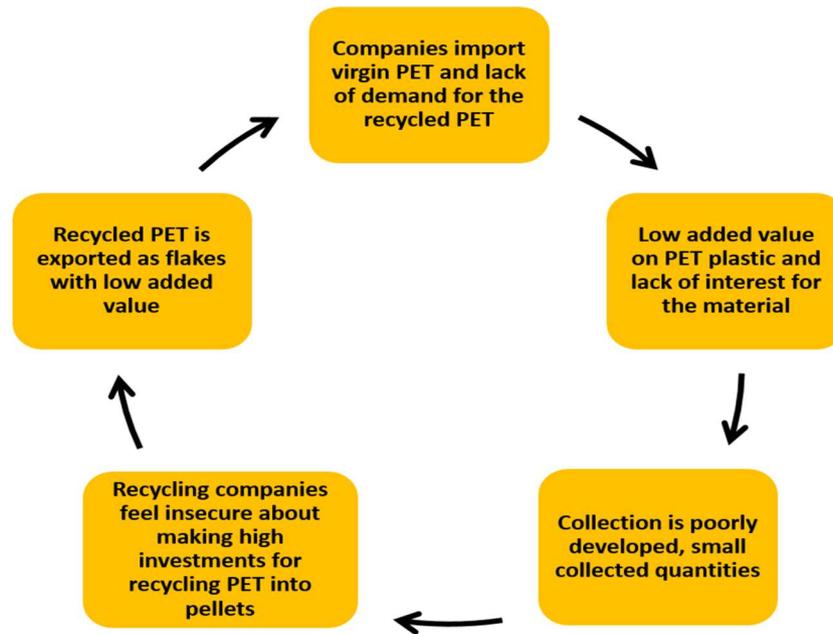
2.2.2 Lack of Recycling Options for PET

There is currently no recycling of PET into pellets in Ghana, either food-grade or non-food-grade. The causes identified are presented below and are linked between one another, making the whole PET market fragile.

1. First, the recycling process to turn PET plastic waste into plastic pellets is much more technical and expensive than the process for PET flakes production. PET is a polymer for which the production of pellets is much more expensive than for LDPE, HDPE and PP due to the characteristics of this polymer and the technology needed. Therefore, the interest of companies to develop the recycling of PET is limited by the investment costs.
2. In addition, to carry these investments, the potential PET recycling companies need to have an accurate vision of the PET available in waste and of the manufacturing companies (food-grade and non-food grade) that would buy the produced r-PET.
3. Therefore, the few collected PET plastic wastes are currently transformed into plastic flakes and exported abroad. Knowing that the costs of transportation are relatively high (shipping), the value creation of PET recycling in Ghana is low. This phenomenon contributes to keeping the prices of the material very low on the whole PET value chain, from collection to recycling.
4. As a consequence, PET waste is barely collected by waste pickers. The price of PET is lower than other materials (0.3 to 0.5 GHS/kg).

These various issues are all linked to each other: the limited collection system prevents potential recyclers from investing in the production of recycled PET pellets. The following diagram demonstrates the existing interactions between the main parameters limiting PET recycling.

Figure 4: Vicious Circle for PET Recycling



2.2.3 Lack of Recycling Options for PP Films and Raffias

While rigid PP is a highly demanded material, recycled into flakes used to produce long-life products, the PP raffia and PP films are currently not recycled. The following reasons explain the lack of recycling of PP films and raffias:

- PP films are often used in packaging. Unfortunately, these are similar to LDPE and HDPE films and there is a lack of knowledge among the waste pickers and recyclers on how to differentiate these films.
- PP raffia bags are reusable but not recycled due to the lack of knowledge of the recycling opportunities.
- PP films and raffia bags quantities are limited and are light materials compared to the PP buckets, chairs, etc. Therefore, these products have low value (0.4 GHS/kg for raffia bags against 0.8 for rigid PP) and are less profitable for the waste pickers.
- Recycling PP raffia bags are more expensive than PP rigid materials since the recycler has to invest in an agglomeration machine, before extruding the material: therefore, the recycling costs are more expensive.

2.2.4 Lack of Recycling Options for PS

PS waste arises from two sources, municipal solid waste (households, small-shops, offices, etc.) and industrial waste:

- The PS available in municipal solid waste comes from takeaway food packaging. The main challenge is that this type of waste is generally dirty and may even still contain food which causes challenges for recycling because the quality of recycled flakes/pellets would be low and because intensive cleaning generates extra costs.
- The PS available in industrial waste comes from the post-production process of industries, implying that collected volumes of PS are rather small. Also, even with a high rate of cleanliness, the collection of PS is not really profitable due to the lightness of the PS items.

Therefore, PS waste is not collected in Ghana and the recycling companies are not interested in developing recycling lines of a material due to the limited quantities of PS in waste. Lastly, the limited knowledge of recycling opportunities for PS further prevents the development of recycling solutions.

2.2.5 Lack of Recycling Options for Composites

Composite plastics have different composition and characteristics. These plastics are currently not recycled for the following reasons:

- This category of plastic waste gathers several polymers which makes its recycling difficult.
- It is hard to differentiate one composite from another as some are visually similar.
- They are very often light and collecting them is not very profitable for the waste pickers.

The challenge of recycling composites is not specific to Ghana. These plastics are extremely difficult and costly to recycle; and solutions, even worldwide, are limited. Potentially, these products can be melted together in order to recycle them. Yet, one remaining challenge is that PA is a contaminant to the other plastic polymers. Only one manufacturing company in Ghana uses composites in its process, but the quantities that can be taken in the process (production of pavement bricks) are limited. Also, low prices of waste disposal in Ghana affect the development of plastic recycling for all polymers but particularly for the polymers that are found in small quantities and are costly to recycle such as composites; considering the multiple recycling challenges mentioned above.

2.3 Lack of Transparency and Long-Term Vision of the Informal Sector Plastic Activities

The informal sector is very active in the collection of plastic in Ghana. It is estimated that most of the plastic is collected by the various networks of waste pickers (over 5,000+). Yet, the informal sector comprises numerous stakeholders (waste pickers, borla-taxis, middlemen, aggregators) working with a lack of transparency and an unsteady business model. On the other side, the formal sector suffers from a lack of a coordinated approach that is presented in the next subsection.

2.3.1 Lack of Transparency

There is little information available about the collection system, the stakeholders, their activity (types of plastics collected/bought), their location, or their economic model. It is therefore difficult to trace the waste and connect with these stakeholders.

The waste pickers are numerous and not organised under an umbrella association. Some waste pickers are organised into associations, but these have a limited number of members. This prevents the waste pickers from being more efficient, having a better power of negotiation and sharing their experiences/knowledge of the plastic sector.

2.3.2 Unsteady Business Model with No Long-Term Vision

The informal sector has an unsteady model. The collection is subject to cash-flow constraints as the waste pickers need immediate cash payment while the aggregators have unsteady cash-flows. Therefore, waste pickers and aggregators cannot provide a steady supply of materials to manufacturers.

The informal aggregators and recyclers do not have a defined business model. The fact that they are informal prevents them from getting the required investments or loans to improve their business.

As a consequence, the collection of recyclables remains erratic. This prevents some manufacturers from

buying recycled flakes and pellets as they need a steady supply of materials for efficient and cost-effective production.

Lastly, the waste pickers, aggregators and recyclers from the informal sector mostly learn about plastics “on-the-job”. Their knowledge about recycling opportunities and best practices is limited. Therefore, these businesses are extremely vulnerable to external changes.

2.4 Burden of Logistics

All of the actors involved in plastic collection and recycling reported that equipment and transportation costs are a major hindrance to the collection and recycling of plastic products. The following three main logistical challenges were identified during the Baseline Study:

1. The costly transportation of plastics (equipment, distance, logistics);
2. The lack of adequate infrastructure (which further contributes to making transportation costly); and,
3. The SWM zoning system that limits opportunities for plastics collection.

2.4.1 Costly Transportation of Plastics

The informal sector is the main source of plastics collection, through networks of waste pickers and middlemen/aggregators. Yet, this network is composed of numerous stakeholders that are not properly coordinated which make the collection of plastic costly and not efficient. The collected plastics often go through waste pickers, borla-taxi, middlemen and aggregators before being sold to a recycler. The transport of plastic from one actor to another is performed: on foot, with a pushcart, by tricycle or by truck.

Furthermore, Accra can be congested, which increases the duration of transport from one area to another. In addition, there is a 32 % import tax on truck refuse in Ghana⁸. This considerably increases the capital needed to invest in transportation equipment for all the actors in the plastic chain. This tax increase capital costs which are a challenge in particular for recyclers that are small-scale with limited resources, and for the service providers that face financial constraints (lack of fee payment by the customers, unpaid debts from the Government of Ghana). Therefore, numerous stakeholders use old equipment that results in high maintenance costs. Lastly, the poor quality of the roads (potholes) tends to increase the transportation time, reduce the lifetime of the equipment and increase the maintenance costs.

2.4.2 Lack of Infrastructure

Another challenge faced by all the stakeholders is the lack of adequate infrastructure. In particular, the limited number of roads and the lack of transfer stations and buying centres. There are only two transfer stations in Accra and its surroundings. The buying centres are limited and mostly informal (40+ plastic collection bins, aggregators located at the disposal sites - Kpone, Nsumia - and at other areas - Darkuman).

Therefore, the distances to transport plastics are high and it makes the aggregation of plastics costly. Lastly, because these systems are mostly informal and are not led by the service providers, the population is not aware of the existing collection options and do not dispose of their plastics in plastic collection bins or do not have any knowledge about the network of waste pickers/borla-taxis operating in their neighbourhood.

⁸ According to the Ghana Revenue Authority, <https://gra.gov.gh/index.php/general-information-on-importation-of-vehicles/>, Accessed on 04/10/2019

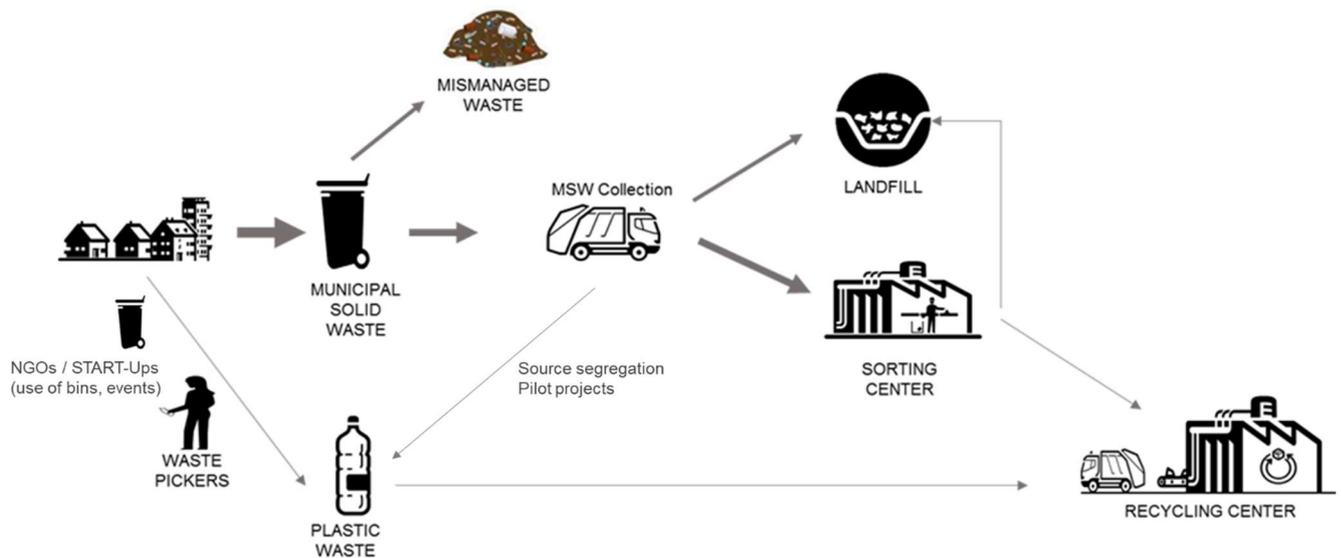
2.4.3 Zoned Collection of Municipal Solid Waste

The last logistical challenge is linked to the current system of solid waste management. The assemblies are responsible for municipal solid waste management and have contracted service providers to operate in defined zones. The generators of municipal solid waste (households, commercial, institutional) are obliged to use the services of the official service providers in their designated zone. Yet, these actors already face challenges (costly transportation, unpaid debts, unpaid collection fees) that prevent them from investing in a separate collection which would require equipment (trucks), additional logistics (planning of the collection) and education/sensitisation. There are some initiatives led by the service providers (Jekora Ventures, John Stanley Owusu), but these are small-scale pilots limited to some households/schools of their zones.

The initiatives led by start-ups and NGOs for plastics collection do not have the possibility to scale-up (do door-to-door collection) as the zoning system makes their activity illegal. Therefore, existing plastics collection initiatives from start-ups and NGOs tend to avoid door-to-door collection and prefer to collect plastics during events or from schools/churches even though it is not legal. Some waste pickers or borla-taxis collect informally door-to-door. Lastly, some formal initiatives (Coliba, Environment 360) have implemented plastic bins in public areas to avoid zoning constraints. All these initiatives collect limited amounts of plastics, except for waste pickers and borla-taxis, but these stakeholders also collect from streets, drains, transfer sites and disposal sites.

The graph below illustrates the plastic collection flows by the different actors.

Figure 5: Plastic Collection Flows



2.4.4 Conclusion

The logistical challenges (costly transportation, equipment, lack of infrastructure, zoning) prevent the development of an efficient collection of plastics, either by formal service providers or by informal actors or local initiatives. Yet, collection is a key element of the plastic chain. A better arrangement for waste collection with segregation at-source and separate collection would increase the quantity and the quality of the recyclables, with a direct positive impact for the recyclers and manufacturers.

2.5 Lack of Stakeholders Coordination

Numerous stakeholders are involved in plastic management: institutional stakeholders, international stakeholders, the private sector, the informal sector and civil society organisations. Most of the private stakeholders (and some of the informal stakeholders) are organised into associations. Nevertheless, these actors do not have a coordinated approach and the plastic sector lacks transparency.

2.5.1 Lack of Coordination between Institutional Stakeholders

Three main national institutional stakeholders are related to plastics management:

1. The Ministry of Sanitation and Water Resources (MSWR) which is responsible for municipal solid waste.
2. The Ministry of Environment, Sciences, Technology and Innovation (MESTI) which is responsible for environmental management.
3. The Ministry of Local Government and Rural Development (MLGRD) which is responsible for supervising the local assemblies.

There is some overlapping in the functions between these ministries (especially MSWR and MLGRD) that can impact the management of plastics. Their roles with regard to plastics management are more defined in the National Plastics Management Policy, yet to be passed.

2.5.2 Lack of Coordination among Plastic Chain Actors

Despite numerous associations of private actors:

- There is no association to represent all the waste pickers (5,000+). Only small-scale associations are formed. This prevents waste pickers from having a stronger voice and obtaining better working conditions (prices, training, equipment, support, visibility).
- There is no association for the companies involved in plastic recycling, only of manufacturers or collectors. This prevents coordination and synergy between the recycling initiatives (development of common projects for example) and does not enable the recyclers to have a voice in negotiations/discussions about plastic management⁹.

In addition, there are numerous private actors and organisations (such as the GRIPE, the NGO Environment 360) leading initiatives for plastic management. Yet, these do not communicate sufficiently with one another and do not organise their actions together. As a result, the plastic management sector is not as effective and efficient as it could be. In particular, the lack of coordination has a negative impact on plastic collection: it remains costly due to the burden of logistics but also the lack of organisation of the plastic sector.

One initiative, the GRIPE (Ghana Recycling Initiative by Private Enterprises) gathers major manufacturers (such as Nestlé, FanMilk, Coca-Cola, etc.) that are conducting plastic management projects. Yet, there is not yet a large-scale plastic management project conducted by all these actors together, or by the GRIPE itself.

2.5.3 Conclusion

As a result, the plastic sector suffers from a lack of transparency, from poor communication between the different actors of the plastic chain (importers, producers, manufacturers, distributors, consumers,

⁹ It should be noted that the Asase Foundation (involved in plastic collection) reported that an association of recyclers and aggregators is currently being created.

collectors and recyclers) and from a lack of efficiency. Many of the recycling initiatives identified are small-scale and have difficulties scaling-up due to the unsteady supply of recyclables, low demand but also limited financial resources (detailed in subsection 2.7). Some of these challenges could be addressed if stakeholders had more opportunities to communicate.

It should be noted that

- The Waste Recovery Platform launched by the UNDP aims at providing a platform for all the stakeholders (institutional, international, private, informal, CSOs) to communicate and coordinate their actions.
- The National Plastics Management Policy, yet to be passed, will provide a legal framework for stakeholders involved in plastics management, define their roles and responsibilities and be supported by an implementation plan.

2.6 Lack of Expertise, Public Education and Poor Data Management

The lack of know-how, education and sensitisation is one of the major challenges identified during the Baseline Study. This challenge concerns both the actors of the plastic sector and the population of Accra and its surroundings. In addition, the poor management of data about plastics management in Ghana contributes to the lack of general knowledge about the plastic management sector both for all types of stakeholders (governmental, international, private, informal and civil society).

2.6.1 Lack of Knowledge and Expertise

The lack of knowledge about the different polymers and their recycling opportunities prevents the plastic sector from developing recycling solutions suitable to the Ghanaian context. This is due to the lack of education on plastic polymers and recycling processes in Ghana. The private companies that can afford international staff hire staff trained in Europe, China, India, Lebanon, etc. This increases their costs and prevents the development of local know-how. At the same time, the companies (small-scale, informal) that have limited resources face challenges to scale-up their business and implement the appropriate processes. Two types of expertise are particularly needed:

- *At the management level*, there is a need for general expertise in plastic, so that the company is able to make decisions based on international best practice. In addition, there is a need for general knowledge of the different types of machines, their uses and capabilities, their costs, etc. This would enable a company to buy the proper equipment without facing unexpected costs.
- *At the working level*, there are different types of machines for the processes and polymers and there is a need for skilled staff with the right technical expertise to operate the machines and increase productivity.

There is only one training course currently offered in Ghana at the University of Ghana, focussing on food packaging which includes management of plastic waste. However, this training is not sufficient to address the needs for skilled staff in the country (and lacks some technical knowledge). Therefore, there is a need to develop adequate education and training programmes that would increase local know-how and benefit the local plastic sector.

Lastly, the lack of knowledge and expertise is also a challenge for the public sector (governmental stakeholders) that is responsible for supervising waste management and creating an enabling environment for plastics management.

2.6.2 Lack of Public Education and Sensitisation

The lack of public education and sensitisation among the population has consequences on the environment (indiscriminate littering), on the daily consumption (ongoing use of single-use black plastic bags) and on the quality of the recyclables (dirty because of the lack of source segregation).

There is, therefore, a strong need for education and sensitisation among the population, particularly in the following subjects:

- *General waste management* - the service providers and assemblies do not conduct sufficient education campaigns for the population. Yet, Information, Education and Communication (IEC) is a major contributing factor to the efficient management of municipal solid waste.
- *Plastics management* – overall, based on the declarations from the service providers and other collectors, the population lacks sufficient knowledge about plastics and its consequences on the environment. This lack of education contributes to the uncontrolled plastic leakage into the environment. In addition, the lack of knowledge of the population contributes to the important consumption of single-use plastics and the population will not change its habits unless aware of the consequences of plastics on the environment, of the potential alternatives, sensitised and incited to change its habits (for example: selling of single-use plastic bags instead of distribution for free).
- *Plastic collection* - most of the plastic collection is performed by the informal sector¹⁰ and not known by the population. The service providers do not perform separate collection due to the extra costs it would generate. Nevertheless, some initiatives (Coliba, Environment 360) are interested in performing a separate collection of plastics. For these to be more successful, the population would need to know about these initiatives and to be educated about the advantages of source segregation and about waste sorting.

2.6.3 Poor Data Management

The poor monitoring of data on waste, plastic and environmental management is an important challenge for the stakeholders of the plastic sector. First, it should be noted that data on plastics management comes from different sources:

- Waste management stakeholders (MSWR, assemblies, MLGRD), as plastic is collected partly with mixed MSW, and as waste characterisation campaigns provide important information on the amount and types of plastic in households, commercial and industrial waste.
- Plastic management stakeholders (MESTI, EPA), as plastic is partly collected separately from mixed MSW by specific actors (informal, formal) that focus on recyclables before being recycled by actors of the plastic chain.
- Financial management stakeholders (Ghana Revenue Authority (GRA)), as plastic imports and exports are subject to taxation by the GRA Customs Department.
- Environmental and water management stakeholders (MESTI, MSWR), as plastic can leak into the environment and be found in water sources, beaches, streets, drains, open dumpsites, etc.

At present, there is no reliable data collection and analysis by the public sector. The ministries (MSWR,

¹⁰ During the Baseline Study, it was assessed that over 95% of the plastics recycled are collected by the informal sector. Indeed, the flows collected through services providers (Jekora Ventures, John Stanley Owusu) and arising from initiatives set by Ezov Environmental Services, Asase, Coliba and Environment 360 are limited (less than 3% of the total plastics collected).

MESTI, MLGRD), agencies (EPA) and local assemblies (AMA, TMA, etc.) have not implemented a system for the coordinated collection and monitoring of plastic management data. The situation is worsened by the fact that municipal solid waste is managed by eight different assemblies in Accra. The lack of a defined methodology, of exchange of data and of reporting to an entity in charge of data consolidation is a challenge for the development of accurate and reliable information on the waste, plastic and environmental sectors; while this information could support decision-making.

Currently, the following challenges can be observed:

- Waste management data is fragmented between different assemblies and not consolidated, the methodology is not clearly stated, reporting by the service providers is uneven.
- Plastic management data is not collected by the public sector - which then relies on figures obtained through different studies (universities, students, international organisations, etc.). This creates a lack of continuity and the absence of common methodology in the data.
- Financial management data is available at the Ghana Revenue Authority (imports and exports of plastics) but not analysed and consolidated by other public stakeholders in charge of plastics management (for example, the MESTI).
- Environmental management data in relation to plastic pollution is not collected by the public sector - which then relies on figures obtained through different studies (universities, students, international organisations, etc.). This creates a lack of continuity and the absence of standardised methodology for data collection.

It should be noted that poor data management was identified as a key challenge by the Waste Recovery Platform of the UNDP. This Platform aims to make existing data available to the different stakeholders via its website but there is still a need for defining methodology and channels for collection at the governmental level.

2.7 Lack of Financial Support and Insufficient Legal Framework

The lack of financial support and insufficient legal framework is one of the major challenges identified during the Baseline Study phase.

2.7.1 Lack of a Consolidated Effective Legal Framework and Limited Public Resources

One of the potential contributing factors to the lack of coordination is the absence of a consolidated legal framework for plastic, environmental and waste management. Indeed, there is no comprehensive law(s) for solid waste and/or plastics management that would support the functions of the different ministries and assemblies and define the rights and duties of all the actors involved in plastic and waste management (including the population). The National Plastics Management Policy (yet to be passed) will contribute to the clarification of the expected roles and responsibilities of the different actors.

In addition, the existing legislation (the taxation of plastics products¹¹, the oxo-biodegradable additive¹²) are not enforced for all stakeholders. The imports of finished products are not subject to taxation, which creates a competitive distortion between the local producers and importers of finished products. The Waste Recycling Fund (more information available in Annex S), supposed to receive the revenues arising from the tax, has not been created, which generates a lack of trust from the private sector in the public sector. Lastly, the use of the oxo-biodegradable additive as prescribed in the MESTI Directive requiring an oxo-biodegradable component in flexible plastics manufactured in or imported into Ghana (2015) is not

¹¹ Customs and Excise (Amendment) Act, 2013 (Act 863)

¹² Directive on oxo-biodegradable additive and flexible plastics issued by the MESTI (November 2015)

enforced for all the actors. It creates a competitive distortion between the importers (that may import products that do not contain the additive); the large manufacturers (that may benefit from exemptions) and the local producers and manufacturers (that are requested to use the additive which increases their production costs).

2.7.2 Lack of Stakeholders' Commitments and Limited Financial Support

In addition to the lack of public financial resources, there is a lack of stakeholders' commitments and private financing for plastics management. First, despite the recent creation of the GRIPE, the large plastic producers and manufacturers have not made significant contributions to improving plastics management. The GRIPE is supporting pilot initiatives, but more significant commitments are needed to address the plastic challenge in Ghana. In addition, the large-scale producers and manufacturers are barely using recycled pellets in their production, but mostly raw pellets, due to the quality of the pellets and/or to the food-grade requirements as presented in Section 2.1. Lastly, there is no extended producer responsibility (EPR) scheme implemented in Ghana.

This lack of strong financial support from the private sector (such as manufacturing companies) prevents the scaling-up of initiatives for plastic management. These require investments for infrastructure and equipment but also sufficient cash-flows to be able to provide a regular supply of recyclables. Depending on the size of the initiative, its sector (collection, recycling), the type of polymer and of production (pellets, flakes, food-grade), the investments needs can range from a thousand dollars to tens of millions of dollars. Financing opportunities would require the support of different actors: incubator, private investors, international financing institutions, etc. The potential financiers and financial sources will be further detailed in an Investment Plan.

2.7.3 Conclusion

The lack of consolidated and enforced legal framework and availability of financial resources prevents the development and/or scaling-up of some initiatives and limits good coordination between stakeholders.

It should be noted that:

- The National Plastics Management Policy, yet to be passed, will provide a legal framework for stakeholders involved in plastics management, define their roles and responsibilities and be supported by an implementation plan.
- The GRIPE, created by large manufacturers, is the first step towards commitments of large producers and manufacturers of the plastic sector but is yet to result in concrete large-scale actions.

3 VISION AND KEY PRINCIPLES

3.1 Vision

The APMP team has developed potential solutions and actions to be implemented to address the challenges identified in the Baseline Study (presented in Section 2). The recommendations proposed in this Strategic Roadmap are developed in line with the following long-term vision¹³:

- To reduce permanently plastic waste leakage into the environment (zero plastic leakage objective);
- To increase circular material use;
- To deliver socio-economic benefits for the local community by creating new jobs and ensuring social equity; and
- To improve the environment stake for all.

This vision implies the implementation of different actions; in particular:

- The collection and recycling of material, with added value, to ensure shared environmental and social benefits along the plastic chain and the population.
- The limitation and replacement of short-term plastic to limit leakage into the environment and plastic pollution.
- The up-stream design to limit the use of non-recyclable plastic and plastic in general and the promotion of alternatives to plastics.
- The empowerment of the population (education and sensitisation), of the private and informal sector (training, education, capacity building) to limit plastic pollution and improve the plastic chain efficiency.
- The mobilisation and engagement of the plastic importers, producers and manufacturers to limit the use of non-recyclable plastics and encourage the purchase of recycled products.
- The development of reliable data to inform decision-making, policy formulation, legal reforms, etc. by the public sector.

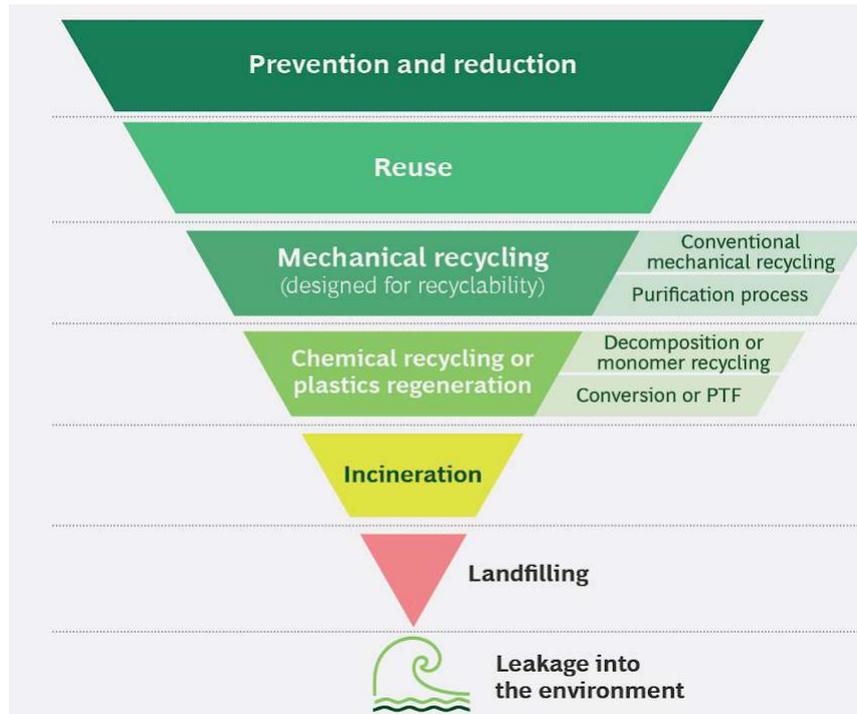
3.2 Key Principles

Key principles related to sound environmental management, waste management and plastics management are usually applied internationally. These arise from international best practice and provide the basis for the development of recommendations. The following key principles were considered when developing the solutions and actions to be implemented in this Strategic Roadmap:

- The sustainability waste management principle that favours the prevention of waste, preparing for reuse, recycling and composting of waste, energy recovery and disposal. This hierarchy is promoted by the European Union as a good practice for sustainable management¹⁴.

¹³ This proposed vision is aligned with the main objectives of the Draft National Plastics Management Policy which are to: (1) Improve the state of the environment and public health, (2) Reduce pressure on the utilisation of the country's national resources, (3) Minimise Ghana's dependence on imported finished products, and (4) Contribute to the socio-economic development of Ghana by creating jobs particularly for vulnerable groups.

¹⁴ European Commission, (2010). Being wise with waste: the EU's approach to waste management. Available at: <https://ec.europa.eu/environment/waste/pdf/WASTE%20BROCHURE.pdf>

Figure 6: The Pyramid of Plastic Waste Management (BCG, 2019¹⁵)

- The 5 R's principles that are quite similar to sustainable waste management principles but relate to plastics management only. The 5 R's are to Refuse (to buy plastics), Reduce, Reuse, Repurpose (old plastics for different use) and Recycle.
- The precautionary principle that minimises activities that could potentially be damaging to the environment.
- The 'polluter pays' principle that states that the producers of pollution (importers, producers and manufacturers) should participate in the costs of waste and plastic management.
- The principles of coordination that aim for the stakeholders to act according to their functions in an effective manner and collaborative manner.
- The principle of capacity building and education that provides the opportunity for all the stakeholders to develop knowledge, skills and abilities to effectively participate in the management of plastics and waste.

3.3 Proposed Solutions and Recommended Actions

The solutions and recommended actions presented in Section 4 of this Strategic Roadmap follow the vision and the key principles defined above. Overall, seven solutions are proposed in this Strategic Roadmap:

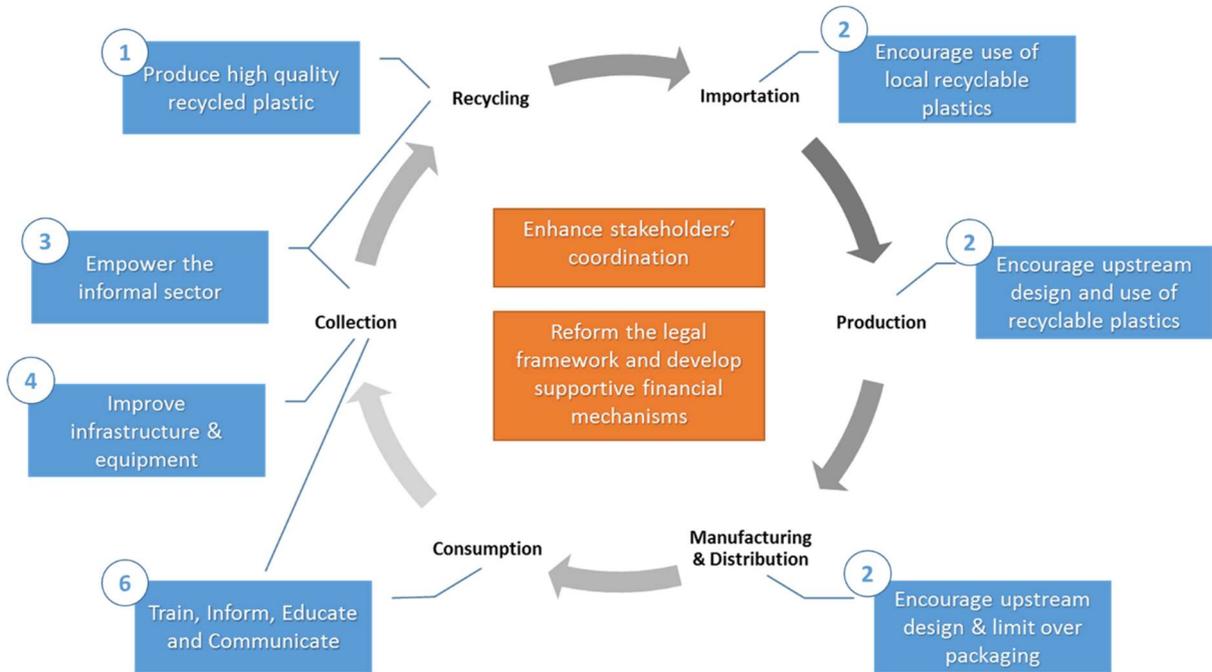
1. Create more value in the plastic chain with a circular economy approach:
2. Limit the use of some plastic products and improve recycling:
3. Empower the informal sector:
4. Improve infrastructure and access to equipment:
5. Enhance stakeholders' coordination:
6. Train, Inform, Educate and Communicate

¹⁵ Boston Consulting Group. (2019). A Circular Solution to Plastic Waste. Available at: http://image-src.bcg.com/Images/BCG-A-Circular-Solution-to-Plastic-Waste-July-2019_tcm9-223960.pdf

7. Reform the legal framework and develop supportive financial mechanisms

These solutions (number 1 to 7) are placed in the value chain circle on the graph below. Solutions 5 and 7 apply to the entire value chain.

Figure 7 Solutions Proposed Placed In The Plastic Value Chain Circle



4 SOLUTIONS: TURNING CHALLENGES INTO OPPORTUNITIES

This section presents the different solutions to the challenges identified in Section 2. The solutions follow the vision and principles stated in the previous section and are based on the different consultation and meeting with the stakeholders. In particular, the APMP organised:

1. A two-day workshop on the design of collection systems, the results of which are summarised in the Technical Note #6 available in Annex P.
2. A one-day workshop on the Extended Producer Responsibility Scheme, with members of the GRIPE.
3. A presentation of the draft Strategic Roadmap to key institutional stakeholders (26/11/2019). The minutes of the meeting are available in Annex Q.

The following table summarises the proposed solutions for the main challenges identified:

Table 4: Solutions Proposed to Address the Main Challenges

Topic	Challenges	Solutions	Recommended Actions
1- The Value Chain	The low value in the plastic chain.	Create more value in the plastic chain with a circular economy approach	RA#1. Recycle PET RA#2. Recycle PP RA#3. Improve the water sachets model and promote alternatives RA#4. Recycle better: an approach to improve recycled products' quality
2- Recycling	The lack of recycling options for some polymers and products	Limit the use of some plastic polymers and products and improve recycling	RA#1. Recycle PET RA#2. Recycle PP RA#3. Improve the water sachets model and promote alternatives RA#4. Recycle better: an approach to improve recycled products' quality RA#5. Reduce the use of short-life and difficult to recycle plastics RA#6. Improve recovery and disposal solutions for non-recycled plastics
3- The Informal Sector	The lack of transparency and long-term vision of the informal sector plastic activities	Empower the informal sector	RA#7. Empower the informal sector RA#8. Build capacity RA#9. Develop education and certifications
4- Logistics / Infrastructure	The burden of logistics	Improve infrastructure and access to equipment	RA#10. Develop infrastructure for collection, sorting and transfer RA#11. Finance plastic management RA#12. Organise the plastic sector RA#13. Conduct IEC
5- Coordination	The lack of stakeholders'	Enhance stakeholders'	RA#7. Empower the informal sector

Topic	Challenges	Solutions	Recommended Actions
	coordination	coordination	RA#12. Organise the plastic sector RA#14. Strengthen the legal and institutional framework
6- Knowledge / Data Management	The lack of expertise and public education, and poor data management	Train, Inform, Educate and Communicate	RA#8. Build capacity RA#9. Develop training courses and certifications RA#13. Conduct IEC RA#15. Monitor data on plastic management
7- Financial Resources / Legal Framework	The lack of financial support and insufficient legal framework	Reform the legal framework and develop supportive financial mechanisms	RA#8. Build capacity for the actors of the plastic chain RA#9. Develop training courses and certifications RA#14. Strengthen the legal and institutional framework

The solutions are detailed in the following subsections. The actions to be implemented are associated with each solution. The roadmap for recommended actions is presented in Section 5 (stakeholders, resources, timeline, risks and mitigation measures) and the RAs are available in the Annexes.

4.1 Create More Value in the Plastic Chain with a Circular Economy Approach

There is a need to create more value in the plastic chain, in particular at the collection and recycling levels.

4.1.1 Recycle PET and PP Flakes into Higher Value Products

For PET, the recycling sector is currently not developed: there is no recycling into pellets in Ghana, and PET flakes are exported abroad. Therefore, there is a need to assess the feasibility and opportunities to develop PET food-grade or non-food-grade recycling infrastructure in Ghana. These infrastructures are costly and can only be cost-effective if a sufficient quantity of PET waste is generated and if there is a market to buy the PET recycled pellets. Therefore, the assessment of the opportunities should take into consideration two main applications of the PET: food use, in particular, transparent bottles and take-away packaging; and non-food use, in particular textile and braids. Based on the study of the market and on the commitments of the manufacturers involved in beverage, packaging, braids or textile, the best option for PET recycling could be determined.

For PP, recycling with more value at the bottom of the chain (small-scale and informal companies) can be done through the facilitation of the access to equipment for pellets production and / or for finished goods production. The prices of the equipment should be estimated, and companies potentially interested identified. Lastly, the sources of financing and requirements to access these sources would need to be determined.

4.1.2 Upcycle the Water Sachets and Promote Alternatives

The downcycling of LDPE water sachets into black plastic bags contribute to plastic pollution and does not bring value to the plastic chain. The improvement of LDPE recycling scheme would require four complementary approaches:

1. The water sachets could be produced following defined standards (better recyclability).
2. Water sachets could be recycled into long-life products (upcycling).
3. Water could be provided in different packaging such as dispensers, long-life bottles, etc. or could be made safe thanks to the use of filters (promotion of alternatives).

The first option is at the production level and would necessitate the clear definition of standards by the Ghana Standards Authority. The production of water sachets of similar density would facilitate their recycling and, as a consequence, improve their collection.

The second option implies the conduct of a market study to determine the opportunities and estimate the costs for the existing recyclers to move from black plastic bags production to another product. One of the potential long-life products that can be made out of LDPE is the sanitation pipe.

The third option needs to target the unnecessary use of water sachets. Indeed, consumers of water sachets may buy some for convenience (being in the streets, eating outside, limited resources) but some may also buy water sachets while they could afford other options such as: dispensers; large 15L bottles with a system of tap/pump; use of reusable bottles; etc. The third options should identify the unnecessary use of water sachets and ways of encouraging consumers to change their habits.

4.1.3 Improve the Quality of Recycled Products

The development of better-quality recycled products (flakes and pellets) should improve the plastic collection, recycling and manufacturing in Ghana and bring value to the plastic chain. The low value mostly concerns the companies with limited know-how, resources and equipment who cannot produce high-quality recycled material. As a result, the large manufacturing companies will prefer the use of virgin imported pellets, even for non-food-use. Therefore, the recyclers will face a lack of demand and this will directly impact the prices of recyclables at the collection and recycling levels.

To improve the quality of the recycled products, an approach to the entire plastic chain is needed as the challenges along the plastic value chain are all interconnected. In addition, this approach should be circular, to limit waste and improve the durability of the products. The improvement of the whole plastic value chain necessitates a look at different aspects, such as the standards, the testing, the public (tender) and private market, the expectations of the producers/manufacturers, the marketing of recycled products and the opportunities for long-life product manufacturing.

4.1.4 Actions

The Recommended Actions (RAs) to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes A, B, C, and D). The following actions have been identified in relation to the creation of additional value in the plastic chain:

- **Recommended Action #1 - Recycle PET**
- **Recommended Action #2 - Recycle PP raffia bags and promote alternatives to PP films**
- **Recommended Action #3 - Improve the water sachets model and promote alternatives**
- **Recommended Action #4 - Recycle better: an approach to improve recycled products' quality**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Preliminary feasibility study for a PET plant**, to assess the potential for the production of recycled PET pellets locally in Ghana
- **Study on the potential solutions and alternatives for each polymer, including cost estimates**, that could be of use for the actors of the plastic chain and institutional stakeholders to improve recycling and lower plastic pollution.

4.2 Limit the Use of some Plastic Polymers and Products and Improve Recycling

The recycling of plastic products is uneven in Ghana. Depending on the quantities for each polymer and on the difficulty of recycling the polymers, improving the process will either consist in limiting the use of some

products and promote alternatives, or in developing the adequate infrastructure or market.

4.2.1 Limit and Promote Alternatives for LDPE, PP films, PS and Composites

There is a need to better manage LDPE plastic bags, PP films, PS and composites. Unfortunately, these plastics are either difficult to recycle and / or produced in insufficient quantities.

As a result, alternatives should be proposed for these products.

- LDPE black plastic bag use could be limited and replaced by reusable bags (such as PP raffia bags, cotton bags, paper sachets), or by better quality plastic bags that would have more value on the recycling market (over 60-micron plastic bags, transparent). Unnecessary use of water sachets could be replaced with alternatives (dispenser, reusable bottles, etc.).
- PP films could be replaced by LDPE or HDPE films, for which a collection system already exists. Unnecessary overpack should be limited as well.
- PS takeaway containers could be replaced by PP containers that are reusable; or by cardboard containers.
- Composites: alternatives require rethinking the design of the product, upstream, to produce more easily recyclable products. One potential opportunity of recycling for composites is the production of pavement bricks but the quantities of these products to be used as inputs in the production are limited.

Lastly, for all remaining plastics that are not successfully replaced, solutions for material recovery (such as plastic to fuel) and for controlled disposal should be available.

The opportunities for alternatives should be studied to determine which product would best fit the market and if the price of the product could be affordable for the actors of the plastic chain

The development of alternatives requires to engage manufacturers so that these actors consider the recyclability in the design of their products. This upstream design approach relies on the commitment of the manufacturers and their understanding of the plastic challenges. This approach should be encouraged by an EPR system and by regulations and policies from the public sector as well.

4.2.2 Improve the Recycling of PP Raffias and PET

As mentioned in Section 4.1.1, there is an opportunity to improve the recycling of PET into pellets. A preliminary feasibility study is being conducted by the APMP team.

Regarding PP, the recycling of PP raffia bags and PP films need to be improved. The necessary equipment for recycling should be investigated. The recycling of PP raffias is even more crucial in the case of a replacement of LDPE plastic bags by PP raffia bags. The potential solutions for better recycling and alternatives are being investigated by the APMP team for each polymer, including for PP raffia bags and films.

4.2.3 Actions

The Recommended Actions (RAs) to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes A, B, C, D, E, F). The following actions have been identified in relation to the improvement of recycling and limitation of the use of some plastic products:

- **Recommended Action #1 - Recycle PET**
- **Recommended Action #2 - Recycle PP raffia bags and promote alternatives to PP films**
- **Recommended Action #3 - Improve the water sachets model and promote alternatives**

- **Recommended Action #4 - Recycle better: an approach to improve recycled products' quality**
- **Recommended Action #5 - Reduce the use of short-life and difficult to recycle plastics**
- **Recommended Action #6 - Improve recovery and disposal solutions for non-recycled plastics**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Preliminary feasibility study for a PET plant**, to assess the potential for the production of recycled PET pellets locally in Ghana
- **Study on the potential solutions and alternatives for each polymer, including cost estimates**, that could be of use for the actors of the plastic chain and institutional stakeholders to improve recycling and lower plastic pollution
- **Support to large distributors in Accra for the implementation of alternatives to single-use plastic bags** to reduce the distribution of free single-use plastic bags. A workshop with the main supermarkets of Accra will take place on 3 December 2019 to engage them on the topic of the distribution of single-use plastic bags to consumers.

4.3 Empower the Informal Sector

The informal sector needs to be better organised and have a longer-term vision in order to increase its efficiency, have a stronger voice in the plastic chain and improve its working conditions. In particular, the empowerment of the informal sector would benefit the plastic chain at the collection and recycling levels. Some solutions presented were developed during a two-day workshop, the results of the workshop are provided in the Annexes as Technical Note #6 (Annex P).

4.3.1 Train and Build Capacity

The lack of long-term vision prevents the informal sector from being more developed and capturing more value out of the plastic value chain. There are two main needs for the stakeholders involved in the informal sector:

- i) on-the-job capacity building (in business, management, health and safety, machines operations) and
- ii) training (certification/degree in environmental management, technical aspects related to plastics, technical aspect for operating machines).

Capacity building will most likely be the main form of education to be provided to the informal sector. Some informal actors with sufficient resources (some recyclers or entrepreneurs) may be willing to invest in education (certification, degree) in order to improve their business.

4.3.2 Map and Organise the Informal Sector

The lack of transparency and information on the informal sector could be addressed by an extensive mapping of the actors involved. This mapping should include information on the location, activity and contact details. The use of digital tools (social media) is a good way to improve efficiency, especially when the various actors do not connect or know about each other.

In the case of waste pickers and borla-taxis, a better organisation and knowledge of the sector would probably improve the buying prices and their working conditions. In this perspective, the waste pickers could be organised into an umbrella association (regrouping all the small associations of waste pickers). The borla-taxis are already gathered in an association.

In addition, the use of a mobile app to connect the aggregators, consumers, collectors would benefit the collection of recyclables. As noted in Section 2.5.3, the UNDP is launching a Waste Recovery Platform

which will include a mobile app aims at connecting the stakeholders of the value chain.

Lastly, the fact that the sector is informal prevents companies from obtaining loans or grants. Therefore, the creation of a hub to support the actors of the plastic chain could be a solution. The hub could facilitate access to financial resources and provide support to businesses that are willing to formalise their activities (capacity building in management and administration, knowledge-sharing about the required procedures).

4.3.3 Actions

The recommended actions to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes G, H, I). The following actions have been identified in relation to the empowerment of the informal sector:

- **Recommended Action #7 - Empower the informal sector**
- **Recommended Action #8 - Build capacity**
- **Recommended Action #9 - Develop education and certifications**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Development of a roadmap for the creation of a plastic hub** (vision, mission, strategic actions, cost estimates) that would support actors of the plastic chain and create synergies; and,
- **Development and implementation of a training programme on key subjects.** The programme of the training session is available in Annex T.

The following activity has already been completed by the APMP team in relation to the solutions proposed:

- **Study on the digital tools** that could be used to coordinate the activities of the actors of the plastic chain (available in Annex R).

4.4 Improve Infrastructure and Access to Equipment

As described in Section 2.4, logistics are a real challenge for plastic collection, limiting the quantity and type of plastic collected. The transportation of plastic is costly and would need to be alleviated by improving the infrastructure and access to equipment.

4.4.1 Improve Equipment's Lifetime and Accessibility

Reducing costs of plastics transportation requires improvements to the road network and city planning and the alleviation of importation taxes on equipment necessary for solid waste and plastic management (such as trucks). A better road network would reduce transportation time and maintenance costs for the vehicles. A reduction of the importation taxes on vehicles would enable the actors of the plastic chain to invest in new equipment and reduce maintenance costs. These two solutions depend on the political commitments and resources of the assemblies and of the government of Ghana.

4.4.2 Create Transfer Stations, Sorting Centres and Buying Centres

The high costs of transport would be significantly reduced with the development of infrastructure for solid waste and plastic management. The creation of transfer stations, sorting centres with equipment and of buying centres could help the actors involved in collection to reduce the distances to travel:

1. The transfer stations would receive municipal solid waste before its transport to the disposal site. At the transfer stations, plastics (and other valuable materials such as organics, metals) could be sorted and removed from waste to be disposed. It should be noted that the development of

transfer facilities is one of the activities of the GARID¹⁶ project of the World Bank.

2. The sorting centres would receive recyclables such as plastics and potentially other types (metals). The plastics would be sorted per type of polymer (labels and caps removed) and washed and/or crushed and sold to recyclers.
3. The use of buying centres by the population would improve the efficiency of collection at a lower cost than door-to-door collection. The buying centres would buy the plastics collected from the waste pickers. The population could also bring to the buying centre and would receive vouchers or other compensation as the quantities brought by households are usually small.

4.4.3 Develop Source Segregation and Separate Collection

Zoning is a key component of solid waste management in Accra and its surroundings and can only be changed by the assembly. This would require consultation with the stakeholders involved in municipal solid waste management such as the Environmental Service Providers Association (ESPA).

One option would be to encourage service providers to collaborate with the plastic collectors to organise a separate collection. Another option would be to modify the zoning system to state that the plastics and other recyclables collectors are allowed to perform separate (not mixed) collection in a zone if a service provider does not offer separate collection service to the customers. Overall, the change of the zoning system should be part of a re-organisation of the plastic sector to make it more effective and efficient.

The support of source segregation and separate collection will, in addition to the revision of the zoning system, require:

- Additional equipment for separate collection (vehicles, bins) and the installation of plastic bins as drop-off points where the population could bring plastics for free. This system would be complementary to the infrastructure for mixed MSW (transfer stations) and plastic sorting and collection (sorting centres, buying centres).
- Education and sensitisation campaigns to support source segregation.
- Financial support to support the implementation and operation of a collection scheme for plastics and recyclables. Service providers could benefit from the solutions to improve the lifetime and accessibility of equipment (as proposed in the section on improving Equipment Lifetime and accessibility) but also from other financial incentives to be developed (government or municipalities subsidies, extended producer responsibility system, etc.).

4.4.4 Actions

The recommended actions to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes J, K, L, M). The following actions have been identified in relation to the improvement of the infrastructure and accessibility of the equipment:

- **Recommended Action #10 - Develop infrastructure for collection, sorting and transfer**
- **Recommended Action #11 - Finance plastics management**
- **Recommended Action #12 - Organise the plastic sector**
- **Recommended Action #13 - Conduct IEC**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Development and implementation of a training programme on key subjects**, including Information, Education and Communication (IEC) - programme available in Annex T;

¹⁶ Greater Accra Resilient and Integrated Development, World Bank Project.

- **Support to the GRIPE on the topic of Extended Producer Responsibility (EPR)**, in order to provide financial support to plastics management; and the
- **Support to three plastic collectors** for the improvement of their plastic collection scheme in Accra.

4.5 Enhance Stakeholders' Coordination

The coordination between the stakeholders can be positively enhanced by a clarification of the roles of the stakeholders (especially the institutional stakeholders) and a better organisation and more transparency in the plastic chain (private actors, both formal and informal).

4.5.1 Clarify the Roles and Responsibilities of the Institutional Stakeholders and Enhance Coordination

The roles of the institutional stakeholders should be clarified, especially between the MESTI, MLGRD and MSWR. Coordination contact people could be identified in the different ministries. Coordination with local assemblies is crucial and could be done through designated coordinators in the organisations, a dedicated committee or an existing entity (such as the Regional Health Office, the EPA, etc.). The coordination between institutional stakeholders is crucial to the development of official data on waste, plastic and environmental management.

The National Plastics Management Policy (yet to be passed) should contribute to clarifying the expected roles and responsibilities of the different actors and plans for the creation of a Resource Recovery Secretariat that could be a key coordinating stakeholder.

During the presentation of the draft Strategic Roadmap (26/11/2019, minutes available in the Annexes), the institutional stakeholders expressed their interest for the development of a data management strategy and strategy for better coordination between institutions.

4.5.2 Enhance Transparency and Coordination in the Plastic Chain

As mentioned previously, the plastic chain could be better coordinated if the informal sector was organised into associations and accessible on a platform. This recommendation also applies to the private formal sector. An association of the recyclers could be created. In addition, gathering the stakeholders on a platform (such as a mobile app) where they could trade plastics would improve the transparency of the sector and its efficiency. The reorganisation of the plastic sector and better coordination of the main actors is crucial for an improved management of plastics.

In addition, the private sector comprises of large producers and manufacturers. These actors may not know about the existing recycling initiatives. One key outcome of a platform would be to connect the large-scale actors that put plastics on the market to the small-scale actors that collect and recycle plastics. Knowing the importance of plastic pollution, these connections could lead to:

- Financial support of the large-scale companies to recyclers (for example, the GRIPE support to Coliba); and
- Commitments from the producers and manufacturers to buy a defined amount of recycled pellets per month (would stimulate the market, thus the collection).

It should be noted that the Ghana Recycling Initiative by Private Enterprises (GRIPE) is an interesting initiative for better coordination and joint efforts. Nevertheless, this initiative would need to go beyond financial support offered to small-scale projects. The GRIPE could lead or finance large-scale recycling projects (potentially through an EPR or a voluntary EPR scheme) and/or make commitments for the purchase of recycled products as it gathers large international manufacturing companies in Ghana.

Lastly, the creation of a hub to support actors of the plastic chain (technical assistance, training, facilitation of access to financial resources) could be a solution to enhance the efficiency of the sector and build on synergies.

4.5.3 Actions

The recommended actions to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes G, L, N). The following actions have been identified in relation to the enhancement of stakeholders' coordination:

- **Recommended Action #7 - Empower the informal sector**
- **Recommended Action #12 - Organise the plastic sector**
- **Recommended Action #14 - Strengthen the legal and institutional framework**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Development of a roadmap for the creation of a plastic hub** (vision, mission, strategic actions, cost estimates) that would support actors of the plastic chain and create synergies; and,
- **Support to the GRIPE on the topic of Extended Producer Responsibility (EPR)**, in order to provide financial support to plastics management.

The following activity has already been completed by the APMP team in relation to the solutions proposed:

- **Study on the digital tools** that could be used to coordinate the activities of the actors of the plastic chain (available in Annex R).

4.6 Train, Inform, Educate and Communicate

To address the lack of knowledge, expertise, education and sensitisation, there needs to be a coherent approach depending on the type of stakeholders and the knowledge gap. A strategy for data management also needs to be developed and implemented in order to inform decision-making and support the measuring of impacts of projects, policies, etc.

4.6.1 Build Capacity to Increase the Knowledge and Know-how in Plastic Management

In the plastic chain, the actors reported a lack of knowledge, know-how and expertise about plastic management due to the lack of training courses and certifications available. Capacity building programmes could be developed to address the knowledge gap of the people already involved in the plastic sector. In particular, there is a need for capacity building in:

- *Plastic general knowledge* - the different polymers, how to recognise them, their main use, the recycling opportunities, etc.
- *Plastic recycling focusing on specific polymer* - how to recycle the polymer, the process, the costs and investments, the quantities, the sector in Accra / Tema, the opportunities to produce new products from recycled pellets, etc.
- *Technical knowledge on the operation of recycling machines* - health and safety induction, maintenance, use of the machine, process explanation, etc.

In addition, many companies and entrepreneurs (formal and informal) would benefit from training in more general topics such as management, business, accounting. For the informal stakeholders, there is a specific need for information on the management of a company/association/cooperative and on the requirements for registration, reporting, accounting, permitting, etc. in order to transition to the formal sector.

Lastly, the institutional stakeholders in charge of supervising plastic management (such as the MESTI, MSWR, and the assemblies) would also benefit from capacity building on the following topics:

- Data monitoring, analysis and reporting;
- Waste management key principles and best practice for collection, transport, sorting, transfer and disposal;
- Plastic management key principles and best practice from collection to recycling, the different types of polymers and their recycling opportunities and challenges, source segregation and separate collection; and
- IEC campaigns, the content of the messages, dissemination channels, impact monitoring and evaluation.

Training and capacity building could be offered by a plastic hub, as proposed in Recommended Action #12.

4.6.2 Develop Education and Certifications

In addition, to remedy the knowledge gap in the plastic sector, there is a need to design adequate training and education programmes. The review of the existing training courses offered by universities and certification centres should be based on the assessment of the needs of the plastic sector. It is expected that two types of training would be adequate:

- Degrees (in plastic management, recycling, packaging, etc.) for management positions (3 to 5 years of studies)
- Certifications for short training (in plastic recycling, operations of machines, health and security, etc.) for working-level positions.

This would enable the actors of the plastic chain to hire staff members with adequate skills and profile.

4.6.3 Implement IEC Campaigns

Lastly, the general public should also be reached through education campaigns. As a result, the population would be more aware of plastic pollution, communicable diseases related to waste management, waste management good practices, etc. Campaigns are a way to change the behaviours of the population in general and therefore to improve municipal waste management. Education and awareness-raising will improve the coherence and efficiency in the plastic value chain.

Information, Education and Communication (IEC) refers to the approach developed to “*change or reinforce a set of behaviours in a ‘target audience’ regarding a specific problem in a predefined period of time. (...) IEC strategies involve planning, implementation, monitoring and evaluation (...) [and can], when carefully carried out (...), help to foster positive health practices, individually and institutionally and can contribute to sustainable change toward healthy behaviour*” (WHO, 2001¹⁷). According to the study conducted by the World Health Organisation (2001), IEC has proved to be effective over the past 25 years. The main achievements of IEC is that it creates awareness, develops knowledge and changes people’s behaviours. Solid waste service success is particularly dependent on the behaviour of the people, as they need to set out their waste at a time and in a manner that allows it to be efficiently collected, and only they can source segregated recyclables to enable their cost-effective recovery.

“Information, Education and Communication” (IEC) campaigns should be developed and implemented, on the following subjects:

- *General waste management* - the good practices, the diseases, the service providers, the risks for

¹⁷ World Health Organization. (2001) Information, education and communication – Lessons from the past; perspectives for the future.

health and the environment of alternative practices such as burying, burning, indiscriminate littering, etc. (result in diseases, floods, pollution)

- *Plastics management* - key facts about plastics (time to degrade, pollution on the beaches, types of plastics), the main alternatives to reduce plastics consumption (cotton bags, glass, dispensers, etc.), social activities to engage in (beach clean-up events) and existing initiatives (recycling goods, collection initiatives, mobile apps, etc.)
- *Waste segregation* - how to segregate at home (plastics, organics, paper, metals, etc.) and who to contact for collection / where the drop off bins are located, the opportunity for recycling for the different products.

4.6.4 Monitor Data on Plastic Management

The following stakeholders would need to coordinate for better data management:

- The assemblies, MSWR and MLGRD for data about waste management
- The Ghana Revenue Authority (Customs Department) for data about plastic imports/exports with the entity in charge of plastic management (the MESTI or its agency, the EPA)
- The EPA and the MESTI for data about companies involved in recycling, producing, manufacturing of plastics and data about plastic leakage into the environment (with the MSWR and other ministries or agencies responsible for water resources and wildlife)

Accurate information about waste, plastic and environmental management would enable to inform decision-making, policy formulation, legal reforms, etc. The monitoring of data on plastic management requires the definition of a data management strategy on plastics for the whole of Ghana. This data management strategy should include among other: methodology, channels for reporting, design and implementation for data collection tools, leading stakeholders etc. so that there is consistency in data collection and analysis¹⁸.

4.6.5 Actions

The recommended actions to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report (Annexes H, I, M, O). The following actions have been identified in relation to training and IEC:

- **Recommended Action #8 - Build capacity**
- **Recommended Action #9 - Develop education and certifications**
- **Recommended Action #13 - Conduct IEC**
- **Recommended Action #15 - Monitor data on plastic management**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Development and implementation of a training programme on key subjects**, including IEC (training programme available in Annex T)
- **Development of a roadmap for the implementation of an IEC strategy** to raise awareness about plastics pollution and educate the population on good solid waste and plastics management.

¹⁸ During the presentation of the draft Strategic Roadmap (26/11/2019, Annex Q), the institutional stakeholders expressed their interest for the development of a data management strategy and strategy for better coordination between institutions.

4.7 Strengthen the Legal Framework and Develop Financial Mechanisms

The reinforcement of the legal framework and development of financial mechanisms would benefit the whole plastic sector.

4.7.1 Strengthen the legal framework and public financial support

The legal framework should be enhanced to support the management of plastics. The development of a comprehensive law for waste management and plastic would provide a strong framework for enforcement. The approval and mostly the implementation of the National Plastics Management Policy (NPMP) supported by all the key stakeholders is also a cornerstone.

The current legal framework could be reviewed in particular to avoid having different rules applied to local producers/manufacturers and importers (Directive on oxo-biodegradable, Customs and Excise Act 863). Regarding the import taxes on vehicles, the actors involved in plastic collection and recycling could benefit from a waiver to reduce their costs. Regarding the controversial use of the oxo-biodegradable additive, the impacts of this additive should be assessed by an independent entity in order to determine whether the use of the oxo-biodegradable additive should stay mandatory or become obsolete.

Moreover, the Plastic Recycling Fund would need to be created, as planned in Act 863 in order to support the plastic sector through public finance. The creation of the Plastic Recycling Fund is clearly identified as one of the strategic actions of the NPMP, that is yet to be passed.

Lastly, the investigations on alternatives for low quantity and hard to recycle plastics (Sections 4.1 and 4.2) could potentially lead to a ban of some plastic products (as provided in the NPMP for “harmful plastics”) or to a standardisation of some plastic products. If the study of polymers and plastics products result in such recommendations, these would require to be supported by a regulation or another type of legally binding document.

As part of its activities, the APMP team has conducted a study with recommendations on the legal framework (available in Annex S). The study reviews the draft National Plastics Management Policy (NPMP) and proposes an improvement to ensure that the NPMP will effectively address the challenges faces by the plastic actors. Among other recommendations, the study has identified a key impediment to the management of the Plastic Waste Recycling Fund: indeed, the NPMP identifies the MESTI as the leading entity for managing the fund while this role is currently assigned to MLGRD by the Act 863. This is due to the fact that, when Act 863 was passed, the ministry responsible for plastics and waste management with the MLGRD. The study was transmitted to the MESTI in November 2019. During the presentation of the draft Strategic Roadmap (26/11/2019, available in Annex Q), the MESTI underlined that this key legal challenge is currently being addressed by a legal committee, created to work specifically on the legal issues related to the National Plastics Management Policy. This legal committee will draft an amendment to Act 863 in order to enable the MESTI to manage the Plastic Waste Recycling Fund as planned in the draft NPMP.

4.7.2 Develop financial mechanisms and encourage stakeholders’ commitments

In addition to public financing and legal framework, private stakeholders should be mobilised, especially large-scale producers and manufacturers. The Baseline Study revealed that eight large scale producers and manufacturers interviewed accounted for roughly 30% of the plastic raw pellets imports in Ghana. The following support by plastic producers and manufacturers is envisioned:

- The development of an extended producer responsibility scheme (EPR) (the ‘polluter pays’ principle). The design and implementation of this EPR scheme aim at being a simple and transparent system. The coexistence of the Plastic Tax and the EPR system should be discussed at

the first stage of design with the government.

- The use of recycled pellets in their local production.
- The financial support of plastic management initiatives, as initiated by the GRIPE, but at a larger scale.
- The sponsoring of plastic management initiatives via the provision of knowledge (pro-bono activities), equipment or infrastructure.

In addition, the plastic sector would benefit from the creation of a plastic hub that would facilitate their access to financing and capacity building. Financial and technical assistance support from international organisations would need to be more advertised, for example on the UNDP Waste Recovery Platform and/or the plastic hub.

4.7.3 Actions

The recommended actions to be implemented are presented with the roadmap in Section 5 and in more detail in the Annexes of the report. The following actions have been identified in relation to the legal framework and financial mechanisms:

- **Recommended Action #11 - Finance plastics management**
- **Recommended Action #14 - Strengthen the legal and institutional framework**

The following activities have been launched by the APMP team in relation to the solutions proposed:

- **Support to the GRIPE on the topic of Extended Producer Responsibility (EPR)**, in order to provide financial support to plastics management;
- **Development of a roadmap for the creation of a plastic hub** (vision, mission, strategic actions, cost estimates) that would support actors of the plastic chain and create synergies;
- **Study on the potential solutions and alternatives for each polymer, including plastic products that should be replaced/banned**, that could be of use for the actors of the plastic chain and institutional stakeholders to improve recycling and lower plastic pollution; and,
- **Development of an investment plan (high-level cost estimates)** for some activities identified by the APMP team as key for the better management of plastics in Accra and its surroundings.

The following activity has already been completed by the APMP team in relation to the solutions proposed:

Study on the legal framework with recommendations to determine which reforms/amendments / legal texts could strengthen the legal framework and its implementation (available in Annex S).

5 ROADMAP FOR RECOMMENDED ACTIONS

This section presents the roadmap for the Recommended Actions (RAs) that will enable the implementation of the proposed solutions. The RAs are available in the Annexes. The table below summarises the roadmap for the recommended actions. The financial resources needed will be estimated for some of these recommended actions as part of the APMP and will be included in an investment plan.

Table 5: Recommended Actions Roadmap

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
RA#1. Recycle PET <ol style="list-style-type: none"> Recycle PET into food-grade pellets Recycle PET into non-food-grade pellets. Two potential uses identified: braids and textile. Recycle PET into flakes at an industrial scale 	MESTI / private actor operating or investing in the plant	Private investments	Feasibility study: 3 months Permits, registration, EIA, plant construction: 1 year to 3 years depending on the plant	Insufficient quantity of PET for the cost-effective development of a plant Labels in PVC that prevent PET from being recycled into food-grade rPET Absence of food-grade rPET standards and thus impossible use of rPET in local bottling production	Recycling of PET into flakes for export Strengthening of the collection system for plastics Development of standards for labels' production Development of standards for rPET
RA#2. Recycle PP <ol style="list-style-type: none"> Recycle PP raffia bags into long-lasting products Limit the use of PP films Improve recovery and disposal solutions for non-recycled PP films (cf. RA #6) 	Recycling of PP raffia bags and alternatives development: private sector (for ex: GPMA) Recovery facility: MESTI / private actor operating or investing in the plant	Recycling of PP raffia bags: grants, loans, private investments Alternatives development: grants, loans, private investments Recovery facility: private investments	Feasibility study for recycling: 3 to 6 months Permits, registration, EIA, plant construction: 1 year Identification and development of alternatives: 6 months Recovery facility feasibility study: 3 to 6 months	Lack of financial support (small grants/loans) for recycling and development of alternatives Importation of PP films in finished products Lack of commitments from PP films users for alternative materials	Development of an investment plan and mobilisation of financial resources Development of an EPR system incl. difficult to recycle plastics

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
			Technology identification, detail design engineering permits, registration, EIA, plant construction: 1 to 3 years		
<p>RA#3. Improve the water sachets recycling model and promote alternatives</p> <ol style="list-style-type: none"> 1. Establish standards for the production of water sachets 2. Increase the use of alternatives (dispensers, 15/10/5 L water bottles, filters) 	<p>Standardisation: NASPAWAP / GSA</p> <p>Alternatives: Water bottling companies and companies proposing filters</p>	<p>Development of standards: public funding, international financing</p> <p>Increasing the use of alternatives: costs supported by the private sector</p>	<p>Development of standards: 6 months</p> <p>Increasing the use of alternatives: 6 months</p> <p>Spreading the use of mobile units: 1 to 5 years</p>	<p>Resistance to change by water sachets producers</p> <p>Less employment for water sachets street vendors</p> <p>Reduced activity for water sachets producers (loss of jobs)</p>	<p>Development of a change management plan</p> <p>Assessment of economic and social impact on the water sachets sector</p>
<p>RA#4. Recycle better: an approach to improve recycled products' quality</p> <ol style="list-style-type: none"> 1. Develop the production of long-lasting products made of recycled plastics 2. Produce recycled pellets of high quality 3. Promote recycled products 	Recyclers, GPMA and GSA	Private investments, grants, loans, public funding	From 6 months to 2 years depending on the plastic polymer / the proposed product	<p>Lack of financial support (small grants/loans) for better recycling</p> <p>Lack of demand for recycled pellets and products</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Inclusion of recycled products in public tender</p> <p>Development of a branding strategy and promotion of r-pellets' quality</p>
<p>RA#5. Reduce the use of short-life and difficult to recycle plastics</p> <ol style="list-style-type: none"> 1. Design easily recyclable 	<p>Upstream design, alternatives and behaviour change:</p> <p>Recyclers, GPMA and GSA</p>	<p>Costs supported by the private sector</p> <p>Banning: public funding</p>	<p>Upstream design: 6 months'</p> <p>Development of</p>	Resistance to change by manufacturers and producers	<p>Development of a change management plan</p> <p>Assessment of the</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>products (eco-design)</p> <ol style="list-style-type: none"> Develop and/or promote alternatives to short-life and difficult to recycle plastics Change the habits of the plastic chain actors Ban some short-life and difficult to recycle plastics 	Banning: MESTI		<p>alternatives: 3 months to 1 year depending on the product</p> <p>Behaviour change: 3 months' minimum</p> <p>Banning: 1 year minimum, long legal process</p>	<p>Design decided at headquarters for international companies</p> <p>Reduced activity for manufacturers and producers of banned products</p> <p>Reluctance of the government to ban harmful products if their production provides employment to the population</p>	<p>economic and social impact of banning</p> <p>Support of international financing institutions</p> <p>Support of the local and national government</p> <p>Clear commitment of the government to fight plastic pollution and support to businesses having a circular economy approach</p>
<p>RA#6. Improve recovery and disposal solutions for non-recycled plastics</p> <ol style="list-style-type: none"> Develop plastics recovery Improve the disposal of waste 	<p>Recovery facility: MESTI / private actor operating or investing in the plant</p> <p>Disposal: MSWR</p>	<p>Recovery: private investments, public funding, international funding</p> <p>Disposal: public funding, international funding, PPP scheme</p>	<p>Recovery facility feasibility study: 3 to 6 months</p> <p>Technology identification, detail design engineering permits, registration, EIA, plant construction: 1 to 3 years</p> <p>Assessment of disposal sites in Accra and improvement plan: 6 months to 1 year</p> <p>Disposal site rehabilitation: 1 year to 3 years</p> <p>Implementation of a new landfill: about 5 years</p>	<p>Lack of large public funding for disposal improvement</p> <p>Difficulties in finding appropriate sites location for disposal & recovery facility</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Support of international financing institutions</p>
RA#7. Empower the informal	Mapping and organising,	Mapping and organising:	Mapping: 3 months	Lack of financial support	Development of an

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>sector</p> <ol style="list-style-type: none"> 1. Map, organise and engage the informal actors (associations and cooperatives, use of digital tools, etc.) 2. Create a plastic hub (incl. to support the formalisation of businesses) 3. Build capacity and educate 	<p>capacity building: NGOs or organisations working with the informal sector (Environment 360, WIEGO)</p> <p>Hub: MESTI / actor interested in leading the creation of a plastic hub</p>	<p>public funding, grants</p> <p>Hub creation: private investments, public funding</p>	<p>Organising: 6 months to one-year minimum</p> <p>Hub creation: 1 year</p> <p>Capacity building implementation: 3 months to 1 year</p>	<p>(grants/ public funding/ private investments)</p> <p>Difficulty to reach informal actors</p>	<p>investment plan and mobilisation of financial resources</p> <p>Use of local organisations to reach informal actors</p>
<p>RA#8. Build capacity</p> <ol style="list-style-type: none"> 1. Implement training sessions 2. Create a knowledge centre (cf. RA#15) 	<p>MESTI / actor interested in leading the creation of a knowledge centre</p>	<p>Public funding, grants, international funding</p>	<p>Identification of needs and development of a training programme: 3 months</p> <p>Capacity building implementation: 3 months to 1 year</p> <p>Knowledge centre: 1 year</p>	<p>Lack of financial support (grants/ public funding / international funding)</p>	<p>Development of an investment plan and mobilisation of financial resources</p>
<p>RA#9. Develop education and certifications</p> <ol style="list-style-type: none"> 1. Implement education courses (degree/master) and certifications in plastic management 2. Create a knowledge centre (cf. RA#15) 	<p>MESTI, Ministry responsible for education/actor interested in leading the creation of a knowledge centre</p>	<p>Education and certifications: public funding, international funding</p> <p>Knowledge centre: public funding, international funding, grants</p>	<p>Education and certification: 1 year</p> <p>Knowledge centre: 1 year</p>	<p>Lack of financial support (grants/ public funding / international funding)</p> <p>Fragmentation of leading stakeholders (MESTI/ ministry responsible for education)</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Clear definition of roles between the MESTI and ministry responsible for education</p>
<p>RA#10. Develop infrastructure for collection, sorting and transfer</p>	<p>MESTI, MSWR / private actors involved in plastic collection</p>	<p>Public funding, international funding, private investments</p>	<p>From 1 month to several years depending on the size</p>	<p>Lack of a coordinated approach</p>	<p>Definition of a clear strategy for plastic</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<ol style="list-style-type: none"> 1. Create transfer stations 2. Create sorting centres, buying centres 			of the infrastructure		collection infrastructure needed, together with the different actors involved in collection
<p>RA#11. Finance plastic management</p> <ol style="list-style-type: none"> 1. Develop an Extended Producer Responsibility (EPR) scheme 2. Implement structural funding for infrastructures and major investments 3. Implement public financial mechanisms for better waste/plastics management 4. Develop access to finance for small and medium enterprises 	<p>EPR scheme: manufacturers and producers, GRIPE / MESTI</p> <p>MESTI / Ministry of Finance/actor interested in leading the creation of a plastic hub</p>	Public funding, international funding, private investments, grants, loans	<p>EPR scheme: 6 months minimum for the design of the system and 1 year for implementation</p> <p>Infrastructure funding: 1 year to 5 years depending on the infrastructure</p> <p>Public mechanisms: around 1 year and above, depending on the legal process</p> <p>Access for SMEs (hub creation): 1 year</p>	<p>Resistance from private stakeholders to additional financial commitments</p> <p>Lack of implementation of governmental commitments</p>	<p>Consultation with private stakeholders for the development of financial mechanisms and enforcement measures</p> <p>Clear definition of roles and responsibilities of institutional stakeholders</p> <p>Development of a fair and transparent system</p>
<p>RA#12. Organise the plastic sector</p> <ol style="list-style-type: none"> 1. Coordinate plastic actors' activities (for both formal and informal sectors) 2. Organise plastic collection by both formal and informal actors, including separate 	<p>Coordination: MESTI / NGOs or organisations working with the informal sector/association of the private formal and informal sector</p> <p>Plastic collection: ESPA /</p>	<p>Coordination: public funding, international funding</p> <p>Plastic collection: private investments, public funding, loans, international funding</p> <p>Connexion: supported by</p>	<p>Coordination: 1 year and above</p> <p>Plastic collection: 3 months minimum for piloting, and above until all users in a zone receive separate collection</p>	<p>Lack of leadership to coordinate activities and create a connexion</p> <p>High costs of separate collection (equipment, logistics, sensitisation, etc.)</p>	<p>Definition of a coordination strategy with clear roles and responsibilities of stakeholders (especially associations of plastic actors)</p> <p>Definition of a clear</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
<p>collection by service providers</p> <p>3. Connect plastic producers/manufacturers to plastic recyclers and encourage commitments (funding, purchase of recycled materials, etc.)</p>	<p>MESTI</p> <p>Connexion: UNDP Waste Resource Recovery Platform</p>	<p>plastic actors</p>	<p>Connexion: ongoing (UNDP waste resource recovery platform)</p>		<p>strategy for plastic collection with the different actors involved in collection</p> <p>Development of a business plan for separate collection</p>
<p>RA#13. Conduct IEC</p> <p>1. Conduct IEC campaigns</p> <p>2. Create a knowledge centre/platform</p>	<p>IEC: MESTI / MSWR (implemented via the assemblies)</p> <p>Knowledge centre: MESTI, Ministry responsible for education/actor interested in leading the creation of a knowledge centre</p>	<p>Public funding, international funding, grants</p>	<p>Definition of an IEC plan: 3 months</p> <p>Implementation: 6 months to 1 year, to be conducted annually</p> <p>Knowledge centre: 1 year</p>	<p>Lack of financial support (grants/ public funding / international funding)</p> <p>Fragmentation of leading stakeholders (MESTI/ ministry responsible for education)</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Clear definition of roles between the MESTI and ministry responsible for education</p>
<p>RA#14. Strengthen the legal and institutional framework</p> <p>1. Clarify the roles and responsibilities of institutional stakeholders and define modalities for coordination</p> <p>2. Develop a comprehensive and coherent legal framework to fight plastic pollution and improve plastic management</p> <p>3. Strengthen enforcement and</p>	<p>MESTI</p>	<p>Public funding, international funding</p>	<p>Clarification: ongoing in the National Plastics Management Policy</p> <p>Comprehensive legal framework and enforcement: depends on the legislative document to be developed (Act, Directive, etc.)</p>	<p>Lack of enforcement and lengthy process to reform the legal framework</p>	<p>Consequent consultation with stakeholders to ensure understanding of the new legal framework</p> <p>Definition of a strategy for enforcement and allocation of additional human and financial resources</p>

Recommended Actions	Leading Stakeholder	Needed Resources	Timeline	Risks	Mitigation Measures
compliance					
<p>RA#15. Monitor data on plastic management</p> <ol style="list-style-type: none"> 1. Generate reliable official data about plastics management 2. Create a knowledge centre/platform 	<p>Official data: MESTI / MSWR</p> <p>Knowledge centre: MESTI, Ministry responsible for education/actor interested in leading the creation of a knowledge centre</p>	<p>Public funding, international funding, grants</p>	<p>Definition of a data management strategy: 6 to 12 months</p> <p>Implementation: 6 months to 1 year</p> <p>Knowledge centre: 1 year</p>	<p>Lack of financial support (grants/ public funding / international funding)</p> <p>Fragmentation of leading stakeholders (MESTI/ ministry responsible for education)</p>	<p>Development of an investment plan and mobilisation of financial resources</p> <p>Clear definition of roles between the MESTI and ministry responsible for education</p>

6 CONCLUSION AND WAY FORWARD

During the Baseline Study, numerous challenges were identified. These have been clustered into seven categories:

1. The Plastic Chain
2. Recycling
3. The Informal Sector
4. Logistics / Infrastructure
5. Coordination
6. Knowledge / Data Management
7. Financial Resources / Legal Framework

Based on these challenges and in accordance with the various meetings and workshops with stakeholders, solutions have been developed, in line with a defined vision and key principles related to environmental management, waste management and plastic management. The solutions propose to:

- Create more value in the plastic chain with a circular economy approach
- Limit the use of some plastic polymers and products and improve recycling
- Empower the informal sector
- Improve infrastructure and access to equipment
- Enhance stakeholders' coordination
- Train, Inform, Educate and Communicate
- Reform the legal framework and develop supportive financial mechanisms.

The solutions proposed aim to address the challenges identified in the entire plastic chain, as illustrated in the graph available in Section 3.

These solutions have been further detailed into 15 Recommended Actions. The RAs include a roadmap to implement long-term activities. Out of these, key activities to be implemented during the APMP timeframe were selected. As part of the project, the team will initiate these activities, mobilise the stakeholders on these recommendations and provide them with additional support for launching the recommended actions (technical support, engagement, etc.). It should be noted that the APMP will hand over the activities to the different stakeholders, as they will need to be continued after the APMP closure date (end of January 2020).

The following activities have already been completed by the APMP team:

1. Study on the **digital tools** that could be used to coordinate the activities of the actors of the plastic chain (available in Annex R).
2. **Study on the legal framework with recommendations** to determine which reforms/amendments / legal texts could strengthen the legal framework and its implementation (available in Annex S).

The following activities have been launched and will be completed by 31 January 2020:

3. **Preliminary feasibility study for a PET plant**, to assess the potential for the production of recycled PET pellets locally in Ghana.
4. **Support to the GRIPE on the topic of Extended Producer Responsibility (EPR)**, in order to provide financial support to plastics management.
5. **Support to large distributors in Accra for the implementation of alternatives to single-use plastic bags** as a pilot to reduce the distribution of free single-use plastic bags. A workshop with the main supermarkets of Accra will take place on 3 December 2019 to engage them on the topic of the

distribution of single-use plastic bags to consumers.

6. **Support to three plastic collectors** for the improvement of their plastic collection scheme in Accra.
 7. **Development of a roadmap for the creation of a plastic hub** (vision, mission, strategic actions, cost estimates) that would support actors of the plastic chain and create synergies.
 8. **Study on the potential solutions and alternatives for each polymer, including cost estimates**, that could be of use for the actors of the plastic chain and institutional stakeholders to improve recycling and lower plastic pollution.
 9. **Development and implementation of a training programme** on key subjects, including Information, Education and Communication (IEC). The programme of the training sessions is available in Annex T.
 10. **Development of a roadmap for the implementation of an IEC strategy** to raise awareness about plastics pollution and educate the population on good solid waste and plastics management practices.
 11. **Development of an investment plan (high-level cost estimates)** for some activities identified by the APMP team as key for the better management of plastics in Accra and its surroundings.
1. Lastly, it should be noted that, in addition to the activities and deliverables mentioned above, one key meeting/workshop will be organised by the APMP team in January 2020 with potential investors and donors about solutions that would require financial support (for ex: public institutions, private sector actors, international financial institutions).

ANNEXES

Annex A – Recommended Action #1: Recycle PET

Description	
Objective	To develop local or regional PET recycling in order to produce either food-grade r-PET and/or non-food grade r-PET (braids, textile)
Solutions proposed	<ol style="list-style-type: none"> 1. Recycle PET into flakes 2. Recycle PET into non-food-grade pellets. Two potential uses identified: braids and textile. 3. Recycle PET into food-grade pellets
Expected outcomes	<p>Increased collection and recycling of PET</p> <p>Increased demand from manufacturers/producers for recycled PET pellets (rPET)</p> <p>Local or regional facilities established for the production of: rPET food-grade, rPET non-food-grade</p>

Activities / Stakeholders	
Activities to implement	<p><u>PET recycling into pellets / into flakes:</u></p> <ul style="list-style-type: none"> ● Feasibility study (incl. market study, cost estimates, regulatory requirements, etc.) ● Business Plan ● Fund raising or investment ● Identification of a potential operator/initiatives to be scaled-up <p>This phase should enable to determine the feasibility conditions of such initiatives.</p> <ul style="list-style-type: none"> ● Implementation: Registration / Obtaining the required permits (incl. EIA) / Construction / Recruitment / Operations, etc.
Stakeholders to engage	<p>Consult the manufacturers and producers to determine the interest for r-PET, PET flakes</p> <p>Engage existing PET recyclers to determine interest for r-PET (pellets) or for scaling-up</p> <p>Mobilise public or private investors/donors</p> <p>Ensure support from the Governmental authorities (MESTI, etc.)</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, etc.)</p>

Implementation during the APMP	
Activities and timeline	<p><u>PET recycling into pellets / into flakes</u></p> <ul style="list-style-type: none"> ● November 2019: Preliminary feasibility study including cost estimates
Stakeholders	<p>Current recyclers of PET into flakes</p> <p>Manufacturers of PET bottles such as members of the GRIPE, collectors and recyclers of PET such as Coliba, rePATRN, Environment 360, potential operators/investors for PET recycling</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Preliminary feasibility study on PET</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or implement the recycling of PET</p>

Annex B – Recommended Action #2: Recycle PP Raffia Bags and Promote Alternative to PP Films

Description	
Objective	To develop local or regional PP recycling of raffia bags and to replace PP products that are difficult to recycle such as PP films
Solutions proposed	<ol style="list-style-type: none"> 1. Recycle PP raffia bags into long-lasting products 2. Limit the use of PP films 3. Improve recovery and disposal solutions for non-recycled PP films (cf. RA #6)
Expected outcomes	<p>Increased collection and recycling of PP raffias</p> <p>Demand from manufacturers/producers for rPP raffia</p> <p>Local or regional facilities for the production of rPP from PP raffia bags</p> <p>Reduced use of PP films by manufacturers</p> <p>Reduced PP films pollution</p>

Activities / Stakeholders	
Activities implement to	<p><u>PP raffia bags recycling:</u></p> <ul style="list-style-type: none"> ● Feasibility study (incl. market study, cost estimates, regulatory requirements, etc.) ● Business Plan ● Fund raising or investment ● Identification of a potential operator/initiatives to be scaled-up ● Implementation: Registration / Obtaining the required permits (incl. EIA) / Construction / Recruitment / Operations, etc. <p><u>PP films replacement by alternatives:</u></p> <ul style="list-style-type: none"> ● Identification of potential alternatives (including costs) to PP films ● Promotion of these alternatives ● Analysis of the impacts of banning PP films and recommendations <p><u>Recovery and disposal of non-recycled PP films:</u></p> <ul style="list-style-type: none"> ● Recovery plant ● Engineered landfill
Stakeholders engage to	<p>Consult the manufacturers and producers to determine the interest for r-PP from raffia bags and for potential alternatives to PP films</p> <p>Engage existing LDPE and PP recyclers to determine interest for recycling PP raffia bags and scaling-up</p> <p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the government (MESTI, etc.)</p> <p>Engage the MSWR for the disposal solutions</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, etc.)</p>

Implementation during the APMP	
Activities and timeline	<p><u>PP raffia bags recycling / PP films replacement by alternatives:</u></p> <ul style="list-style-type: none"> November 2019: Technical Note on solutions for each polymer (incl. PP raffia bags recycling options and potential alternatives to PP films)
Stakeholders	<p>Current recyclers of PP</p> <p>Manufacturers and producers of PP raffia bags and films</p> <p>Current recyclers of LDPE films to determine their potential interest in recycling PP raffia bags (same technics)</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on solutions for each polymer</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or implement the recycling of PP raffia bags</p>

Annex C – Recommended Action #3: Improve the Water Sachets Model and Promote Alternatives

Description	
Objective	To improve the recyclability of the water sachets by establishing production standards and to reduce the use of water sachets by developing alternatives
Solutions proposed	<ol style="list-style-type: none"> 1. Establish standards for the production of water sachets 2. Increase the use of alternatives: dispensers, 15/10/5 L water bottles, filters etc.
Expected outcomes	<p>Water sachets production is standardised</p> <p>Increased collection and recycling of water sachets</p> <p>Increased recycling of water sachets into long-lasting products</p> <p>Demand for dispensers, 15/10/5L bottles</p> <p>Filtration of water at home</p>

Activities / Stakeholders	
Activities to implement	<p><u>Standardisation:</u></p> <ul style="list-style-type: none"> ● Development of standards for water sachets production <p><u>Development of alternatives:</u></p> <ul style="list-style-type: none"> ● Study (identification of potential alternatives, quantities of water sachets, the interest of manufacturers, cost estimates, filters, etc.) ● Implementation of the most profitable and sustainable alternatives ● Change management plan: identification of opportunities for the water sachets producers, in case of a diminution of water sachets production ● Distribution of the alternatives in large supermarkets, malls and small shops ● Change management and communication plan: promotion of the proposed alternatives especially with the population, offices, small shops, restaurants etc. for behaviour change
Stakeholders to engage	<p>Consult the water sachets producers and recyclers about the standardisation (such as Voltic, NASPAWAP, Finepack, etc.)</p> <p>Engage with the Ghana Standards Authority and FDA for the development of water sachets production standards</p> <p>Consult the water sachets producers and other manufacturing companies to determine their interest in alternatives</p> <p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the government (MESTI, MSWR, etc.)</p>

Implementation during the APMP	
Activities and timeline	<u>Standardisation / Development of alternatives:</u> <ul style="list-style-type: none"> ● November 2019: Technical Note on solutions for each polymer (incl. the alternatives to water sachets)
Stakeholders	Ghana Standards Authority- for the development of standards about water sachets. Dispensers/large bottles manufacturers for the production of alternatives to water sachets
Handover	<u>Reports and/or Technical Notes:</u> Technical Note on solutions for each polymer <u>Others:</u> Minutes of meetings and workshops Names/contacts of stakeholders that are willing to lead or implement the supply of clean tap water units.

Annex D – Recommended Action #4: Recycle Better: An Approach to Improve Recycled Products’ Quality

Description	
Objective	To improve the quality of recycled plastic products so that recycled products (pellets, finished products) meet the requirements of the producers and manufacturers
Solutions proposed	<ol style="list-style-type: none"> 1. Develop the production of long-lasting products made of recycled plastics 2. Produce recycled pellets of high quality 3. Promote recycled products
Expected outcomes	<p>Better recycling (long-lasting recycled products, high-quality pellets)</p> <p>Increased collection of plastics and recycling into long-lasting products such as sanitation pipes, etc.</p> <p>Increased demand for plastic pellets produced locally out of recycled plastics</p> <p>Increased demand for recycled products from the local and foreign markets</p> <p>Increased knowledge (general and technical) about plastics recycling</p> <p>Empowered formal and informal plastic sector</p>

Activities / Stakeholders	
Activities to implement	<p><u>Production of long-lasting plastic products made of recycled plastics:</u></p> <ul style="list-style-type: none"> ● Feasibility study for plastic products that are recycled into short-life products (identification of long-lasting alternatives, market study, cost estimates, etc.) ● Business Plan ● Fund raising or investment ● Identification of a potential operator/initiatives to be scaled-up ● Implementation: Registration / Obtaining the required permits (incl. EIA) / Construction / Recruitment / Operations, etc. ● Capacity building and knowledge development in plastic recycling (cf. RA#8 and RA#9) <ul style="list-style-type: none"> ○ Identification of needs and gaps ○ Development of a programme ○ Implementation <p><u>Production of recycled pellets of high quality:</u></p> <ul style="list-style-type: none"> ● Development of standards for recycled products ● Study on the availability of affordable laboratory testing ● Implementation of testing for plastics in existing laboratory ● Capacity building and knowledge development in plastic recycling (cf. RA#8 and RA#9) <ul style="list-style-type: none"> ○ Identification of the needs and gaps ○ Development of a programme ○ Implementation <p><u>Promotion of recycled products:</u></p> <ul style="list-style-type: none"> ● Strategy to promote recycled products (levers to increase demand, public tender and procurement, marketing, branding about recycled products, CSR, etc.) ● Implementation of the recommendations
Stakeholders to engage	<p>Consult the manufacturers and producers to determine their expectations (standards) for recycled pellets)</p> <p>Engage existing recyclers for the production of long-lasting recycled products</p>

	<p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the government (MESTI, etc.)</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, etc.)</p> <p>Engage with the Ghana Standards Authority for the development of standards/recommendations for recycled products</p> <p>Engage stakeholders (both private and public) involved in education, training, etc.</p>
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Implementation during the APMP	
Activities and timeline	<p><u>Production of long-lasting plastic products made of recycled plastics:</u></p> <ul style="list-style-type: none"> ● November 2019: Technical Note on solutions for each polymer (incl. long-lasting products) ● Capacity building and knowledge development (cf. RA#8 and RA#9) <ul style="list-style-type: none"> ○ November 2019: Development of a training programme for some key topics ○ November - December 2019: Implementation of training sessions on key topics
Stakeholders	Plastic actors for the identification of training needs
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on solutions for each polymer</p> <p>Programme of capacity building</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or finance the development of plants, the production of long-lasting plastic products.</p>

Annex E – Recommended Action #5: Reduce the Use of Short-Life and Difficult to Recycle Plastics

Description	
Objective	To reduce the use of short-life and difficult to recycle plastics such as LDPE plastic bags, PP films, PS and EPS containers and composites.
Solutions proposed	<ol style="list-style-type: none"> 1. Design easily recyclable products (eco-design) 2. Develop and/or promote alternatives to short-life and difficult to recycle plastics 3. Change the habits of the plastic chain actors 4. Ban some short-life and difficult to recycle plastics
Expected outcomes	<p>Reduced production and use of short-life and difficult to recycle plastics</p> <p>Reduced environmental plastics pollution of short-life and difficult to recycle plastic products</p> <p>Increased awareness of the population and companies on short-life and difficult to recycle plastics and plastic pollution</p> <p>Better conception and increased recycling of plastics</p> <p>Increased use of reusable plastics</p> <p>Effective replacement of some short-life and difficult to recycle plastics products by alternatives</p> <p>Ban of some short-life and difficult to recycle plastics</p>

Activities / Stakeholders	
Activities to implement	<p><u>Upstream design</u></p> <ul style="list-style-type: none"> ● Capacity building about upstream design ● Training courses and/or certifications about upstream design ● Workshops about upstream design <p><u>Alternatives to short-life and difficult to recycle plastics</u></p> <ul style="list-style-type: none"> ● Study to identify plastics that are short-life and difficult to recycle and to propose alternatives ● Promotion of such initiatives to major producers/manufacturers/distributors <p><u>Behaviour change</u></p> <ul style="list-style-type: none"> ● Capacity building (cf. RA#8) / Training courses and certifications (cf. RA#9) / Information Education and Communication (cf. RA#13) ● Creation of a knowledge centre (cf. RA#15) <ul style="list-style-type: none"> ○ Implementation of an Extended Producer Responsibility (EPR) scheme that takes into account the recyclability of plastic products (cf. RA#11) <p><u>Banning some short-life and difficult to recycle plastics</u></p> <ul style="list-style-type: none"> ● Study on short-life and difficult to recycle plastics to identify plastics that could be banned (in line with the National Plastics Management Policy) ● Stakeholders consultation and review by institutional decision-makers (Ministries) ● Decision of the Government to ban some short-life and difficult to recycle plastics

Stakeholders to engage	<p>Consult the manufacturers and producers for the development of alternatives and upstream design</p> <p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the government (MESTI, etc.)</p> <p>Engage stakeholders (both public and private) related to plastics management for the design of an EPR scheme</p> <p>Engage stakeholders (both private and public) involved in education, training, etc. to identify opportunities for the creation of a knowledge centre, implementation of training, development of courses and IEC.</p>
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Implementation during the APMP	
Activities and timeline	<p><u>Upstream design / Behaviour Change</u></p> <ul style="list-style-type: none"> ● Capacity building (cf. RA#8) / Training courses and certifications (cf. RA#9) / Information Education and Communication (cf. RA#14) <ul style="list-style-type: none"> ○ November 2019: Development of a training programme for some key topics ○ November - December 2019: Implementation of training sessions on key topics ● Support to the GRIPE members on the topic of Extended Producer Responsibility (EPR) (cf. RA#11) <ul style="list-style-type: none"> ○ December 2019: Workshops summary and key recommendations for an EPR scheme <p><u>Alternatives to short-life and difficult to recycle plastics / Banning some short-life and difficult to recycle plastics</u></p> <ul style="list-style-type: none"> ● November 2019: Technical Note on solutions for each polymer (incl. identification of alternatives to plastics that are short-like and difficult to recycle, ways to promote these alternatives, identification of plastic products that could be banned (in line with the National Plastics Management Policy)
Stakeholders	<p>Plastic actors for the identification of training needs</p> <p>Distributors, manufacturers and producers for the development of alternatives to plastic bags</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on solutions for each polymer</p> <p>Programme of capacity building and record of the training sessions</p> <p>Recommendations on the EPR scheme based on workshops with GRIPE members</p> <p>Pilot for the use of long-lasting bags instead of plastic bags in large supermarkets</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or finance the production/distribution of alternatives to some plastic products.</p>

Annex F – Recommended Action #6: Improve Recovery and Disposal Solutions for Non-Recycled Plastics

Description	
Objective	To improve recovery and disposal solutions for plastics that are not recycled
Solutions proposed	<ol style="list-style-type: none"> 1. Develop plastics recovery 2. Improve the disposal of waste
Expected outcomes	<p>Recovery of non-recycled plastics</p> <p>Disposal of solid waste in a controlled and engineered landfill</p> <p>Reduced plastic pollution</p> <p>Reduced incidence of waste-related diseases and better health for the population</p>

Activities / Stakeholders	
Activities to implement	<p><u>Recovery plant:</u></p> <ul style="list-style-type: none"> ● Feasibility study (incl. market study, cost estimates, regulatory requirements, etc.) ● Business Plan ● Fund raising or investment ● Identification of a potential operator/initiatives to be scaled-up <p>This phase should enable to determine the feasibility conditions of such initiative.</p> <ul style="list-style-type: none"> ● Implementation: Registration / Obtaining the required permits (incl. EIA) / Construction / Recruitment / Operations, etc. <p><u>Engineered landfill:</u></p> <ul style="list-style-type: none"> ● Solid waste management improvement plan (with disposal site assessment: a solution to improve current sites or development of a new site) ● Implementation of the recommendations (rehabilitation of existing sites or development of a new site)
Stakeholders to engage	<p>Mobilise public or private investors/donors</p> <p>Engage the MSWR for the disposal solutions</p> <p>Ensure the support of the project by the government (MESTI, MSWR, etc.)</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, etc.)</p>

Implementation during the APMP	
Activities and timeline	No specific activity will be implemented under the APMP for improving disposal and recovery of non-recycled plastics.
Stakeholders	<p>Institutional stakeholders (Ministries) - organisation of a consultative workshop or meeting on the proposed recommendations</p> <p>MSWR and World Bank: sharing data (Baseline Study, etc.)</p> <p>Potential operator of the recovery plant (plastic-to-fuel)</p> <p>Support and follow-up with the Plastic Revolution Foundation for the creation of a plastic-to-fuel plant</p>
Handover	<p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p>

Annex G – Recommended Action #7: Empower the Informal Sector

Description	
Objective	To increase transparency (actors involved, materials bought), efficiency and empowerment of the informal sector and to support the development of a long-term vision by the informal actors
Solutions proposed	<ol style="list-style-type: none"> 1. Map, organise and engage the informal actors (associations and cooperatives, use of digital tools, etc.) 2. Create a plastic hub (incl. to support the formalisation of businesses) 3. Build capacity and educate
Expected outcomes	<ul style="list-style-type: none"> • Increased transparency and efficiency of the informal sector and thus increased collection and recycling of plastics • Better coordination of the informal actors (including with the use of digital tools) • Active participation of informal plastic actors in discussions, conferences, platforms • Organisation of waste pickers and recyclers into associations/cooperatives • Formalisation of informal businesses • Existence of a plastic hub for plastic actors • Increased knowledge and capacity of informal actors

Activities / Stakeholders	
Activities to implement	<p><u>Mapping, organisation and engagement:</u></p> <ul style="list-style-type: none"> • A comprehensive study on informal plastic actors (mapping, GPS, activity, quantities, contact, etc.) with recommendations for better coordination (incl. creation of associations/cooperatives, use of digital tools) • Implementation of the recommendations of the study <p><u>Hub:</u></p> <ul style="list-style-type: none"> • Definition of the vision, objectives and mandate (incl. assistance for formalisation, financial support to businesses, etc.) • Business Plan • Fund raising • Implementation <p><u>Capacity building and education (cf. RA#8 and RA#9):</u></p> <ul style="list-style-type: none"> • Identification of needs and gaps (incl. business management, plastic recycling and collection, health and safety, support for the creation of associations and/or cooperatives, support for formalisation) • Development of a programme • Implementation • Creation of a knowledge centre (cf. RA#15) <ul style="list-style-type: none"> ○ Definition of the vision, objectives and mandate ○ Business Plan ○ Fund raising ○ Implementation
Stakeholders to engage	<ul style="list-style-type: none"> • Meet with informal actors to conduct a comprehensive study, create a mapping and identify the capacity building and knowledge needs • Engage and assist informal business for the formalisation of their activity

Activities / Stakeholders	
	<ul style="list-style-type: none"> Engage with the UNDP and other relevant stakeholders involved in the use of digital tools in the plastic sector Engage stakeholders (both private and public) involved in education, training, etc. to identify opportunities for the creation of a knowledge centre, implementation of training and development of courses Mobilise public or private investors/donors to support the creation of a plastic hub and of a knowledge centre Ensure the support of the project by the government (MESTI, etc.)

Implementation during the APMP	
Activities and timeline	<p><u>Mapping, organisation and engagement:</u></p> <ul style="list-style-type: none"> Already done: Technical Note on the study on informal plastic actors October 2019: Technical Note on digital tools that could be developed/used as a support of the activities <p><u>Formalisation:</u></p> <ul style="list-style-type: none"> December 2019: Technical Note on the creation of a plastic hub <p><u>Capacity building and education: (cf. RA#8 and RA#9)</u></p> <ul style="list-style-type: none"> November 2019: Development of a training programme for some key topics November - December 2019: Implementation of training sessions on key topics
Stakeholders	<p>Informal plastic actors for the identification of training needs and study on the informal sector</p> <p>UNDP, Environment 360 and Coliba about their digital tools</p> <p>Footprints Africa and others about the creation of a plastic hub</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on the creation of a plastic hub</p> <p>Technical Note on the digital tools</p> <p>Programme of capacity building</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or finance the creation of a plastic hub, associations, cooperatives etc..</p>

Annex H – Recommended Action #8: Build Capacity

Description	
Objective	To build capacity for both formal and informal actors involved in the plastic chain
Solutions proposed	<ol style="list-style-type: none"> 1. Implement training sessions 2. Create a knowledge centre (cf. RA#15)
Expected outcomes	<p>Increased knowledge (general and technical) about plastic management and other related topics</p> <p>Empowered formal and informal plastic sector</p> <p>Better recycling (best practices, long-lasting recycled products, upstream design)</p> <p>Increase the effectiveness and efficiency of the plastic sector (increased collection and recycling)</p>

Activities / Stakeholders	
Activities to implement	<p><u>Capacity building:</u></p> <ul style="list-style-type: none"> ● Identification of needs depending on the types of actors (producers, manufacturers, distributors, collectors/aggregators, recyclers) ● Development of a programme on different topics (for ex: upstream design, extended producer responsibility, business management, plastic recycling and collection, health and safety, digital tools, etc.) ● Implementation of training sessions <p><u>Knowledge centre:</u></p> <ul style="list-style-type: none"> ● Definition of the vision, objectives and mandate of the knowledge centre (capacity building, open data, certified training, courses, etc.) ● Business Plan ● Fund raising ● Implementation
Stakeholders to engage	<p>Survey the plastic actors to identify their capacity building needs</p> <p>Engage the plastic actors for the implementation of capacity building</p> <p>Mobilise NGOs, start-ups and other organisations for the implementation of capacity building</p> <p>Ensure the support of the project by the government (MESTI, Ministry of Education, etc.)</p> <p>Engage stakeholders (both private and public) involved in education, training, etc. to identify opportunities for the implementation of capacity building and creation of a knowledge centre</p> <p>Mobilise public or private investors/donors to support the creation of a knowledge centre</p>

Implementation during the APMP	
Activities and timeline	<p><u>Capacity building:</u></p> <ul style="list-style-type: none"> ● November 2019: Development of a training programme for some key topics ● November - December 2019: Implementation of training sessions on key topics
Stakeholders to engage	<p>Plastic actors for the identification of needs</p> <p>Environment 360, WIEGO, Footprints Africa, etc. about capacity building</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Programme of capacity building</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or finance the creation of a knowledge centre, the implementation of capacity building</p>

Annex I – Recommended Action #9: Develop Education and Certifications

Description	
Objective	To increase knowledge in plastic management for both the formal and the informal sector
Solutions proposed	<ol style="list-style-type: none"> 1. Implement education courses (degree/master) and certifications in plastic management 2. Create a knowledge centre (cf. RA#15)
Expected outcomes	<p>Increased knowledge (general and technical) about plastic management</p> <p>Increased number of educational courses and certifications in plastics management.</p> <p>Empowered formal and informal plastic sector</p> <p>Better recycling (best practices, long-lasting recycled products, upstream design)</p> <p>Increase the effectiveness and efficiency of the plastic sector (increased collection and recycling)</p>

Activities / Stakeholders	
Activities to implement	<p><u>Education / Certifications:</u></p> <ul style="list-style-type: none"> • Survey: identification of skills (technical, general) required by the different types of actors (producers, manufacturers, distributors, collectors/aggregators, recyclers) and the gaps (incl. existing courses in universities and other entities) • Development of one or more courses in plastic management (degree and master) / certified training programmes • Implementation of courses in a university or another entity (delivery of a diploma or certification) <p><u>Knowledge centre:</u></p> <ul style="list-style-type: none"> • Definition of the vision, objectives and mandate of the knowledge centre (capacity building, open data, certified training, courses, etc.) • Business Plan • Fund raising • Implementation
Stakeholders to engage	<p>Survey the plastic actors to identify their needs in skills (both general knowledge and technical skills)</p> <p>Engage public stakeholders involved in certification and education such as the Universities, the Ministry of Education, the National Accreditation Board (NAB), etc.</p> <p>Engage stakeholders (both private and public) involved in education/training to identify opportunities for the creation of a knowledge centre</p> <p>Mobilise public or private investors/donors to support the creation of a knowledge centre</p> <p>Ensure the support of the project by the government (MESTI, Ministry of Education, etc.)</p>

Implementation during the APMP	
Activities and timeline	No specific activity will be implemented under the APMP for the development of training and certification nor the creation of a knowledge centre. It should be noted that the Strategic Roadmap includes an analysis of the challenges related to education and recommendations on activities to be implemented.
Handover	<u>Others:</u> Minutes of meetings and/or workshops Names/contacts of stakeholders that are willing to lead or finance the creation of a knowledge centre, the implementation of courses and certification

Annex J – Recommended Action #10: Develop Infrastructure for Collection, Sorting and Transfer

Description	
Objective	To develop infrastructure for the collection, sorting and transfer of plastic waste
Solutions proposed	<ol style="list-style-type: none"> 1. Create transfer stations 2. Create sorting centres, buying centres
Expected outcomes	<p>Adequate availability of infrastructure for plastic management (transfer, collection, sorting)</p> <p>Increased collection of plastics, and increased recycling</p> <p>Reduced costs of transportation</p> <p>Increased effectiveness and efficiency of plastic collection, transportation and recycling</p>

Activities / Stakeholders	
Activities to implement	<p><u>Transfer stations / Sorting centres and buying centres:</u></p> <ul style="list-style-type: none"> • Feasibility study (incl. determination of potential location, number of facilities needed, evaluation of the capacities needed) • Cost estimates (Investment and Operation) • Fund raising or investment • Determine the governance scheme • Identification of potential operators • Implementation: Register / Obtain Permit (incl. EIA) / Construct / Recruit / Operate, etc. <p>Transfer stations welcome mixed municipal solid waste and may thus be subject to different regulations than sorting and buying centres.</p> <p>Sorting centres usually perform buying and sorting of plastics (removing caps, labels) and other recyclables; sometimes washing and shredding.</p> <p>Buying centres usually buy recyclables from waste pickers and receive recyclables from households (for free, or give compensation) and may also do some sorting.</p>
Stakeholders to engage	<p>Assessment of the capacity and capability of existing collectors or recyclers to operate transfer stations (for ex: service providers), sorting centres and buying centres (for ex: service providers, aggregators, NGOs, Environment 360, Coliba, etc.)</p> <p>Coordination and support of the project by the assemblies and Ministries (MSWR, MESTI, etc.)</p> <p>Mobilise public or private investors/donors</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, assemblies, etc.)</p>

Implementation during the APMP	
Activities and timeline	<u>Transfer stations / Sorting centres and buying centres</u> <ul style="list-style-type: none"> ● October - January 2019: Support to a local collector for the development of plastic collection points in Accra (pilot)
Handover	<u>Reports and/or Technical Notes:</u> Summary of the support provided to a local collector for the development of plastic collection (pilot) <u>Others:</u> Minutes of meetings and/or workshops

Annex K – Recommended Action #11: Finance Plastic Management

Description	
Objective	To develop sustainable and transparent financial mechanisms to support plastic management in Ghana
Solutions proposed	<ol style="list-style-type: none"> 1. Develop an Extended Producer Responsibility (EPR) scheme 2. Implement structural funding for infrastructures and major investments 3. Implement public financial mechanisms for better waste/plastics management 4. Develop access to finance for small and medium enterprises
Expected outcomes	<p>Increased access to finance for small and medium enterprises</p> <p>Reduced costs of transportation and equipment</p> <p>Existence of an EPR and thus increased funding available for plastics management</p> <p>Increased access to consequent funding for infrastructure development</p> <p>Consolidated, transparent and sustainable system of finance for plastics management</p>

Activities / Stakeholders	
Activities to implement	<p><u>EPR:</u></p> <ul style="list-style-type: none"> ● Stakeholders consultation ● Design of an EPR scheme to be implemented: <ul style="list-style-type: none"> ○ Definition of the vision, objectives, responsibilities and roles of each actor ○ Key definitions, monitoring and reporting modalities to be clearly defined ● Testing/piloting of the EPR scheme ● Implementation of the EPR scheme <p><u>Infrastructure and Equipment Funding:</u></p> <ul style="list-style-type: none"> ● Identification of the investments in infrastructure and equipment needs - Investment Plan ● Identification of potential funders (external / private, public, etc.) ● Project preparation and validation <p><u>Public Financial Mechanisms:</u></p> <ul style="list-style-type: none"> ● Definition of a specific budget for plastic management to support: <ul style="list-style-type: none"> ○ Operations (support to the implementation of plastic collection) ○ Incentive plastic recycled products ○ Awareness campaign ○ Education program ○ Research ● Identification of key financial incentives for better plastic management (for ex: reduced import taxes for refuse vehicles and other types of equipment, etc.) ● Implementation of the incentives identified <p><u>Access to finance for SMEs:</u></p> <ul style="list-style-type: none"> ● Creation of a plastic hub (cf. RA#7) that would support SMEs in loans and grants

Activities / Stakeholders	
	application
Stakeholders to engage	<p>Ensure the support of the project by the Ministries (MESTI, Ministry of Finance, etc.)</p> <p>Mobilise public or private investors/donors</p> <p>Engage stakeholders (both private and public) involved in financing, banking, etc. to identify opportunities for the creation of a plastic hub</p> <p>Engage stakeholders (both public and private) related to plastics management for the design of an EPR scheme</p>

Implementation during the APMP	
Activities and timeline	<p><u>EPR:</u></p> <p>Support to the GRIPE members on the topic of Extended Producer Responsibility (EPR)</p> <ul style="list-style-type: none"> December 2019: Workshops summary and key recommendations for an EPR scheme <p><u>Infrastructure and Equipment Funding:</u></p> <ul style="list-style-type: none"> December 2019: Investment Plan <p><u>Access to finance for SMEs:</u></p> <ul style="list-style-type: none"> November 2019: Technical Note on the creation of a plastic hub
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on the creation of a plastic hub</p> <p>Recommendations on the EPR scheme based on workshops with GRIPE members</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to finance solutions presented</p>

Annex L – Recommended Action #12: Organise the Plastic Sector

Description	
Objective	To organise the plastic sector for better plastic management
Solutions proposed	<ol style="list-style-type: none"> 1. Coordinate plastic actors' activities (for both formal and informal sectors) 2. Organise plastic collection by both formal and informal actors, including separate collection by service providers 3. Connect plastic producers/manufacturers to plastic recyclers and encourage commitments (funding, purchase of recycled materials, etc.)
Expected outcomes	<ul style="list-style-type: none"> • Increased transparency and efficiency of the plastic sector and thus increased the collection and recycling of plastics. • Increased separate plastic collection. • Better coordination of the informal and formal actors (use of digital tools, contractual agreements, etc.). • Increased organisation of plastic actors into associations or cooperatives. • Reduced costs of transportation. • New commitments from large manufacturers to purchase recycled plastic.

Activities / Stakeholders	
Activities to implement	<p><u>Plastic actors' coordination:</u></p> <ul style="list-style-type: none"> • Empowerment of the informal sector (cf. RA #7) • Comprehensive study on plastic actors (mapping, GPS, activity, quantities, contact, etc.) with recommendations for better coordination (incl. creation of associations/cooperatives, use of digital tools, etc.) • Implementation of the recommendations <p><u>Plastic collection (including separate collection by service providers):</u></p> <ul style="list-style-type: none"> • Feasibility study for improved plastic collection (the study of the different options including separate collection by service providers, cost estimates, regulations, main challenges, etc.) • Business Plan • Fund raising or investment • Implementation: Register / Obtain Permit and Contracts for collection / Recruit / Operate / etc. <p><u>Connexion between producers/manufacturers and recyclers:</u></p> <ul style="list-style-type: none"> • Creation of a plastic hub <ul style="list-style-type: none"> ○ Definition of the vision, objectives and mandate (incl. for collectors/recyclers to receive support from producers and manufacturers, etc.) ○ Business Plan ○ Fund raising ○ Implementation • Development of an EPR (cf. RA#11)
Stakeholder	Meet with both formal and informal actors for the conduct of a comprehensive study

s to engage	<p>Consult and engage with the service providers about the separate plastic collection</p> <p>Mobilise large manufacturers and producers</p> <p>Engage with the UNDP and other relevant stakeholders involved in the use of digital tools in the plastic sector</p> <p>Ensure the support of the project by the institutional stakeholders (MESTI, etc.)</p> <p>Obtain permits and required authorisations from the relevant institutions (EPA, etc.)</p> <p>Mobilise public or private investors/donors</p>
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Implementation during the APMP	
Activities and timeline	<p><u>Plastic actors' coordination:</u></p> <ul style="list-style-type: none"> ● October 2019: Technical Note on digital tools that could be developed/used as a solution <p><u>Plastic collection (including separate collection by service providers):</u></p> <ul style="list-style-type: none"> ● November 2019: Technical Note on the creation of a plastic hub ● October - January 2019: Support to a local collector for the development of plastic collection (pilot)
Stakeholders	<p>Plastic actors for the development of a study</p> <p>UNDP, about the mobile app and website developed by the Waste Recovery Platform</p> <p>Environment 360 and Coliba about their mobile application and separate plastic collection system</p> <p>Footprints Africa and others about the creation of a plastic hub</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on the informal actors (submitted as Technical Notes #1 and #6)</p> <p>Technical Note on the creation of a plastic hub</p> <p>Technical Note on digital tools</p> <p>Summary of the support provided to a local collector for the development of plastic collection points (pilot)</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p> <p>Names/contacts of stakeholders that are willing to lead or finance the creation of a plastic hub, separate collection of plastics</p>

Annex M – Recommended Action #13: Conduct IEC

Description	
Objective	To develop Information, Education and Communication to increase knowledge about solid waste and plastic management
Solutions proposed	<ol style="list-style-type: none"> 1. Conduct IEC campaigns 2. Create a knowledge centre/platform
Expected outcomes	<p>Increased knowledge about solid waste and plastics management by the population, institutions, industries, small shops and offices</p> <p>Increased collection of MSW and plastics by authorised service providers</p> <p>Increased source segregation</p> <p>Reduction of illegal SWM practices such as burning, indiscriminate littering, burying</p> <p>Reduction of waste-related diseases such as diarrhoea, cholera, etc.</p>

Activities / Stakeholders	
Activities to implement	<p><u>IEC:</u></p> <ul style="list-style-type: none"> ● Definition of an IEC strategy and roadmap (the content of the messages, target population, ways to disseminate IEC, timeline etc.) ● Production of IEC materials as proposed in the IEC strategy (podcasts, TV ads, letters, etc.) ● Implementation of IEC <p><u>Knowledge centre:</u></p> <ul style="list-style-type: none"> ● Definition of the vision, objectives and mandate of the centre (training courses, capacity building, certifications, etc.) ● Business Plan ● Fund raising ● Implementation: Registration / Recruitment / Operations, etc.
Stakeholders to engage	<p>Engage the assemblies and service providers for the development of an IEC strategy</p> <p>Engage stakeholders (both private and public) involved in education/training to identify opportunities for the creation of a knowledge centre</p> <p>Mobilise public and private stakeholders for the development and implementation of the IEC strategy (external consultant, assemblies, service providers, NGOs, etc.)</p> <p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the institutional stakeholders (MESTI, MSWR, assemblies, etc.)</p>

Implementation during the APMP	
Activities and timeline	<u>IEC:</u> <ul style="list-style-type: none"> ● November 2019: Programme of capacity building (incl. IEC)
Stakeholders	Assemblies and service providers and others for the development of an IEC strategy
Handover	<u>Reports and/or Technical Notes:</u> Programme of capacity building <u>Others:</u> Minutes of meetings and/or workshops

Annex N – Recommended Action #14: Strengthen the Legal and Institutional Framework

Description	
Objective	To reform and strengthen the legal and institutional framework for better plastics management
Solutions proposed	<ol style="list-style-type: none"> 1. Clarify the roles and responsibilities of institutional stakeholders and define modalities for coordination 2. Develop a comprehensive and coherent legal framework to fight plastic pollution and improve plastic management 3. Strengthen enforcement and compliance
Expected outcomes	<p>Better coordination between institutional stakeholders with procedures/channels / dedicated committees, etc.</p> <p>Stronger legal framework with better enforcement</p> <p>Reduced plastic pollution and illegal practices</p>

Activities / Stakeholders	
Activities to implement	<p><u>Institutional stakeholders' coordination:</u></p> <ul style="list-style-type: none"> ● Definition of the roles of the public institutions with regards to plastic management (for ex: assemblies, regional offices, MSWR, MLGRD, MESTI, EPA, GRA, GSA) ● Implementation of effective coordination channels (group, committee, key contacts, etc.) and procedures (regular meetings, reporting, etc.) <p><u>Legal framework:</u></p> <ul style="list-style-type: none"> ● Legal framework study with identification of gaps, overlaps, etc. and recommendations ● Implementation of the recommendations of the legal framework study (for ex: implementation of the National Plastics Management Policy, development of a comprehensive law for solid waste management, revision of existing legislation on oxo-biodegradable, etc.) <p><u>Enforcement and compliance:</u></p> <ul style="list-style-type: none"> ● Legal framework study with identification of gaps, overlaps, etc. and recommendations ● Definition of an enforcement and compliance strategy ● Implementation of the strategy
Stakeholders to engage	<p>Engage institutional stakeholders for the development of the study on the roles of the institutions, the legal framework and enforcement (for ex: assemblies, MESTI, MSWR, MLGRD, regional offices, GRA, GSA, etc.)</p> <p>Consult private stakeholders (both formal and informal) for the study on the existing legal framework and enforcement</p> <p>Ensure the support of the project by the institutional stakeholders (MESTI, etc.)</p>

Implementation during the APMP	
Activities and timeline	<p><u>Institutional stakeholders' coordination / Legal framework / Enforcement and compliance:</u></p> <ul style="list-style-type: none"> ● Submitted: Technical Note on institutional stakeholders with an analysis of the roles of the public institutions with regards to plastic management (TN#4) ● Submitted: Technical Note on the analysis of the legal framework (TN#5) ● October 2019: Technical Note on the potential gaps, overlaps and recommendations for the institutional and legal framework
Stakeholders	<p>Institutional stakeholders for the development of the study on the roles of the institutions, the legal framework and enforcement (for ex: assemblies, MESTI, MSWR, MLGRD, regional offices, GRA, GSA, etc.)</p> <p>Private and public stakeholders for the study on the existing legal framework and enforcement</p>
Handover	<p><u>Reports and/or Technical Notes:</u></p> <p>Technical Note on the potential gaps, overlaps and recommendations for the institutional and legal framework</p> <p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p>

Annex O – Recommended Action #15: Monitor Data on Plastic Management

Description	
Objective	To monitor data on plastic management in order to have reliable, accurate data and strengthen knowledge about the plastic sector
Solutions proposed	<ol style="list-style-type: none"> 1. Generate reliable official data about plastics management 2. Create a knowledge centre/platform
Expected outcomes	<p>Reliable data about MSW and plastic management to support decision-making</p> <p>Increased knowledge (general and technical) about plastic management and other related topics</p> <p>Empowered formal and informal plastic sector</p> <p>Better recycling (best practices, long-lasting recycled products, upstream design)</p> <p>Increase the effectiveness and efficiency of the plastic sector (increased collection and recycling)</p>

Activities / Stakeholders	
Activities to implement	<p><u>Data management:</u></p> <ul style="list-style-type: none"> • Data management study (gaps analysis, existing data, etc.) • Development of a strategy for data management (key indicators, stakeholders responsible for data, coordination channels, procedures, reporting, methodology, etc.) • Implementation of the plastics data management strategy <p><u>Knowledge centre:</u></p> <ul style="list-style-type: none"> • Definition of the vision, objectives and mandate of the centre (training courses, capacity building, certifications, etc.) • Business Plan • Fund raising • Implementation: Registration / Recruitment / Operations, etc.
Stakeholders to engage	<p>Engage institutional stakeholders for the development of the study on the roles of the institutions in the management of data (for ex: assemblies, MESTI, MSWR, MLGRD, regional offices, GRA, GSA, etc.)</p> <p>Engage stakeholders (both private and public) involved in education/training to identify opportunities for the creation of a knowledge centre</p> <p>Mobilise public or private investors/donors</p> <p>Ensure the support of the project by the institutional stakeholders (MESTI, MSWR, assemblies, etc.)</p>

Implementation during the APMP	
Activities and timeline	No specific activity will be implemented under the APMP for the monitoring of data nor the creation of a knowledge centre. It should be noted that the Baseline Study and the Monitoring Plan includes data on plastic management in Accra and its surroundings.
Stakeholders to engage	<p>WorldBank, AfDB, EU etc. - organisation of a workshop or meeting about solutions that would require financial support (including the creation of a knowledge centre)</p> <p>Institutional stakeholders (Ministries) - organisation of a consultative workshop or meeting on the proposed recommendations</p> <p>GRIFE / MESTI / MSWR / Ministry of Finance / MLGRD - Presentation of the data developed in the Baseline Study</p> <p>All stakeholders engaged during the APMP - sharing of the Baseline Study results</p>
Handover	<p><u>Others:</u></p> <p>Minutes of meetings and/or workshops</p>

Annex P – Technical Note #6: Informal Plastic Sector Integration and Organisation Strategy

Technical Note #6

Informal Plastic Sector Integration and Organisation Strategy

General Information

<i>Project</i>	Accra Plastics Management Pilot		
<i>Client</i>	Department for International Development (DFID)		
<i>Objective</i>	The objective of this technical note is to propose a strategy to integrate the informal sector to the plastic recycling value chain and optimise its organization		
<i>Recipients</i>	DFID		
<i>Author</i>	Mélanie Grignon		
<i>Contributors</i>	All the stakeholders who were interviewed and participated to the design thinking sessions The NGO Environment 360 who facilitated the design thinking workshops and mobilisation of stakeholders Mathilde Gourion-Retoré, Seureca		
<i>Approved by</i>	Marie Gouttebroze		
<i>Version</i>	V1	<i>Date</i>	25 July 2019

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List of Acronyms

AMA	Accra Metropolitan Assembly
APMP	Accra Plastics Management Pilot
E360	Environment 360
GAMA	Greater Accra Metropolitan Area
GHS	Ghanaian cedi (currency)
GSS	Ghana Statistical Services
HDPE	High-Density Polyethylene
ILO	International Labour Organisation
kg	kilogramme
LDPE	Low-Density Polyethylene
PET	Polyethylene Terephthalate
PP	Polypropylene
PS	Polystyrene or Styrofoam
PVC	Polyvinyl Chloride
SMEs	Small and Medium Enterprises
TMA	Tema Metropolitan Assembly
TNT	Tema New Town
WIEGO	Women in Informal Employment: Globalizing and Organizing

1. INTRODUCTION

1.1. Context of the APMP

The Accra Plastics Management Pilot (APMP) started in February 2019. It is funded by the Department for International Development (DFID) with the main objective of tackling plastic pollution in Accra, Ghana. The project should be a catalyst to initiate, enhance and fund pilot projects; and act as an integrator to coordinate the efforts of the various initiatives, in order to have a structured and global approach towards plastic management. The Accra Plastics Management Pilot focuses on Accra and its surroundings (including Tema and other close areas where industries, companies are based). It targets plastics management and in particular single-use plastics, often used in food packaging.

The APMP is organised into four main areas of work that should be completed over the twelve (12) months of duration of the pilot. The four areas of work listed below will be tied up with actions, with the final objective of creating spin-off projects resulting in the implementation of viable solutions for a sustainable plastic management:

1. **Facilitation and Partnership Support**, which aims to strengthen stakeholders' collaboration, between five types of stakeholders - national governmental stakeholders, international organisations, private sector, informal sector and civil society organisations
2. **Technical Support and Action-Innovation**, which aims to assess the current situation in Accra and define a strategy and a roadmap
3. **Investment**, which aims to analyse investment needs and identify potential sources of financing
4. **Replication and Scaling-up**, which aims to develop best practices and a methodology in order to enable the replication and scaling-up of this approach in Ghana and other countries.

1.2. Overview of the role of waste pickers worldwide in waste management systems

Historically and in most societies, the poorest have always taken in charge waste management for the whole society, including the middle and upper classes under different names: scavengers, cartoneros, pepenadores, zabbalin or ragpickers. Waste pickers provide waste collection, segregation, sometimes processing and make a living through the selling of recyclables material in various cities of the emerging and developing countries.

The waste pickers are part of the informal employment, under which workers do not receive social protection through work or legal protection through the state. The concept originally applied to self-employment in small unregistered enterprises.

Globally, it is estimated that the informal recycling sector gathers nearly 15 million of informal workers in developing countries¹ or 1 to 2% of the world urban population². In many cities, the informal sector employs more people than the formal sector.

For many poor people, waste picking seems to be the only activity they can engage into. Indeed, waste picking distinguishes itself from other activities by the fact that this activity does not require any capital to start with, nor a certain level of education. For this reason, poor people who have not received any training or can not afford any type of investment (even small, such as the one that would be made by a street vendor for example) will see in waste picking an opportunity to make money out of products (wastes) that are believed to have no value by the majority of the population. Therefore, waste picking is an important source of revenue for the poorest livelihoods. The income of waste collectors considerably varies depending on the region, the type of activity and gender. Although recovery is often the least paid activity in the recycling chain, these workers can earn more than the minimum wage. Waste picking is an activity for which the waste pickers is paid on its performance, hence important differences of income between waste pickers as the volumes collected considerably vary from one waste picker to another.

¹ <https://blog.secteur-prive-developpement.fr/2012/11/12/integrer-secteur-informel-pour-meilleure-gestion-des-dechets/>

² Bartone, 1988

Moreover, it happens that waste pickers who are able to save money from this activity decide to re-invest it in this business and to buy from other waste pickers in order to increase their revenues while continuing to collect waste on their side as well.

Access to rights, decent work, and the rise of economic activities of these scavengers are priority issues in the fight against poverty. To achieve this, the strategy that seems to be the most consistent is to enhance the value of this business, recognise its place in society and positive impact for the people, and to reorganise it in order to articulate waste picking with the service delivered by the formal service providers of municipal solid waste management.

1.3. Evaluating the work and social conditions of waste pickers in Accra

Accra is a fast growing capital city, with more than 2,3 million inhabitants producing around 2,150 tons of waste every day in 2017 according to the AMA. The AMA estimates that 80% of the waste generated are currently collected, leading to 20% of leakage of waste, and particularly plastics into the environment. The Greater Accra Metropolitan Area (GAMA) has about 4 million inhabitants, which makes it the 11th largest metropolitan area in Africa.

The informal sector plays an important part in the collection and aggregation system of plastic waste in Greater Accra Metropolitan Area (GAMA).

WIEGO³ estimates that around 5,000 waste pickers are working in GAMA. 2,000 of them - the so-called "Borla-Taxis"- provide door-to-door collection service in the districts that are not served by the franchised service providers. Generally, these districts are difficult to access (narrow roads) and not accessible to the collection trucks owned by large service providers. The borla-taxis generally segregate valuable materials like plastics and metals at the transfer station. The other waste pickers collect directly the materials at dumpsite, streets and markets.

Incorporating the informal sector to the waste management chain is a strong lever to increase the collection and recovery of plastics. It also can prevent competition from between formal and informal systems. According to the Accra Metropolitan Assembly (AMA), it is one of their on-going activities: the AMA is encouraging the incorporation of the collection provided by the tricycles and borla-taxis (in neighbourhoods that cannot be accessed by the truck of the service providers) into the collection system provided by service providers. Service providers are requested to include the tricycles and borla-taxi in their collection activities, creating a formalisation of the informal sector.

³ <http://www.wiego.org/>

Stands for Women in informal employment: Globalizing and organising

2. METHODOLOGY IMPLEMENTED TO PROPOSE A STRATEGY

3. Objectives of the recommendations

This Technical Note falls under the second area of work of the APMP ‘Technical Support’. It focuses on the informal sector involved in plastics collection: the waste pickers, the borla-taxi, middlemen and aggregators. This document follows the survey on the informal plastic sector (Technical Note #1) and aims at proposing a strategy to integrate the informal sector to the plastic value chain and to optimise its organisation.

Informal sector is the main collection system for plastics in Accra Metropolitan area. The informal sector is one of the key levers to improve plastic flows and thus recycling downstream.

The objectives of this document are to:

1. Propose a strategy to “optimise” the organisation of the informal sector
2. Define the “place” of the plastic management value chain
3. Better the working conditions of the informal sector
4. Increase the collection of plastic at source
5. Create innovative models.

3.1. Definitions

For the purpose of this Technical Note, the following definitions will apply:

Attendance site is the term used by the workers of the informal sector to designate transfer stations. In particular, it is used by the borla-taxi who bring the mixed waste collected at the attendance sites to sort the recyclables while other wastes are transferred to disposal sites.

Borla-taxis is the term used in Accra to designate the tricycles performing informal mixed or segregated solid waste collection, usually in areas that cannot be accessed by the equipment (large trucks) of the official municipal solid waste service providers.

Informal employment refers “to all employment arrangements that do not provide individuals with legal or social protection through their work, thereby leaving them more exposed to economic risk than the others, whether or not the economic units they work for or operate in are formal enterprises, informal enterprises or households⁴”. Recyclables collectors working for or selling to registered companies do not benefit from any legal or social protection and don’t have any contract signed with the companies. They do not work for a salary and do not have prescribed hours for work; and are paid solely on the basis of the materials collected. In this perspective, waste pickers’ work falls under the definition of informal employment.

Middlemen (also used in this survey to designate middlewomen) / **Aggregators** both refer to the people buying recyclables in order to gather larger volumes to make profit out of the selling of these volumes. The term middleman would refer to a person who does not have direct contact with a recycling company or large manufacturers and has no or little equipment. The term aggregator refers to a person who are in direct contact with manufacturers or recycling companies. For example, a middleman will buy from waste pickers or another middleman and sell to another middleman or an aggregator. An aggregator would buy from waste pickers and middlemen, and sell to recycling companies or manufacturers.

Municipal Solid Waste (MSW) refers to the stream of waste collected by the municipal assemblies (by the private contractors under their franchise agreement and by the assemblies themselves) coming indistinctly from the households and from the small and medium commercial and industrial companies.

Waste pickers, according to the definition used in the ILO Report, are “those who do the primary collection and sorting of waste. [...] Waste pickers extract and reclaim reusable and recyclable materials

⁴ International Labour Office, *Women and men in the informal economy: a statistical picture (second edition)*, Geneva, 2013, p.3.

from mixed types of waste that others have cast aside. They may collect or sort household waste from the curbside, litter from streets and urban waterways, or commercial and industrial waste from dumpsters. Some work at municipal dumps or landfills, and some may also be involved in the processing of recyclable waste⁵. Based on this definition, the report distinguishes three types of waste pickers: unorganised or autonomous waste pickers, organised waste pickers – working through cooperatives and associations, and waste pickers with a contract – this third category is considered to be formally employed (ex: metallurgical industries, public sector). According to the ILO, waste picking is one of the four groups of work occupied by “urban informal workers” (the other three are: domestic work, home-based work and street vending). These groups have the specificity to provide little security (most are not protected against loss of work and income), to have low and erratic earnings and to operate “outside the reach of government regulations and protection”, remaining “largely invisible in official statistics⁶”.

3.2. Scope of the strategy, methodology and cautions

3.3. Scope

These recommendations focus on the informal sector and the plastic value chain. They follow a first study on the informal sector (Technical Note #1). Under this second phase, the role and contribution of the informal sector into the whole plastic value chain was re-considered during workshops by its main actors in order to think of a potential optimisation. Therefore, this report focuses on the optimisation of the plastic value chain as a whole, based on insights from key stakeholders that were shared during two design thinking sessions and during interviews.

3.4. Interviews

The goal of the interviews is to draw a first diagnostic of the actions to be implemented in order to improve the plastic collection and recycling systems.

Between the 27th and the 31th of May 2019, 16 stakeholders were met in Accra and its surroundings:

- Mr. Solomon Roi, AMA, Head of Waste Management Department
- Mr. Victor Kotey, AMA, Deputy Head of Waste Management Department
- M. Dereck Anku, TEMA, Head of Waste Management Department
- Mrs. Ama Ofori Antwi, Executive Secretary, ESPA (Environmental Service Providers Associations)
- M. Oteng, Professor. Geography Department, Waste Management Specialist
- Mr. Prince Kwame Agbata, Co-founder, Country Director Coliba
- Mrs. Cordie Aziz, Executive Director, E360
- Mr. Orlando Kwame Frimpong, AMA President of Borla-Taxi Association
- Mr. Daniel Frimpong, Kasoa Central Organizer of Borla-Taxi Association
- Mr. Sameul Akins, Member of Borla-Taxi Association
- Mr. Acquah Richard, Member of Borla-Taxi Association
- Mr. Elvis, Head of Water Sachets Collectors Association
- Mr. Lateh, Clan leader, Tema New Town Fisherman Community
- Mr. Samwell Commey, Secretary of the Canoon Fishermen, Jamestown, Accra
- Mr. Nii Ayigbti II, Chief Fishermen of Asene, Jamestown, Accra
- Mr. Godwin Ekpe, Active Organizer of Victory Foundation, Tema New Town

⁵ Idem, p.47.

⁶ Idem, p.39.



Interview with Mr. Samwel Commey, Secretary of the Canoon Fishermen on the 29th of May 2019

3.4.1. Questionnaires

A questionnaire was administered to 45 households living in medium/high income districts of Accra to understand the behaviour of this social category regarding plastic segregation.

The questionnaire is presented in the annexes.

It is structured as follows:

0. Status (sociological profile of the respondent)
1. Opinion regarding waste pollution in Accra and plastic waste in particular
2. Behaviour regarding plastic segregation
3. Willingness to pay for separated collection system
4. Type of plastic consumed

The panel of the respondents to the questionnaire is composed as follows:

Panel composition by gender

Men	Women	Total
11	34	45

Panel composition by age

Age	Number of respondents
18-25	1
25-35	22
35-45	15
45-55	5
55+	2
Total	45

3.5. Design thinking sessions

Two design thinking sessions were organised on 18 and 19 June 2019 to work with several stakeholders on the way to improve the plastic value chain organisation, improve plastic collection and articulate the informal sector to the whole system:

- Design Thinking Workshop 1: “Collection systems: strategies to develop transfer and sorting centres and ways to improve the plastics market (demand/supply) for each plastic stream”; and,
- Design Thinking Workshop 2: “Collection systems: strategies to improve plastics collection, in particular to mobilise the borla-taxis and fishermen”.

The first design thinking workshop was gathering personalities from the Government of Ghana, Municipality of Accra, Agregators, Recyclers and Manufacturers. The objective was for them to work on potential strategies to improve plastics collection, in particular on the development of transfer and sorting centres and on ways to improve the plastics market so that demand and supply can meet for each plastic stream.

The second design thinking workshop focused on improving plastic collection at sources by including the borla-taxi and fishermen communities into the collection system.

3.5.1. Design thinking session 1: working on the value chain

- Participants and organisers

21 people joined the first design thinking session:

- Mr. Robert Cheetham, AMA, Waste Management Department
- Mr. Oliver Boachie, Advisor, Ministry of Environment (MESTI)
- Mr. Eugene Tiagbe, EHSD, Ministry of Sanitation and Water Resources (MSWR)
- Mr Quaranchi Teltey, Ministry of Sanitation and Water Resources (MSWR)
- Mrs. Cordie, Executive Director, Environment 360
- Mr. Richardson Set Owoo, Executive Secretary, Plastic Waste Management Ghana, Ghana Plastic Manufacturers Association (GPMA)
- Mr. Joseph Akl, Deputy GM, Qualiplast, Recycler
- Mr. Jeffrey Provencal, Rapatrn, Recycler PET
- Mr. Ludwig Adjakloe, General Manager, Ezov Environmental Services, Aggregator/Buyer PET
- Mr. Christopher Gyan-Mensah, Ezov Environmental services
- Mrs. Evelyn Ampadu, Director, Lynamps Enterprise, PET flacking
- Mr. Moses Panni, Executive Director, Trash Connect (Aggregator)
- Mr Wisdom Torgby, Executive Director, Redfiels (Aggregators)
- Theophilus Arthur-Mensah, Analyst, ACI
- Mrs. Naa Quaynor-Mettle, Fan Milk
- Mr. Martin Oteng-Ababio, Professor , Department of Geography and Resource Development, University of Accra
- Mr. Pascal Peslerbe, Innovative Plastic Recycling Solutions expert, Veolia
- Mr. Prince Mortey, Executive Assistant, Coliba
- Mr. Emmanuel Bonney, Coliba
- Phan Bai, Circular Economy & EPR Specialist , Veolia
- Pascal Peslerbes, Project Director, Veolia

This workshop was organised by, Mélanie Grignon - Social Expert, 2EI Veolia - Mathilde Gourion Retore - Project Coordinator, Seureca - and Rashida Seidu from E360. Two members of Environment 360 recorded the session.

- Organisation of the workshop

The workshop was held from 1 pm until 5.30 pm.

- 1) Ice-breaking

The forum started with Rashida Seidu and Mélanie Grignon welcoming the participants and introducing the human web, an activity to interact with participants and get to know their expectations for the day.



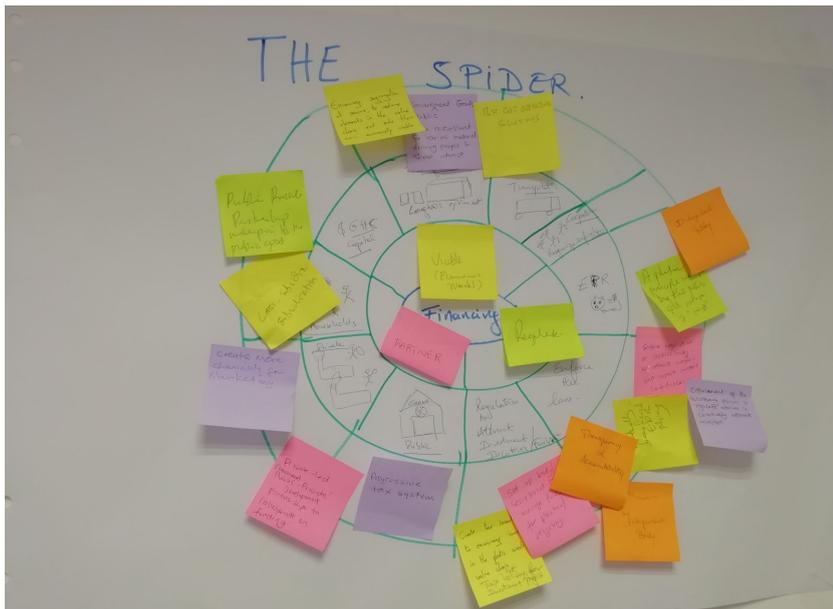
2) Mapping the value chain and the different stakeholders

Then, the participants filled the value chain based on their ideas and the reality on the ground. After some deliberations the value chain was arranged and participants indicated where they fit in the value chain.



3) Mapping the challenges

Then the participants were asked to map the main challenges in the plastic value chain according to their opinion.



5) Designing a project

The participants selected, then, through voting process, one of the idea/solution that they found the most relevant among all the ideas proposed.

The stakeholders had to define the project related to this solution through the following architecture:

1. Title of the solution
2. Description of the project
3. What?
4. How? (resources)
5. With whom?
6. When?
7. The main obstacles
8. How to address those obstacles?



3.5.2. Design thinking session 2: working on improving the plastic collection at source

- Participants and organisers

10 borla-taxi and 10 fishermen joined the workshop.

This workshop was organised by Mélanie Grignon - Social Expert, 2Ei Veolia - and Rashida Seidu from E360.

One member from E360 was translating the borla-taxis' conversations from Twi language to English and Mrs. Lydia Doe - E360 as well - was translating the conversations of the fishermen from Ga to English. Two members from Environment 360 recorded the session.

- Organisation of the workshop

1) Ice-breaking

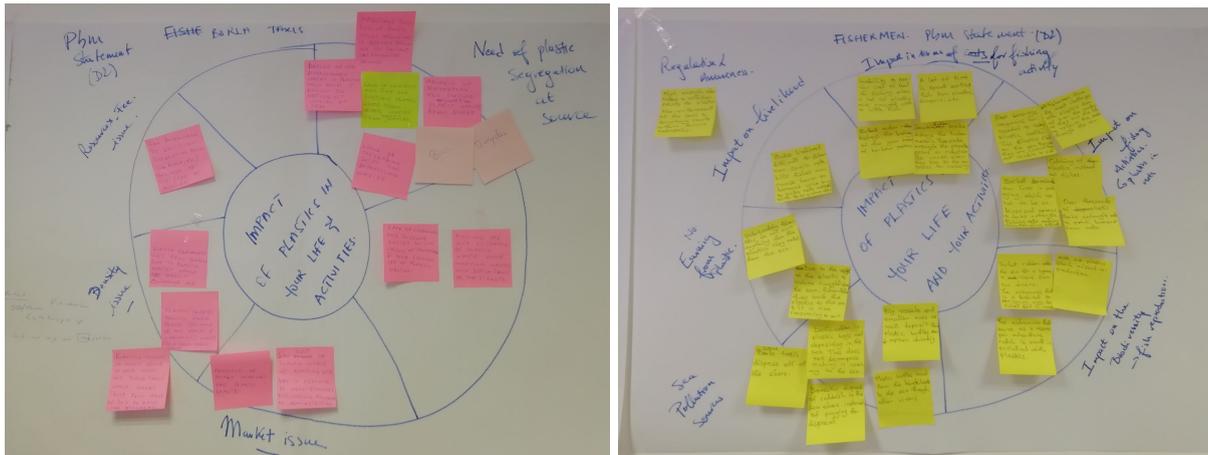
The workshop started at 8 am with Rashida Seidu and Mélanie Grignon welcoming the participants. Everyone introduced himself.

Then the participants were divided in two groups: the borla taxi on one side and the fishermen on the other side.



2) Problem statement

The facilitators first asked the two groups to work on the problem statement and more particularly to think about the impact of plastic in the life of the participants.



3) Mapping the solutions

Then the participants were asked to imagine solutions to the problems statement.



4) Sketching the solutions

The participants selected, then, through voting process, one of the idea/solution that they found the most relevant among all the ideas proposed.

The stakeholders had to define the project related to this solution through the following architecture:

- Title
- Description
- Resources needed
- Location
- Timeline
- Who is involved
- Main challenges in achieving the solution
- How to address the challenges

5) Getting their opinion on the workshop

After the lunch, and before the presentation of the solutions by the two groups, the participants played to the human web. The participants were asked what they liked and disliked from the activities that were proposed to them. It appeared that they were really glad to have been consulted on this topic and their expectations are high.



6) Presentation of the two solutions

The borla-taxi presented a project called “Awareness creation in Greater Accra and partnerships for added value in plastic waste”.

The fishermen selected and presented the solution that they called “Education and partnership for collection of plastic waste.”



3.6. Cautions

Language: The languages of the second design thinking workshop, held on Wednesday 19th of June 2019, were in Twi and Ga. The conversations were translated into English. Some elements of the discussions can, thus, have been missed.

4. Improve collection systems by organising the value chain

4.1. Overview of the possible contribution of stakeholders to improve plastic collection at source

According to the interviews held from 27 to 31 May 2019, almost all the stakeholders have an interest in contributing to the plastic collection system and have expressed some needs to achieve this goal.



The next section details the contribution of each stakeholder.

4.2. Improving plastic collection at household level

4.2.1. Middle and high income households

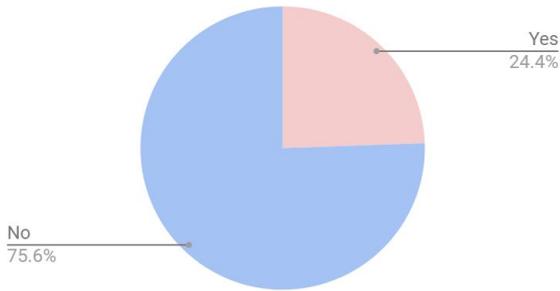
- **Behaviour regarding plastic segregation and collection**

According to the questionnaire administered to 45 households living in medium/high income district of Accra - mainly in East legon, North Legon, West legon, Osu, Ashimota, Abelemkpe areas - 100% of the persons interviewed declared that Accra is not clean. 98% have heard about plastic pollution and its consequences on health, which shows a certain level of awareness and education.

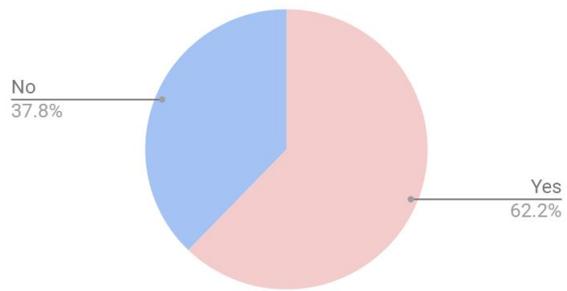
62% of the inhabitants already segregate plastics despite the fact that only 24% have an existing plastic collection system.

Two persons declared to pay for the collection system.

Existing plastic collection system



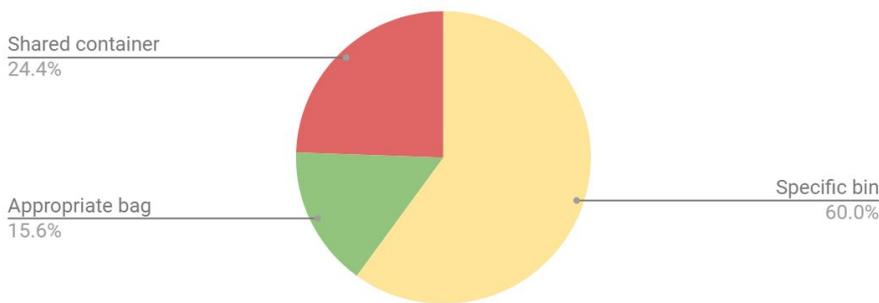
Segregate plastics



98% of the inhabitants interviewed declared to be ready to segregate plastic.

If they were able to choose they would prefer to have a specific bin for plastic collection.

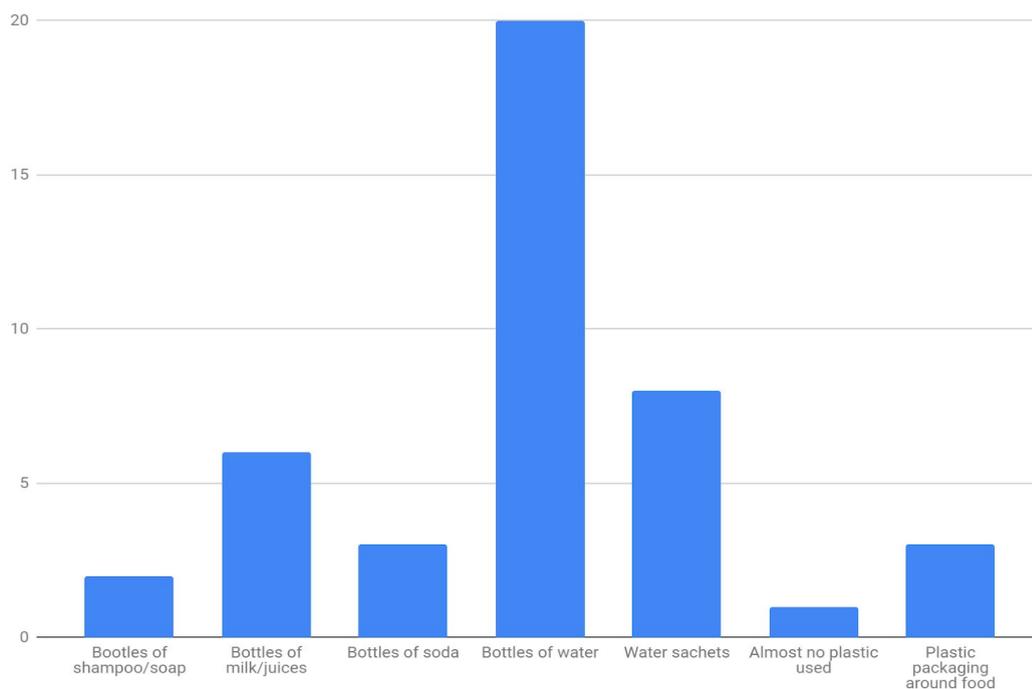
Which tool would you prefer to segregate plastic



88% would be ready to pay for a specific plastic collection system.

According to what the households declared the type of plastic packaging that they consume the most is water bottles.

Plastic packaging consumed the most



- **Proposition to improve collection at source**

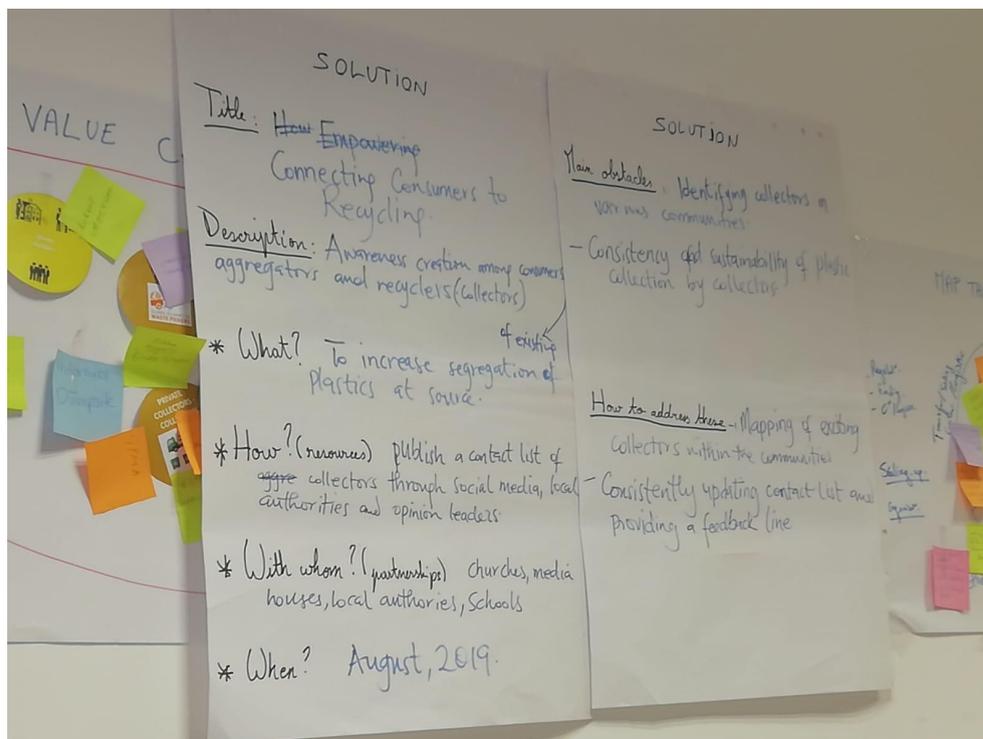
Improving collection at source is one of the main challenges to be able to get clean plastics.

One of the groups of the first design thinking workshop, held on 18 June 2019, worked more specifically on this specific topic.

The team came up with **four solutions to solve the problem of segregation at source:**

1. The necessity of training of individuals/consumers on proper waste disposal and source segregation
2. The need for education and sensitization of individual on waste segregation at source
3. Funding to finance the segregation at source
4. Motivation

The group then developed on a solution to connect consumers to recyclers.



The solution is focused on increasing segregation plastics at source among consumers. The stakeholders recommend to create awareness among consumers on existing aggregators and recyclers (collectors).

They suggest to publish a contact list of collectors through social media, local authorities, opinion leaders among others. They propose, more particularly to partner with churches, media, households, local authorities and schools.

They identify as **main obstacles:**

1. Identifying plastic collectors in various communities
2. Consistency and sustainability of plastic collection by the collectors. It means that the volumes to be collected or demand for collection have to go beyond the capacity of collectors.

They proposed to address those challenges by:

1. Mapping existing collectors within the communities
2. Consistently updating contact list and providing feedback line
3. Developing partnership among collectors to be able to constantly collect large volumes of recyclables (plastics)

4.2.2. Low income households

- **Behaviour regarding plastic segregation and collection**

The questionnaire has not been addressed to low-income community because there is already some feedback and experiences in terms of segregation at source.

E360 works in Tema New Town communities to encourage households to segregate plastic.

They work, for example, with the Victory Foundation, a local NGO working on bringing the youth of the Community together. They have organised the youth together to support the Pick it Project.

They work more particularly on creating awareness by asking people to collect the plastic and bring it to the Pick It sorting center. They communicate to the communities by distributing education materials to the inhabitants. They convey the message through flyers and meetings, organise the float and mobilise the community at one place. The Foundation has an interest because they consider it as a good project for the Community, contributing to the improvement of the City.

E360 sorting center pay the households for the material they have segregated.

- **Proposition to improve collection at source**

The mobilisation can be created through:

1. Awareness programs lead by some local NGO in the community
2. Give an incentive -money or other incentive - to the low-income communities to encourage them to segregate waste

These two propositions are developed in the section 4. Mobilise resources

4.3. Supporting the informal sector to improve collection system

The plastic is today mainly recovered by the informal sector. The challenge there is to support the informal sector to enable its different stakeholders to scale-up their activity and volumes collected.

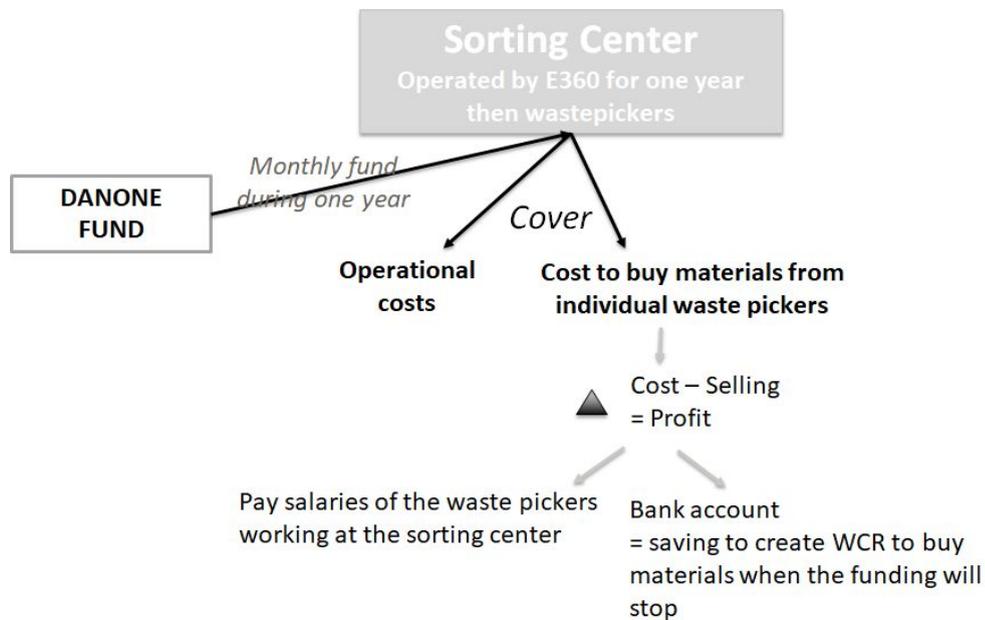
4.3.1. Organise the waste pickers to increase the volume of plastics collected

E360 has developed **two models to structure** the waste pickers:

1. The association model
2. The cooperative model

The two models are described below:

- The association model developed by E360 in Tema New Town for the Pick it project



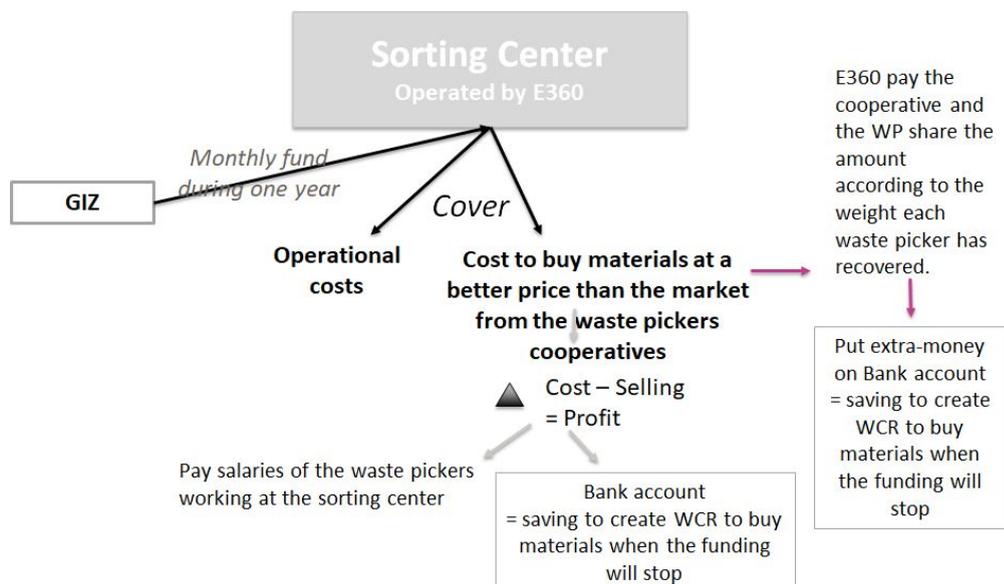
WCR: Working capital requirement

This project is financed by Fan Milk.

According to Cordie Aziz, the Executive Director of E360, this model has **some limits**:

1. There is, particularly, a real need to build trust among the waste pickers. In the Pick it project, there was a segregation of the muslim women by the other women⁷.
2. In the Danone project the women are responsible for what they do with the profit. Most of them have a short term vision whereas a long term vision is needed to run a sorting center.

- The cooperative model developed by E360 in Kumasi and Accra



The projects in Kumasi and Accra are financed by the GIZ.

⁷ See Minutes of Meeting between E360 and MGR of the 30/05/2019

Cordia Aziz estimates that after 3 to 5 years, the waste pickers can be able to operate the sorting centres. According to her, the management board of each sorting centre should be a combination of 3 waste pickers, 1 person from an NGO and a person from the municipality to ensure the long-term viability of the sorting centre.

To build this cooperative model, the waste pickers had to pass entrepreneurial test: interview, test in situation, how do they react in group, etc...

25 individuals were chosen for the pilot project in Accra.

According to Mr.Oteng and Mrs. Cordie Aziz, **the cooperative is probably the best model to structure the informal sector and enable it to increase the volume of the materials recovered.**

- *Improving waste pickers working conditions*

The organisation of the waste pickers into cooperatives has to take into account the improvement of their working and living conditions.

The precedent Technical Note #1 has revealed some main challenges:

1. The inequalities between men and women and the discrepancy in revenues from plastic recovery between the waste pickers picking in the street and the landfills
2. Most of the waste pickers working in the street pick as a part-time job
3. Health and safety are two of the main concerns for waste pickers and have an impact on their activity
4. Creating waste pickers loyalties does not raise only on prices.

Improving the working and living conditions of the waste pickers and support them to make their business grow can be a sound lever to gain their confidence and thus work with them.

4.3.2. Support offer/demand matching

- ***The creation of sorting and/or transfer centres***

According to all the actors interviewed, the first necessity is to create transfer and/or sorting centers in all the Accra Metropolitan Area.

Indeed, most of the stakeholders - waste pickers, borla-taxi, fishermen and even private companies - declared to be interested by organising plastic collection to sell the materials but their main challenge is to identify the demand for the different types of plastic.

The main resources required are:

1. A stakeholder organising the setting up of sorting and/or transfer centers
2. Funds to finance these facilities.



The Pick it project centers managed by E360

- **Developing social incubator on plastic waste**

E360 seems to have developed a sound social business model to improve plastic collection system:

1. Organisation of the waste pickers into cooperatives
2. Mobilisation of the communities to get plastic at sources
3. Creation of sorting centers - that need to be more mechanised
4. Logistic
5. Fundraising
6. Creation of a long-term viable economic model through working capital fund creation.

They are now replicating the model developed in Kumasi in Accra - in Jamestown and Old Fadama districts - and are planning to start a new project based on the same model in Cape Coast.

On the short term, existing social incubators/NGOs could be supported to enable a quick scale-up of sorting center creations as well as a systematic organisation of the informal sector.

A social incubator gives technical & business skills to waste pickers and can benefit from private or public funds to initiate business model structuration.

Veolia has a sound experience in supporting social business incubators through its program called Pop Up by Veolia. In India, the Pop Up team has more particularly worked on improving the working conditions of the waste pickers⁸.

E360 could be supported to turn into Plastic Management Social Incubator/or scale up the model as they have all the required skilled to organise waste pickers into cooperatives, build sorting centers, organise the business and identify the demand while training the waste pickers to manage their activity in a sustainable way.

- **Cautions regarding the impact of the organisation of the value chain on the waste pickers working at the landfill**

The waste pickers working on the landfill could be directly impacted by the structuration of the value chain, particularly by the segregation of plastic at source.

We highly recommend to achieve an economic and social impact survey before starting those kind of actions.

Probably the segregation at source should concerns the type of plastic that they are not recovering currently like PET and MLP.

4.4. Including new informal actors in the value chain

⁸ For the presentation of Pop Up program and Pop Up India consult the following website: <https://www.veolia.in/about-us/corporate-social-responsibility/resourcing-region/pop-veolia-india>

4.4.1. Integrating the borla-taxi to the plastic collection system

During the workshop, the borla-taxi have stressed the **following impacts** of plastic pollution in their job:

- Difficulty in segregating plastics; this makes their work difficult – Need for plastic segregation
- Limited market for plastics hence occupies space at offloading sites for general waste that cannot be easily recycled. – Market space
- Bulkiness of the waste collected, the plastics easily fills up the tricycles – Density problem
- Low patronage by middle and low income earning areas. This is because the prices of waste to be collected increase due to bulkiness waste (the presence of plastics).
- Health- they also mentioned that they sometimes sustain injuries due to the presence of plastics (whole and pieces of broken plastics)

They suggested to work on:

1. Collection systems/ logistics
2. Awareness and education
3. Partnerships

They recommend to work on awareness creation in Greater Accra and the creation of partnerships for added value on plastic waste.



They recommend the following actions to be put in place:

1. Public education on proper waste management
2. Awareness creation on establishment of purchasing bodies or companies and institutions such as schools, churches, among others
3. Establishment and connection with purchasing companies with districts and communities
4. Collaborations with local authorities and other relevant bodies

According to them the main resources needed are:

1. Public address systems
2. Human resources
3. Communications materials like flyers, posters banners video shows
4. Funds
5. Dustbins, tricycles, storage facilities, dispatching or offloading sites

They proposed to locate those awareness activities on bus stops and terminals, market places, residential areas, social and mass media.

According to them the main partnerships should be with individuals, private institutions, NGOs, churches, schools, transport companies.

The main obstacles are:

1. Getting funds
2. Having the right logistics

4.4.2. Launching a program to include the fishermen into the plastic collection system

During the workshop, the fishermen have stressed the **following impacts** of plastic pollution in their job:

- Impacts on aquatic biodiversity (both plant and animals). It negatively affects the reproduction of aquatic lives and their food chain
- Impacts on fishing activities – they get plastics in the nets during fishing activities
- Sea and beach pollution. These are mostly done by borla taxi drivers who dispose off their waste at the beaches, defecation in plastics which tends to be disposed of at the sea,
- Impacts on livelihoods – increase the cost of living since more money is needed to replace nets that plastics destroy during fishing. Moreover, the fishermen earn less income due to difficulty to catch fish as many are killed by plastic pollution in the sea.



Dumping site on the sea shore in TNT and a beach in Jamestown, fishermen communities

They suggest to work on:

1. Partnerships, contributions and collaborations
2. Logistics /equipment
3. Regulations
4. Education and sensitization

Like the fishermen, they recommend to work on awareness creation in Greater Accra and the creation of partnerships for added value on plastic waste.

During the workshop, they suggested to work on education on the benefits of plastic waste collection among the fishermen community and develop collaborations with collectors that could collect and pay them to make the beaches clean.

According to them the main resources needed are:

1. Announcement/information
2. Gloves
3. Picking sticks
4. Rakes
5. Wheelbarrows
6. Spade/shovel
7. Collection bins
8. Tracks and tricycles for collection and transportation
9. Plastic waste companies
10. Boots
11. Rain coats

They suggest to locate the collection campaigns in the following areas: estuary of Korle lagoon, Jamestown, Estuary of Chemu lagoon at Chorkor, Big drain at Mensah Guinea , Arts center-Accra

They recommend to partner with NGOs, Civil societies, local government, assembly members, manufacturing companies, other fishermen, plastic waste collectors

They identified as main obstacles:

1. Rainfall during the rainy season that could make plastic collection more difficult
2. The name calling and insults because waste picking is still seen as a dirty activity
3. Misunderstanding and argument over plastic waste
4. Theft of plastics
5. Irregular collection and payment of plastic waste

According to them the main resources needed are :

1. Provision of protective clothing
2. Education and sensitisation

4.5. Supporting the plastic transformers.

Most of the plastic transformers - like Coliba, Repatrn or Lynamps - need some support and more particularly on:

1. Financing equipment like shredders and washers
2. Having guaranteed volumes bought by the recyclers - for PET most of them are abroad
3. Logistics and above all transportation as the costs are too high.

5. Mobilise resources

5.1. Funding the value chain

As stated above, there is a high demand to fund:

1. Investment in sorting centres to be created
2. Investment in the recycling chain: shredders and washers
3. Investment in Transportation: Trucks, Tricycles, etc
4. Funds to support the organisation of the informal sector.

Different types of mechanisms can be used.

5.2. Public contribution

- ***The environmental tax levy***

One of the main challenges to finance the plastic value chain comes to the fact that there is already an environmental tax on private companies but this tax is not used for environment. It seems to go to the general budget.

According to Mr. Oteng, EPR system (see below) is not in the agenda because the Government does not want the international companies to leave the country in case of new taxation. Tightening the environmental law and increasing taxation is thus a hot topic.

- ***The Multilateral aid***

Many multilateral funders were invited to the workshop held on the 18th of June - DFID, GIZ, AFD, European Union - but none of them were able to come.

It is, thus, difficult to know if they have a strong interest or not in financing the plastic recycling value chain.

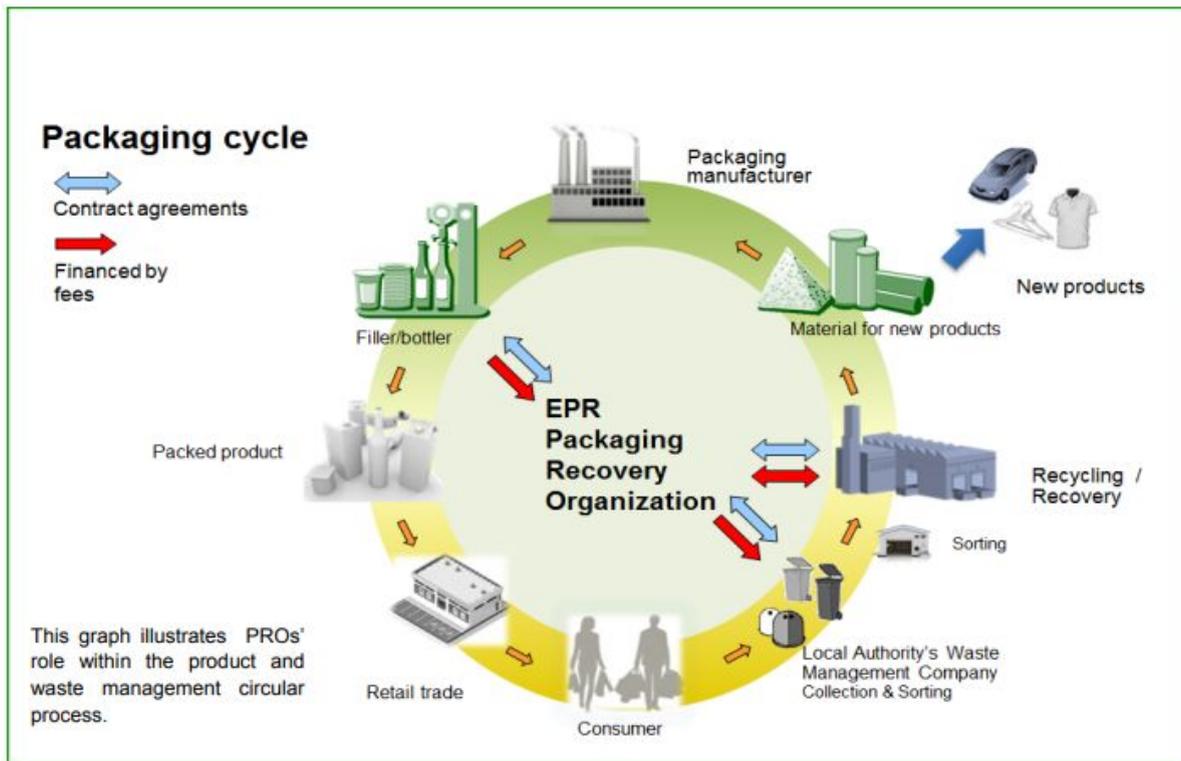
DFID is financing the current survey and GIZ support E360 to develop sorting centres.

5.2.1. Private manufacturers contribution

- ***The Extended Producer Responsibility***

Faced with increasing amounts of waste, many governments have reviewed available policy options and concluded that placing the responsibility for the post-consumer phase of certain goods on producers could be an option.

Extended Producer Responsibility (EPR) is a policy approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. Assigning such responsibility could in principle provide incentives to prevent wastes at the source, promote product design for the environment and support the achievement of public recycling and materials management goals.



Extracted from: http://www.expra.eu/uploads/downloads/EXPRA%20EPR%20Paper_March_2016.pdf

- **The idea of a public-private co-financing**

During the design thinking session held on 18 June 2019, one of the groups decided to work on financing issues to improve the plastic value chain.

They have proposed to create an independent organisation that would allow the private sector and the public sector to develop partnerships in the financing process. According to the different stakeholders, this mechanism could ensure the transparency and accountability of the plastic recycling financing system.

The stakeholders proposed to use this fund to finance:

1. The transportation (logistics) system
2. The development of infrastructure
3. The sorting, recycling and transfer centers
4. The education and awareness programs
5. The inclusivity of the system ie formalizing the informal sector

They suggest that this fund would be finance at:

- 50% by the plastic levy from the government of Ghana
- 50% through the private sector contribution - dealing with packaging

They propose a governance mechanism built around co-plan, co-disbursing, co-implementation and co-financing

They would like the Government, private sectors (MNCs, CSOs, Start ups) and development partners (local capacity) working together to reach this goal.

The main obstacles that they have identified are:

1. The enforcement of the law

2. The lack of data to create databases to inform data decisions and development policies
3. The lack of EPR systems. According to them, the fact that the plastic levy is currently not used for plastic recycling is an obstacle to the development of an EPR system as the private companies do not want a double taxation system

A strong mobilisation of the civil society and all the stakeholders working in the plastic value chain could push the government to use this plastic levy to contribute to plastic recycling.

5.2.2. The Waste-Bank mechanisms

In many cities, schemes have been implemented to encourage residents to sort their recyclable dry waste, through an economic incentive. The principle is usually to create a small fund and a complementary currency.

The set up "community bank" or "waste bank" buys recyclable waste (metals, paper, paperboard, plastics, cooking oil, etc.) from the population slightly above the market price, by paying with this complementary currency.

Residents can use these "vouchers" to buy certain types of products, which are sold at a preferential rate by local businesses. The association running the "waste bank", sells the waste collected to traders or recyclers.

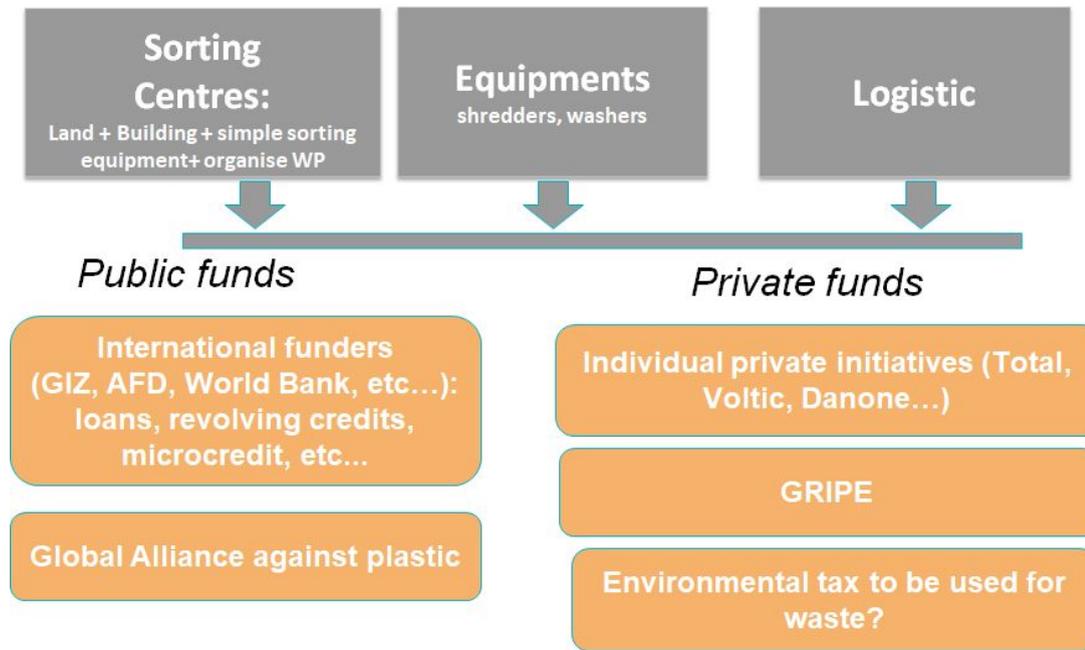
This system encourages recovery, provides income for the urban poor, while at the same time encouraging the inhabitants' expenses on certain types of products: non-perishable staples, products from the region, etc.

This mechanism has been implemented in many countries, here are some famous examples:

- "Moeda verde" (green currency), has been deployed by the NGO Move in Vila Velha (Espírito Santo, Brazil), in one of the poor neighborhoods of Rio de Janeiro, the Santa Marta favela. Here the supply of dry waste is synonymous with a reduction in the electricity bill;
- "Bono Verde" - has been developed in some districts of Lima, Peru;
- "Eco-Pesa" has been created in Kenya as a local currency that can only be used within the targeted informal neighborhood to

This type of mechanism could be implemented to encourage people to better sort their plastic waste and provide additional income to the low-income households.

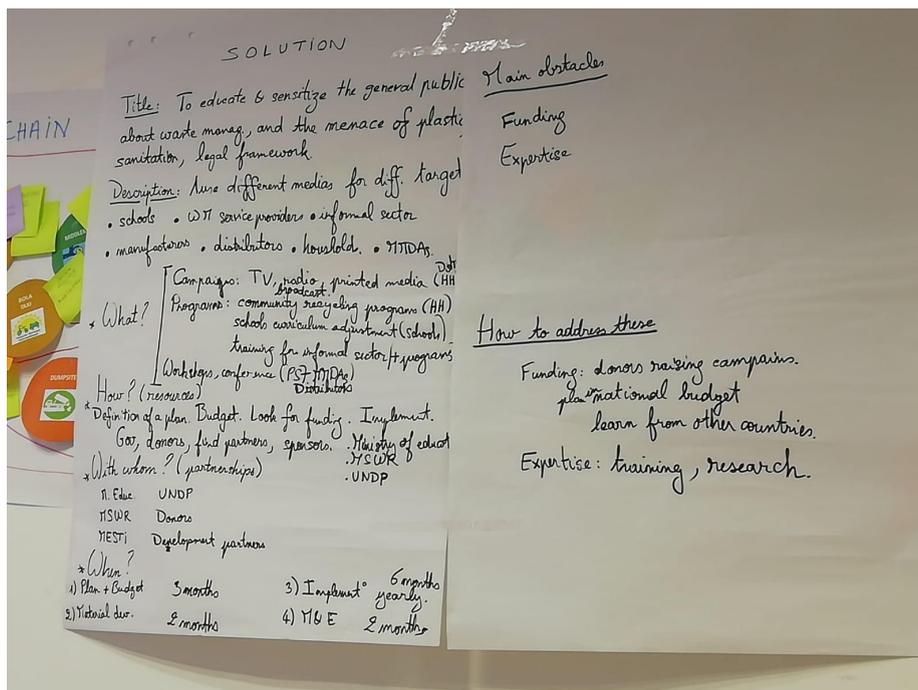
5.2.3. Summary of the resources needed and possible funders



5.3. Awareness campaigns to support the new system implemented

All the stakeholders have stressed the fact that education and raising awareness on plastic pollution and recycling is key to change the behaviors and improve the coherence and efficiency in the plastic value chain.

One of the group of the workshop on the value chain, held on the 18 June 2019, selected awareness and education of the general public on waste management as one of the main challenges to improve the plastic value chain.



The stakeholders have recommended to use different media for different target groups

1. Schools

2. Waste management Service provide
3. Informal sectors
4. Household
5. MMDAs

They have suggested to do it through:

- Campaigns;
- Television, radio, print media (household and distributors)
- Programs;
- Community recycling programs (household)
- School curriculum adjustment
- Training of informal sectors/programs
- Workshops and conferences for private sectors (distributors) and the MMDAs.

This awareness and education project should be co-implemented by the Ministry of education, Ministry of sanitation and water resources and UNDP by:

1. Definition of a plan
2. Budget evaluation
3. Funding through donors, government, sponsors, partners.

The participants suggested that the Government (Ministry of Education, Ministry of Sanitation and Water Resources, Ministry of Environment, Science, Technology and Innovation) should partner with Donors, UNDP, Development Partners and NGOs.

The main obstacles, according to them, are funding and expertise.

These obstacles are probably not too difficult to overcome as the actions consist of donor raising campaign, planning national budget, learning from other countries expertise training research.

6. CONCLUSION

In brief, and concerning the value chain, we recommend:

1. To organise the plastic collection at source for the plastics which are not recycled through existing market mechanism currently
2. To mobilise all the stakeholders in the value chain and create a mechanism to coordinate them - UNDP platform is a first step, an operational step is needed
3. Find partners
4. Find funding
5. Raise awareness through education campaigns led by government, municipalities and NGOs

Regarding more particularly, the informal sector, the actions that should be implemented are to:

1. Organise them under cooperatives to enhance their capabilities, business and management competencies as well as improving their working conditions. The social incubator mechanism could help to scale up the creation of cooperatives.
2. Create transfer and sorting center in Accra. some of them could be created on the existing transfer station -used for general waste - with the help of the Municipality - as they are currently operated by private operators
3. Include other “informal” actors like borla-taxi or fishermen into the plastic value chain to improve plastic collection at households level and depollute the sea shores while creating extra revenue and livelihoods for these communities
4. Make them part of the awareness and education campaigns on plastic recycling.

7. ANNEXES

7.1. ANNEXE 1: Meeting Minutes of the stakeholders interviewed from May 27th till May 31st 2019

7.2. ANNEXE 2: Meeting Minutes written by E360 on the Design thinking Workshops

7.3. ANNEXE 3: Questionnaire residents

Questionnaire residents

Date:.....

Interviewer:.....

1. Area visited

.....

2. Gender

- Women
- Men

3. Age

- 18-25
- 25-35
- 35-45
- 45-55
- More than 55

4. Family situation

- Single
- Couple
- Couple with children
- If children how many.....

5. Do you find Accra clean?

- Yes
- No

If yes which improvement would you like to see?

.....

6. Have you heard about plastic pollution? Impact on health?

- Yes
- No

7. Do you have a specific collection for plastic in your area?

- Yes
- No

If yes who is doing it?.....

If yes do you pay for this specific services?.....

8. Are you segregating plastic?

- Yes
- No

If no why?

.....

7. To improve plastic recycling in Accra would you be ready to segregate them if you are not doing it already?

- Yes
- No

If no why?

.....

8. If you are ready to segregate them would you do it if:

- you are given appropriate bag
- you are given a specific bin
- You have a share-container in the area where you live

9. Would you be ready to pay for specific plastic and/or packaging services?

- Yes
- No

If no why?

.....

10. What is the kind of plastic packaging that you consume the most?

- Bottles of water
 - Bottles of milk/juices
 - Bottles of soda
 - Bottle of Shampoo/soap
 - Water sachets
 - Other? Please precise
-

Annex Q – Minutes of Meeting – Presentation of the draft Strategic Roadmap (26/11/2019)

Minutes of Meeting

Strategic Roadmap Presentation at the MESTI

Project.: Accra Plastics
Management Pilot

Date: 26/11/2019

General Information

In brief Presentation of the draft Strategic Roadmap to the Government of Ghana in order to have their feedback and comments before the submission of the Final Strategic Roadmap.

Participants

Oliver Boachie, MESTI, Special Advisor to the Minister
 Lydia Essuah, MESTI, Director PPME
 Nashim Salif, MESTI, DPO
 Joan D. Kottie, MESTI, ADPO
 Knollis Delle, MESTI, NSS

Mustapha Kumah, MoTI, Director Standards
 Alex Anim-Kwapong, MoTI, Commercial Officer

Ebenezer Akpiok, MoFEP, AEO
 Adwoa Fraikwe, MoFEP, PEO

James Ayarik, MLGRD, Head

Anthony Mensah, MSWR, Director EHSD

Solomon Asoalla, MWH, Chief Director
 Thomas Donkor, MWH, Head of Works

Faustina Atupra, FDA

Macmillan Prentice, GSA, Technical Secretary
 Vincent Arthur, GSA, Technical Secretary

Godson C. Voado, EPA, Chief Public Officer
 Kafui Boni, EPA, Public Officer
 Felisa Owusu-Darko, EPA, Public Officer

Marie Gouttebroze, Seureca, Project Manager
 David Dupré La Tour, Seureca, Team Leader
 Mathilde Gourion-Retoré, Seureca, Project Coordinator

Summary

Presentation of the results of the Baseline Study

The Accra Plastics Management Pilot (APMP) team presented the results of the Strategic Roadmap (cf. PDF presentation). The presentation took place at the MESTI on 26/11/2019.

The following institutions were invited to the meeting:

1. Ministry of Environment, Science, Technology and Innovation (MESTI)
2. Ministry of Sanitation and Water Resources (MSWR)
3. Ministry of Local Government and Rural Development (MLGRD)
4. Ministry of Finance and Economic Planning (MoFEP)
5. Ministry of Trade and Industry (MoTI)
6. Ministry of Works and Housing (MWH)
7. Ghana Standards Authority (GSA)
8. Food and Drug Authority (FDA)
9. Environmental Protection Agency (EPA)

All these organisations were able to attend the meeting.

Discussion

Following the presentation, the participants engaged in a discussion. The following topics were debated by all the participants (interventions for the APMP team are underlined):

- What could be done to influence the design of products. To make them recycled? In practice, how would this happen?
 - There is a need to consult with the manufacturers
- We need to take into account that a lot of plastic are imported as finished products (around 70% - data from APMP baseline study) - how could we encourage upstream design for those ?
 - Any regulation taken on plastic products manufactured in Ghana should also be applied to the imported products. Control at customs will need to be enforced properly.
 - The EPA, MoTI and Customs should be empowered to practicalise regulations.
 - Taxes on difficult to recycle plastics (for example composites) could be an incentive for large companies to change their packaging through the implementation of an EPR scheme.
- Do we have international standards on recyclable plastics? Does it exist?
 - There is no international standards about plastic recycling that we could rely on to choose plastics based on their recyclability as the recyclability of a product also depends on the local context (quantities, plants, local knowledge etc.). Nevertheless, it is interesting to see that it is often the same products, at a global scale, that are regulated / banned (plastic bags, PS)
 - The recommendations proposed in the Strategic Roadmap follow a circular approach so that upstream design, reduce, reuse, recycle, recovery are encouraged.
 - GSA indicates that there are some local standards for example for plastic bottles.
- Some recommendations propose a ban of plastic products. How does this apply to imports?
 - Enforcement will be with the Customs Department.
- Some recommendations propose a ban of plastic products. How can we ever convince the government to move on this while there are jobs provided in this sector?
 - The ban is proposed only for harmful products and these are meant to be replaced by higher value products that will create jobs as well, such as pipes. The ban is part of a change to the whole value chain with a circular economy approach.
 - The exact impacts of the sector will need to be estimated. Nevertheless, ban of some harmful plastic products is a political choice and it is possible that some enterprises will be

impacted / some job losses will take place, however, the long term impacts will be positive. A change management plan is necessary.

- How could the implementation of standards take place, for example for the water sachets?
 - The GSA revises standards for a products every five years, or if there is a need , it can happen before. Moreover, if there are new regulations, the GSA will have to revise standards. Once approved by the Parliament, the National Plastics Management Policy will be followed by regulations. There is therefore an opportunity to include the recommendations for standards in the regulations. Then the GSA will have to revise standards accordingly.
- Source segregation and the needed infrastructure is an important component of the National Plastics Management Policy (NPMP). EPA and MESTI already launched some source segregation three years ago. There is also a solid waste management (SWM) strategy being finalised.
 - The APMP team was told about this pilot and had the opportunity to consult the NPMP draft. The APMP team heard about the SWM strategy by the WorldBank and the MSWR.
 - The NPMP will be followed by an Act once passed, in order to support the sector.
- There are other interesting initiatives to look at but these are limited by the zoning system. There are some local NGOs and private companies collecting from malls in Accra.
- The Ministry of Roads and Highways should be added in the presentation for its role in roads infrastructure.
- The GPAP initiative is also looking at the logistical problems: the collection, transportation, storage and sorting. There are different schemes being worked on for the informal and formal sectors. For the informal sector, the GPAP will focus on the design of strategic collection points. For the formal sector, the GPAP is looking at incentives for the private sector to invest in infrastructure.
 - The APMP team is coordinating with other projects (GPAP, UNIDO, CCOA, Norad) for all its recommendations and define the way forward.
 - The producer could bear the responsibility of transporting the waste back. Indeed, when they deliver their products, their trucks come back empty to the factory.
- The Norad project is planning to do an inventory of plastics, therefore data about plastics will be available.
 - The APMP has also develop data about plastics management in the Baseline Study. What would be needed over the long run is a strategy to develop data on plastics management including: methodology, channels for reporting, leading stakeholders etc. so that there is consistency in data collection and analysis.
- There is a Plastic Waste Recycling Fund. Money has been collected for years but not yet disbursed in the fund. This is a topic that has received strong interest from the MESTI. First, the MLGRD is by Act 863 responsible for the management of the Fund. The Act will need to be changed in order to empower the Ministry responsible for the environment (currently the MESTI). The MESTI has addressed a letter to the Ministry of Finance and Economic Planning and the MoFEP has approved a meeting between the MESTI, MoFEP and MLGRD to discuss how to operationalise the fund. Then a committee has been formed for this purpose and a bank account has been opened. This committee include other actors such as the Customs Department, the Bank of Ghana. A sub-committee on the legal issues was also established. This subcommittee is working on the amendment of the Act and a Cabinet memo has been completed last week on this topic and was sent to the Minister. Then, it will go through Cabinet review and Parliament for approval. There has not yet been a response from the Ministry of Finance and Economic Development about the money available to be disbursed in the fund.
- The Strategic Roadmap should include recommendations about the coordination between the stakeholders. What is the view on this? How should the MLGRD, MESTI, MSWR and EPA coordinate efficiently?
 - The APMP will work on this topic and include recommendations in the Final Strategic Roadmap report. For better coordination it would be necessary to define contact points within the institutions and channels for communication.

Next steps

- Seureca to share the Presentation (*included by email with the Minutes of Meeting*)
- Seureca to finalise the Strategic Roadmap

Annex R – Technical Note #10: Impact of Digital Tools on Collection Systems

Technical Note #10

Project Ref.: ABC01234

Impact of digital on waste collection systems in developing countries

Date: 15/11/2019

General Information

<i>Project</i>	Accra Plastics Management Pilot		
<i>Client</i>	Department for International Development (DFID)		
<i>Objective</i>	To analyse the digital tools that could potentially be used to increase the efficiency, effectiveness and organisation of the plastic sector		
<i>Recipients</i>	DFID		
<i>Author</i>	Pascal Peslherbe		
<i>Contributors</i>	Quitterie de La Villegeorges		
<i>Approved by</i>	Marie Gouttebroze		
<i>Version</i>	V1	<i>Date</i>	15 November 2019

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List of Acronyms

HDPE	High Density Polyethylene
KC	Kabadiwalla Connect
LDPE	Low Density Polyethylene
MGA	Mr. Green Africa
PET	Polyethylene Terephthalate
PP	Polypropylene
PS	Polystyrene
TN	Technical Note
UNDP	United Nations Development Programme

1. Introduction

Digitalisation is impacting all sectors and the waste collection sector is progressing rapidly in this area even if it is not at the forefront. Traditional activity is using digital to increase its efficiency and its productivity. Digital is also a tool for a number of start-ups which are trying to disrupt the traditional business models. This is the case in both developed and developing countries.

Digital tools could be used to improve the efficiency and effectiveness of the plastic sector and to enhance coordination between different actors. This Technical Note provides a description of the benefits of digitalisation and how it can be used (Section 2), a presentation of some start-up models (Section 3) and an analysis of the digital tools (Section 4).

2. Digitalisation and Traditional Actors

Digitalisation is utilised by the traditional actors of the waste value chain (service providers, municipalities) as a tool with two main objectives:

1. Increasing productivity
2. Communicating with customers.

These two main functions are described in the subsections below.

2.1. Digitalisation and Productivity

The actors of the waste value chain are facing challenges in terms of efficiency in waste collection. It is mainly to increase their efficiency that the traditional actors use digitalisation. In particular, digital tools can optimise the waste collection circuits. For this, the traditional actors rely mainly on Global Positioning Systems (GPS) which help them to define collection circuits and to re-route their vehicles in case of change in traffic or based on the activities to be performed (for ex: on-demand collection).

It is expected that these first stage systems will evolve in the short term with the rapid development of connected objects that allow direct communication between the bins and the operators.

In developing countries, these connected object systems are being implemented or investigated by startups such as Kabadiwalla Connect in India (Chennai) with its Urbins, or Coliba in Ghana with its projected system aiming to connect bins to plastic waste collectors.

In Ghana, a traditional actor, Jekora Ventures, develops interesting concepts such as the “Franchising system” for municipal solid waste collection in Accra. This system supports the service provider in the digitalisation of all its direct customers (Individuals, SMEs). This enables the service provider to link its customers with the services and payment. This system avoids the risk of serving a customer who doesn't pay. In addition, this tool can be at the source of road optimisation and can help to communicate with individual customers and to adapt the service and billing, to new material streams such as a recyclables.



JEKORA is an independent waste company operating on Greater Accra. It has a franchise to operate on a 12 sq kilometer zone representing approximately 23,000 households. It collects normal waste and is developing recyclable collection with discounts for its customers who are doing it. The company is thinking of going further in digitalisation (road optimisation, direct communication) with its customer database which is considered as an asset.

2.2. Digitalisation and Communication

In order to improve the circularity of the waste value chain, the communication should be established with waste holders who are at the initial stage of the collection and thus sorting and recycling processes. This is not to say that waste management relies only on waste holders as we are particularly conscious of the systemic aspects (production mode, design, financial anticipation of product end of life, etc.). Nevertheless, the consumer of the waste has a role to play once it has produced the waste.

This is the reason why, nearly every company of a certain level of activity and many public organisations in the developed world, have developed portals to communicate with consumers (domestic, commercial, industrial) or at least to indicate to them the good practices or even to go further with the possibility of ordering services online, buying and selling material.

At the local level, this has also led many bodies to launch platforms to develop communication among actors, to share good practices, to map stakeholders, etc. In Ghana, a large project has been launched and financed by the United Nation Development Program (UNDP) to gather waste actors under the 'Waste Recovery Platform'.



The UNDP has launched the development of a platform which will gather as many waste actors as possible. It will include a website with a mapping (GPS) of the registered actors (to date, nearly 300) and their details. This platform will be supported with the creation of a mobile application for trading waste that will connect all stakeholders along the waste management chain. The website and mobile app are currently being developed..

3. Digital Tools used by Start-Ups

The management of waste, like other sectors, is full of projects led by start-ups, both in developed and in developing countries. Many of these projects will try to disrupt the traditional business model in a movement towards platformisation of logistics. In developing countries this movement is integrated with attempts at launching marketplace platforms to allow a direct link between waste (or material) holders and the sorting or transforming industry.

Four models are described in the following subsections:

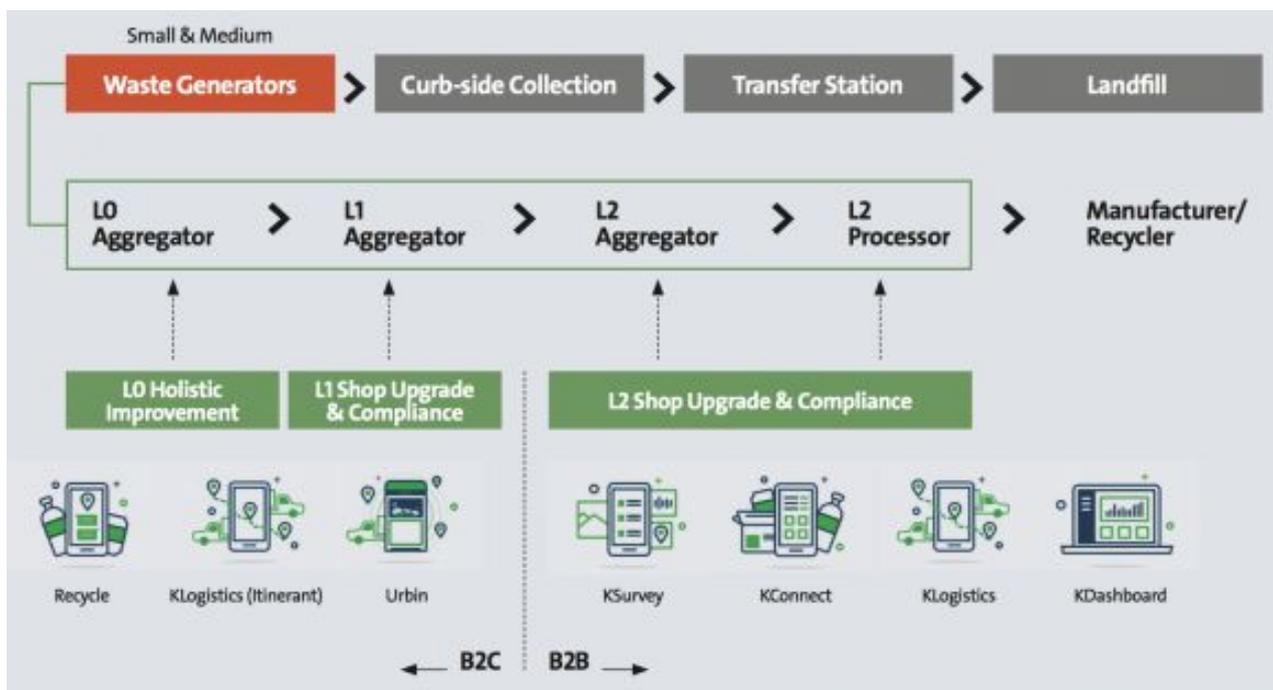
1. Kabadiwalla Connect (India)
2. Mr. Green Africa (Kenya)
3. Cataki (Brazil)
4. Coliba (Ivory Coast/Ghana).

3.1. Kabadiwalla Connect (KC): Digital Tech to Support Plastic Recycling Facility Business

Thanks to an initial funding by the World Economic Forum, Kabadiwalla Connect (KC), an Indian Chennai-based start-up, has developed an extensive study of the informal collection system in Chennai.

The start-up is transforming this study, into a business which relies on the very smart idea of creating what could be called a 'digital infrastructure'. This infrastructure is injected into a map with GPS coordinates, information on the stakeholders, phone, capacity, storage, prices, etc.

Around this virtual network, KC has developed a number of applications to make a link between the waste holders and this network (information, location, etc.), to buy recyclables and organise the transportation of recyclables to a sorting plant.



Recycle is a B2C app that will allow waste producers to find the best available recycling solution in their neighborhood.

UrbIn is an application based on lot Bins that will allow these bins to communicate with the collectors by indicating their filling level.

Ksurvey is the survey tool to help collecting information and creating the “virtual Infrastructure”.

Trough **Kconnect**, the various aggregators will be able to sell to KC their material, and KC will be able to push new prices for new material to be collected.

To finish with, **Klogistics** will assist in the logistic for collection and **Kdashboard** is an app that will allow at a Plastic recycling facility level the monitoring of the individual and collective sorting performance

KC is operational on pilots in Chennai and has been working for Veolia, to map the actual system in Mumbai and in Indonesia. The company was also able to adapt part of its technology to organise a pilot for Veolia in Ivory Coast to buy plastic (PET bottles) from the informal market place for PET sector.

3.2. Mr. Green Africa (MGA)



Mr. Green Africa (MGA), a Kenyan startup based in Nairobi, sells pre-processed recycling materials collected by waste pickers. Its vision is to change people’s perception on waste and waste collectors. 2,500 waste pickers are working for the start-up, and 110 direct jobs were created in Nairobi in its sorting and refining plants. MGA sells its pre-processed plastics to multinational companies such as Unilever offering them traceability, feed stocks and a positive and social impact.

MGA’s offer to waste pickers is a stable and premium price and loyalty services with the aim to transform these waste pickers in small entrepreneurs. MGA has put on the market an interface to connect waste pickers with collection centres and warehouses and to buy and sell pre-processed waste.

3.3. Cataki

Cataki is a project run by the NGO Pimp My Carroça based in Brazil. Pimp My Carroça (“Give style to my cart”) was created in 2007 by Thiago Mundano, a street artist and activist from Sao Paulo with a project to draw public attention to “catadores” as environmental and social agents by customising their waste pickers cart. Cataki is a mobile application used by waste holders and waste collectors, and additionally a social network for waste pickers as one Cataki team manages 10 whatsapp groups. Cataki gathers 2,000 waste pickers on the platform, and 80,000 waste holders.

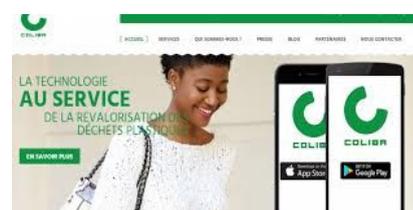


The app allows wastepickers to self register, and then waste holders can find their appropriate picker, connect with them through whatsapp, organise a meeting and do the transaction. So far, Cataki is a purely subsidised business.

3.4. Coliba

Coliba was launched in Ivory Coast and is being replicated and even improved in Ghana, Accra. Once successful, the two companies may be merged.

Coliba started an operational mobile application in Ivory Coast that will show collection centers, inform on recycling and organise the most suitable pick up solution. Once a pick up is requested on the app, Coliba connect with its collectors by phone. The work is in progress to adapt this app to the Ghanaian market.



To date, Coliba Ghana is experiencing PET collection direct from waste pickers or through a network of dedicated containers in a partnership with Total and Voltic.

4. Digital Tools Analysis

The previous presentation of four start-ups is not enough to complete an overview of what exists around the globe. Every day, new start-ups come on the market in developing countries. But there is not to date a specific new model that one may think will prevail on the market. This is most likely due to two factors:

- So far, digital usage in emerging countries has been very different from what it is in developed countries
- The recycling business model in developing countries is far too fragile and financially not sustainable enough to allow these developments.

But there are some catches that could be at the base of a further success. These two factors are further explained in the following subsections.

4.1. Digital Usage in Developing Countries

A study ordered by Veolia to “Archipel and co” involving more than 500 informal workers in different countries, identified the following key-points:

- 62 % of them have a smartphone, but 7 % do not have any phone, and this is especially the case for women in the waste activity
- The usage is mostly concentrated on calls, clocks and calculators, and reading ability is clearly the limit for informal workers
- Having a smartphone is more and more part of a social standing without direct link to a business usage. The business usage is in fact really concentrated on communication tools, especially Whatsapp and on payment tools, such as mobile money. Personal interactions with customers,

- suppliers and peers through Whatsapp is the main usage. These interactions are mostly on a 1 to 1 basis, but there is a tendency to develop community usage, which can be open (between peers) or closed (between a supplier and their customers)
- All in all, professional digital practices are also affected by the very essence of informal activity, where digital creates traceability and visibility (vs. fiscality, legality, competition), where most of the activity is linked to very personal and close relations.

4.2. Fragility of the Recycling Business Model

The recycling business model in developing countries (as it was and sometimes still is in developed countries) is mostly a pure market business with no stable prices, no guarantees and no visibility. It is very much linked to the downstream market. One example of this is the fact that PET is hardly collected in Ghana, and when it is, the market output is an export market to Germany, or Canada. In India, nearly 100 % of the PET bottles are collected for the textile industry, whereas PET bottle-to-bottle plants are developed in other countries.

This instability, and its consequences on the social conditions for waste collectors, is not the best condition for digital apps development. Indeed, the development of apps is to sup

On the other hand, digital can and will be an essential tool to reinforce the business model as soon as Extended Producers Responsibility (EPR) will be launched. These programs will have to be supported by digital tools to ensure traceability, payment, rewards, incentives..

Digital will help the development of a more circular economy which is composed of both physical and financial flows.

4.3. Summary based on Existing Solutions

Each of the solutions previously described contains very good and smart complementary ideas that could be the basis of a smart and may be more universal digital solution.

Mapping: The idea of mapping the informal sector in a dynamic way, and especially the 1st level of aggregation (containers, shops, small companies, transfer, individuals...) is certainly the basis of communication between all the stakeholders. "Who is recycling what, and where" is a key aspect, and in countries without proper infrastructure, the KC idea of a virtual infrastructure is essential.

Launching EPR systems: Through a contractualisation with an industrial company, the idea of being able to give a fixed and fair price to the collectors is essential. This is tested by Veolia with several industrial companies in India and in Indonesia (Danone, Unilever). It is a key aspect for Mr. Green Africa.

Creating a social network on the most used applications: The idea of having a recycling community thanks to Whatsapp is essential to Cataki, which announces the most important number of waste holders and waste pickers active on a platform.

These three elements are certainly essential components to the development of a comprehensive digital tool to help the plastic recycling industry on a large replicable scale.

5. Conclusion

To conclude, digital solutions must and will be implemented. Nevertheless, the first step is to adopt a systemic approach: financial flows linked with industrial demand is key and in this matter digital tools can really help to accelerate the implementation of a material **and** financial circular economy.

We are aware of some industrial projects that could be developed in Ghana: Plastic to fuel, Bottle to bottle PET plants. These projects could make or confirm a price signal to the Ghanaian market.

The incorporation of this price signal in an EPR system could be paramount to the financement of a proper, socially and ethically viable collection system.

One this has been done, digital tools could be used in two main ways to develop recyclable collection:

1. The organisation of traditional waste collection by large companies such as Jekora, or Zoomlion relies on individual invoices and on a cooperation with Borla taxis. This organisation, based on a direct Business to Customer relation together with the monetisation of waste through EPR systems and supported by inhouse digital systems, looks like a very good system to incentivise and develop recyclable waste collection.
2. There are a number of promising start up initiatives at the stage of “seeds” which rely on the power of digital to develop their recycling business. Today even if they are not yet fully operational such as Coliba in Ghana and more recently Ecoreward and of poor tonnage impact, these applications have the objectives to make the link between waste holders, waste collectors and the industry. One of them may take the lead.

In the meantime, UNDP mapping and app initiative on recycling for Greater Accra could become the basis of a virtual infrastructure allowing to know “who does what and where”. This infrastructure shall be supported and complemented by the utilisation of widely used applications, such as Whatsapp for example, to communicate information about new recycling streams, prices, locations, etc.

Annex S – Technical Note #11: NPMP Study and Recommendations

Technical Note #11

National Plastics Management Policy Study and Recommendations

Project Ref.: APMP

Date: 20/11/2019

General Information

<i>Project</i>	Accra Plastics Management Pilot		
<i>Client</i>	Department for International Development (DFID)		
<i>Objective</i>	To review the National Plastics Management Policy, identify potential gaps and propose recommendations		
<i>Recipients</i>	DFID		
<i>Author</i>	Humu-Annie Seini, Legal Expert		
<i>Contributors</i>	Mathilde Gourion-Retoré		
<i>Approved by</i>	Marie Gouttebroze		
<i>Version</i>	V1	<i>Date</i>	20 November 2019

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List of Acronyms

A-G's	Attorney-General's Department
CHRAJ	Commission on Human Rights and Administrative Justice
EFR	Environmental Fiscal Reform Policy
EPA	Environmental Protection Agency
FDA	Food and Drugs Authority
GNPAP	Ghana National Plastics Action Partnership
MESTI	Ministry of Environment, Science, Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal and District Assemblies
MoFEP	Ministry of Finance and Economic Planning
MSWR	Ministry of Sanitation and Water Resources
NEP	National Environment Policy, 2010
NPMP	Draft National Plastics Management Policy
NESSAP	National Environmental Sanitation Strategy and Action Plan
SEA	Strategic Environmental Assessment

1. Introduction

This Report builds on two earlier reports on the institutional and regulatory framework for solid waste and plastics in Ghana submitted as Technical Note #4 and Technical Note #5.

This report provides an in-depth review of the National Plastic Management Policy (NPMP) and its Implementation Plan and a comparison of the proposals with the current situation, in order to

- Identify the main changes proposed, for the institutions (roles, mandates) and for the regulatory framework
- Determine whether these changes sufficiently address the challenges and gaps identified in the National Plastics Management Policy during Phase 1
- Propose potential improvements
- Detail the legal and / or institutional processes required for the implementation of such improvements.

In conducting the review of the National Plastic Management Policy and its Implementation Plan, in addition to reviewing these documents, a desktop review of relevant stakeholders was performed and interviews were conducted with experts working in the various institutions.

2. Identification of Gaps and Recommendations

This section identifies the gaps in the Final Draft of the National Plastics Management Policy as well as gaps in the regulatory and institutional framework for the management of plastics in Ghana and makes some recommendations for addressing those gaps. The following gaps have been identified:

1. Non-operational Plastic Waste Recycling Fund
2. Gaps in the policy framework
3. Potential overlap between the Environmental Fiscal Reform Policy and the NPMP
4. Gaps in the regulatory framework
5. Non-compliance with the 2015 ban on plastics less than 20 microns and the use of oxo-biodegradable additives in plastics
6. Missing stakeholders in the institutional framework of the NPMP and overlaps between institutional actors and fragmentation of roles
7. Lack of accountability
8. Missing stakeholders in the Resource Management Secretariat
9. Delay in approving the NPMP
10. Poor data management.

Recommendations are made to address the above-mentioned gaps.

2.1. The Plastic Waste Recycling Fund

2.1.1. Gap: Non-Operational Plastic Waste Recycling Fund

Paragraph 2.2.5 of the National Plastics Management Policy which deals among other issues with governance, identifies finance as the most challenging limitation to sustainable plastic management in Ghana. It is imperative that this financial issue be thoroughly addressed in order to implement the NPMP to effectively tackle the environmental and other problems associated with the use of plastics in Ghana.

Under Section 1.3.5 of the NPMP which is entitled "Plastics Waste Recycling Fund / Environmental Tax (2013)", the Customs and Excise (Duties and Other Taxes) (Amendment) Act, 2013 (Act 863) is discussed Pursuant to Act 863:

- At least 50% of the revenue generated from the imposition of the environmental tax is to be paid into a "Plastic Waste Recycling Fund"
- The revenue accruing from the Plastic Waste Recycling Fund is required to be dedicated to "recycling of plastic waste and the production of plastic waste bins and the production and use of biodegradable plastics".
- The Minister for Local Government and Rural Development is mandated to act in consultation with the Minister responsible for Finance to "specify the use and modalities for the use of the moneys" accruing from the Fund
- To ensure transparency and accountability, Act 863 imposes a duty on the Minister for Local Government and Rural Development to furnish Parliament with annual reports on the use of the moneys from the Plastic Waste Recycling Fund

Unfortunately, six years have lapsed since Act 836 was promulgated and there is no Plastic Waste Recycling Fund. As stated in the NPMP, Act 836 has not been complied with for which reason the moneys accruing from the environmental tax are paid into the Consolidated Fund and used for other purposes and not for the recycling of plastics and other purposes envisaged by the Fund.

The Plastics Management Implementation Plan lists a number of activities to be put in place for the implementation of the NPMP. One major activity is the establishment of the Resource Recovery Secretariat. Paragraph 2.1 of the Plastics Management Policy Implementation Plan envisages the mobilisation of resources to fund the Secretariat. Section 3 of the Implementation Plan which deals with the budget proposes the establishment of the Plastic Waste Recycling Fund required under Act 863. Paragraph 3.3.13 of the Policy proposes that regulations be passed to augment Act 863 to make the Fund operational and enhance compliance with Act 863.

In trying to address the resource issue the National Plastics Management Policy Implementation Plan appears to have created another problem with regards to the institution responsible for managing the Fund. The Implementation Plan seeks to assign that role to the Resource Recovery Secretariat Paragraph 3.5 of the Resource Recovery Secretariat: Initial Staffing and Structure Document specifically states that a Resource Mobilisation Division will have as a core function, the institution of the Environmental Tax Regime. In view of the fact that Act 863 clearly designates the Ministry of Local Government and Rural Development as the institution responsible for the Plastics Waste Recycling Fund, it is impossible to reassign that role to a different entity in contravention of the law. Act 863 would have to be amended or repealed in order to reassign that role to the Resource Recovery Secretariat.

Another gap is the fact that the list of what the Plastic Waste Recycling Fund could finance is not exhaustive and sufficiently precise. For example, it does not indicate whether the bins should be made of recycled plastics or if any producer will be supported, it does not include the support of collection system (while these are costly and necessary for better plastics management).

2.1.1. Recommendations: Issuing and Implementing Guidelines on the Plastic Waste Recycling Fund and Ensuring a Coherent Management of the Fund

It is imperative that the Plastic Waste Recycling Fund be established in order to fully and effectively implement the NPMP. Without this Fund, it would be difficult to determine how the NPMP will be effectively implemented. It is also important to establish clear guidelines for the use and disbursement of the funds. To ensure accountability it is important that the Minister for Local Government and Rural Development fully take control of her mandate to manage the Fund and discharge her statutory obligation to report to Parliament annually on the use of moneys accruing from the Fund.

The proposed guidelines should clearly indicate what exactly the Fund will be used for and how the funds can be accessed. It is suggested that the Fund be used to address the life cycle of plastic products by encouraging environmentally sustainable processes and to look at the entire plastic chain (from imports to recycling). For instance, the proposed guidelines could encourage the use of recycled plastics for the production of plastic bins. That would serve as a disincentive to manufacturers of bins who do not use recycled plastics. Additionally, the proposed guidelines could be used to provide incentives for the collection and segregation of plastic waste.

Pursuant to Act 863, the Minister for Local Government and Rural Development should act in consultation with the Minister for Finance to “specify the use and modalities for the use of the moneys” accruing from the Fund. Before issuing the guidelines, the draft should be subjected to a stakeholder review. This will ensure transparency in the management of the Fund.

The above-mentioned mandate of the Minister could be achieved by issuing guidelines to indicate clearly how money from the Fund will be used to recycle plastic waste, the production of plastic waste bins and the production and use of biodegradable plastics. The guidelines should state:

- Who beneficiaries of the Fund will be,
- The procedures for applying for money from the Fund, and
- A monitoring and evaluation process to track the use of the moneys disbursed from the Fund
- The bank(s) with which accounts for the Fund will be opened and who the signatories to the Fund will be.

Also to be captured in the proposed guidelines would be mechanisms for settling disputes that arise out of the implementation of the requirements of Act 836.

Once the guidelines are issued and implemented over a period of time, MLGRD can draw on lessons learned and take steps to have the guidelines transformed into regulations under Act 836 which will have the force of law and create more binding obligations and rights in the use of moneys accruing to the Fund. As required by Act 863, Parliament should monitor the use of moneys to be disbursed from the Fund by ensuring that the Minister for Local Government and Rural Development furnishes Parliament with annual reports on the use of the moneys from the Fund.

Lastly, to address the problem created in the National Plastics Management Policy Implementation Plan with regards to the institution responsible for managing the Fund, the Implementation Plan should take into cognisance the provisions of Act 863. Act 863 categorically states that the Ministry of Local Government and Rural Development (MLGRD) is responsible for the management of the Fund and not the Resource Recovery Secretariat as envisaged in Paragraph 3.5 of the Resource Recovery Secretariat: Initial Staffing and Structure Document.

2.2. The Policy Framework

2.2.1. Gaps in the Policy Framework

Paragraph 4.2 of the National Plastics Management Policy (NPMP) recognises the importance of the Environmental Sanitation Policy, 2010, the Environmental Policy, 2014, the Climate Change Policy, 2012 and the Public Health Policy, 2007. However, apart from listing the policies, the NPMP does not provide any details on these policies which are important for the management of plastics in Ghana. The Ministry of Environment is responsible for the National Environment Policy (NEP).

The Ministry of Local Government and Rural Development is responsible for the National Environmental Sanitation Strategy and Action Plan, 2010 (NESSAP) which serves as the main policy on waste management in Ghana. Like the NEP, it would have been good for the NPMP to have provided some information about how relevant NESSAP will be in the implementation of the NPMP.

2.2.2. Recommendation: Consolidation of Relevant Policies

As the lead institution responsible for the NPMP, the Ministry of Environment, Science, Technology and Innovation (MESTI) should incorporate relevant aspects of pre-existing policies into the NPMP:

- The MESTI is responsible for the National Environment Policy (NEP) which among other issues deals with waste management. The NEP recognises the need for waste to be minimised; requires the avoidance of waste at source; and acknowledges that, recycling, separation at source, waste-to-energy practices and safe disposal of unavoidable waste are incumbent upon Government, municipal and district administrations.¹
- Additionally, the National Environmental Sanitation Strategy and Action Plan, 2010 (NESSAP) which is under the MLGRD serves as the main policy on waste management in Ghana. As suggested for the NEP, it would be good for the NPMP to provide some information about how relevant NESSAP will be in the implementation of the NPMP.

Incorporating pre-existing policies into the NPMP would ensure continuity in the implementation of government policies and augment cross-sectoral collaboration in the implementation of the NPMP. This would also minimise the fragmentation of efforts and institutional overlaps in the implementation of the NPMP.

2.3. The Draft Environmental Fiscal Reform Policy

2.3.1. Gap: Potential Overlap between the EFR and the NPMP

The Environmental Fiscal Reform Policy has been submitted to Cabinet for approval and was not available for this assignment. This section is therefore derived from a presentation on the Strategic Environmental Assessment (SEA) of the Environmental Fiscal Reform Policy (EFR) made by the Environmental Protection Agency at the La Palm Royal Beach on 21st June, 2018. According to the EPA, the purpose of the EFR Policy is to “facilitate economic growth, build a climate resilient society, promote green technologies and innovation, low-carbon development, sustainable consumption and production, and practices that lead to the sustainable use of natural resources. Additionally, the EFR provides strategic direction and coordination towards

¹ Ibid section 3.4.15

achievement of Sustainable Development Goals (SDGs).” According to the EPA, the scope of the SEA on the EFR Policy includes:

- Existing baseline information on Ghana’s environmental fiscal policy regime; taxes, incentives, subsidies and institutional arrangements
- Analyses of the fiscal policy to identify interventions for “win-win” opportunities for both the environment and poverty reduction
- Capacity building for relevant stakeholder institutions.

Of the seven thematic areas under the SEA of the EFR Policy, the most relevant is waste management which focuses on packaging, product and plastic tax and EFR incentives for municipal waste management. If approved and effectively implemented, the EFR Policy will remove a major impediment (lack of sustainable funding) to the effective management of waste in general and plastic waste in particular. However, one problem that could arise as a result of the EFR is that some aspects of the EFR might overlap or conflict with the purpose for which the Plastic Fund has been established. Without a copy of the EFR it will be difficult to ascertain if, and the extent to which, the Plastic Fund had been taken into consideration in formulating the EFR.

2.3.1. Recommendation: Incorporating the draft Environmental Fiscal Reform Policy

The EFR, once available, should be cross-referenced in the NPMP, to indicate the extent to which it will affect resource mobilisation for the implementation of the NPMP.

To avoid having some aspects of the EFR overlapping or conflicting with the purpose for which the Plastic Fund has been established, the taxation component of the EFR should be streamlined with the environmental tax imposed under Act 863.

2.4. The Regulatory Framework

2.4.1. Gaps in the Regulatory Framework

Section 4.2.2 of the NPMP lists some relevant environmental legislation on various sectors of the environment that are germane to the NPMP. Like the policy issues discussed above, the NPMP could have summarised the relevance of those laws to the management of plastics in Ghana.

Annex I to the Implementation Plan provides an Implementation table, which requires the development of a robust regulatory framework. Under Strategy Action 16 of the Implementation Plan, the broad objective is for a robust regulatory framework to be developed to guide regulators and relevant stakeholders. Developing a new regulatory framework could take time, as the law-making process could take a few months to a number of years. Regulatory reforms should therefore be a long-term agenda. Due to the uncertainty regarding the promulgation of new laws, waiting for new laws to be passed in order to implement the NPMP would delay the implementation of the NPMP hence the suggestion that existing laws be used in the interim, pending those legislative reforms. The legislative reforms should be a long-term measure.

2.4.2 Recommendation: Relying on Existing Legislation on General Environmental Issues, pending Legislative Reforms

To address the gaps in the current regulatory framework for the management of plastics in Ghana, the NPMP should contain a synopsis of the existing regulatory framework on plastics management in Ghana. Such a synopsis could identify the gaps that need to be addressed to provide a robust regulatory set-up for the effective management of plastics in Ghana. Any legal reforms should be aimed at consolidating the laws on waste management generally and should contain specific provisions for the effective management of plastics in Ghana.

Considering the fact that developing a new regulatory framework could take time, having recourse to existing legislation that may not be specifically meant for plastics but deal with general environmental matters, pending the promulgation of new ones to comprehensively regulate plastics in Ghana would go a long way to address the problems encountered throughout the life cycle of plastics.

For instance, Section 62 of the Environmental Protection Agency Act, 1994 (Act 490) empowers the Minister for Environment, Science, Technology and Innovation to promulgate regulations to deal *inter alia* with:

- The manufacture, importation, use, collection, storage, recycling, recovery or disposal of substances which may be hazardous to the environment
- The disposal of waste generally

The Minister for Environment, Science, Technology and Innovation could therefore invoke Section 62 of Act 490 to promulgate regulations to deal with plastic waste in Ghana.

Another law that is relevant for dealing with plastics in Ghana is the Renewable Energy Act, 2011 (Act 831) which was passed to “provide for the development, management, utilisation, sustainability and adequate supply of renewable energy for generation of heat and power and for related matters.”² Plastic waste could be used to generate energy in Ghana.

Additionally, the Environmental Assessment Regulations, 1999 (L.I.1652) can be used to regulate plastics in Ghana. Pursuant to L.I. 1652, all undertakings likely to have an impact on the environment must be registered with the EPA. The EPA must issue a valid permit in respect of that undertaking before such an undertaking can be commenced in Ghana. For instance, Section 11 of the First Schedule to L.I. 1652 requires manufacturers of plastics and plastic products to register with and obtain an environmental permit from the Environmental Protection Agency. Section 15 of the Second Schedule to L.I. 1652 requires an environmental impact assessment to be conducted for the construction of municipal solid waste treatment and waste disposal facilities including the construction of recycling facilities, land fill sites and waste depots among others.

Another law that is germane to the plastics industry is the Local Governance, Act, 2016 (Act 936). Pursuant to Act 936, District Assemblies are responsible, among others, for the development, improvement and management of the environment in their respective Districts.³ Section 181 of Act 936 empowers District Assemblies to make bye-laws in furtherance of a function under Act 936 or any other enactment. The following bye-laws have been passed by the Accra Metropolitan Assembly:

- Accra Metropolitan Assembly (Sanitation) Bye-laws, 2017
- Accra Metropolitan Assembly (Environmental Protection) Bye-laws, 2017

The Local Government (Departments of District Assemblies) Commencement Instrument, 2009 (L.I 1961) was passed under the Local Government Act, 1993, (Act 462) which was repealed by Act 936. Regulation 1 of L.I. 1961 establishes a number of Departments under District Assemblies⁴, including the following:

- Waste Management Department
- District Health Department.

The District Health Department is responsible *inter alia* for promoting and encouraging good health and sanitation in the District.⁵

Regulation 5 of L.I. 1961 mandates the Waste Management Department to provide facilities, infrastructural services and programmes for effective and efficient waste management for the improvement in environmental sanitation, protection of the environment and the promotion of public health.

The functions of the Waste Management Department include:

- Receiving and providing adequate treatment and effective disposal of solid waste
- Treating and disposing of solid waste
- Inspecting and maintaining sanitary facilities in the metropolis
- Advising the Assembly on recycling and other uses of waste materials.

The Standards Authority Act, 1973 (NRCD 173) was enacted for the purpose of promulgation standards to ensure high quality of goods and for related matters.⁶ Section 1 of NRCD 173 establishes the Standards

² Long title of Act 831.

³ Section 12 of Act 936

⁴ See Schedule 1 to L.I. 1961

⁵ Regulation 4 of L.I. 1961

⁶ Long Title of NRCD 173/

Authority. The aims and functions of the Standards Authority are found in Sections 2 and 3 of NRCD 173 respectively. The aims of the Authority are *inter alia* to establish and promulgate standards with the object of ensuring high quality of goods produced in Ghana, whether for local consumption or for 'export; and to promote standards in public and industrial welfare, health and safety. Among other functions, the Standards Authority is responsible for:

- Assisting government departments, local authorities and any other public bodies in the preparation of the specifications required by them
- Prohibition of the sale or manufacture of goods in the national interest
- Cooperating with representatives of industry, a government department a local authority or any other public body for the adoption of standards.

If the need arises to ban plastics that cause harm to the environment, the Standards Authority could request the Minister for Trade and Industry to issue a directive to ban such plastics. The Minister for trade will need to seek Cabinet approval for the ban on single use plastics, once cabinet approves, the Minister will then issue a notice to the general public to the effect that specific plastic products have been banned, and indicating the date on which such a ban will take effect. Alternatively, the Standards Authority could collaborate with the EPA, local authorities and other relevant stakeholders for the adoption of standards that could form the basis of a life cycle approach to the management of plastics in Ghana.⁷

According to the GSA, it has a Standards Directorate under GSA which is responsible for developing, publishing and promoting standards pursuant to NRCD 173. The GSA develops standards on the basis of consensus, involving experts from government institutions, academia, industry, regulators, trade or professional associations, consumer advocacy groups and other stakeholder institutions. These stakeholders work as members of a Technical Committee to develop standards. Once the standards are drafted, they are subject to review by the public and the comments will be taken into consideration by the Technical Committee before the draft is finalised. The Standards Coordinating Desk coordinates the public review process, edits the final draft standards and publishes the final standards. It collaborates with the Legal Department to have the standards gazetted. The process could last between six months and one year.

Passing a new law to comprehensively deal with the management of plastics and plastic waste could take a year or several years. This would require relevant stakeholders contacting the relevant Ministry, in this case MESTI, which will in turn draft a Cabinet Memorandum, which will include relevant information like the background information, gaps in the existing regulatory framework, the gaps to be addressed and the need to introduce a new law. Cabinet will consider the Memorandum and take a decision on it. If the Memorandum gets the necessary Cabinet approval, the Secretary to the Cabinet will convey the decision to MESTI. MESTI will in turn formally request the Attorney-General's Department (A-G's) to draft a Bill. The A-G's will collaborate with MESTI and make the necessary consultations with other stakeholders to seek clarification and obtain relevant information to draft the Bill. The A-G's will continue discussions with MESTI and keep revising the Bill until they are both satisfied with the revised Bill, MESTI will submit the final draft of the Bill with the Cabinet Memorandum to Cabinet. Once Cabinet approves the Bill, it is sent to the Government Printer for copies to be printed for Parliament and for Gazette notification. After it is published in the Gazette, the Bill is introduced in Parliament.

In Parliament, the First Reading is when the Bill appears in Parliament for the first time. After the First Reading, the Bill is sent to the relevant Committee which examines the Bill and submits a report which is used for the Second Reading which involves a debate on the Bill. At the Committee or Consideration Stage, the Bill is examined thoroughly and Members vote on changes to be made to the Bill which the A-G's will incorporate when it redrafts the Bill. The Third Reading involves further debates on the amended Bill until Members of Parliament vote for or against the Bill. Once Parliament votes in favour of the Bill, the Clerk of Parliament submits the final Bill to the Government Printer for printing. When the Clerk verifies the Bill printed by the Government printer, vellum copies are printed and submitted to the President for his assent. The President

⁷The Ghana Standards Authority, Catalogue of Ghana Standards, 2018 contains some standards on some plastics.

will inform the Speaker whether he/she assents to the Bill or refuses to assent to it. If the President assents to the Bill, it becomes law.⁸

2.5. The Directive requiring an oxo-biodegradable component in flexible plastics manufactured in or imported into Ghana (MESTI, 2015)

2.5.1. Gap: Non- Compliance with the 2015 Ban on Plastics less the 20 Microns and the use of Oxo-Biodegradable Additives in Plastics

Section 1.3.6 of the Policy paints a glum picture of the National Standards for use of oxo-biodegradable additives in the production of flexible plastics below 20 microns. Additionally, the National Standards for the use of oxo-biodegradable additives issued by the EPA were gazetted in 2018. Notwithstanding these interventions, those plastics continue to be used. As indicated in the NPMP, the EPA will need resources and capacity to ensure compliance with this directive.

2.5.2. Recommendation: Evaluating the effects of the 2015 Ban on Plastics less the 20 Microns and the use of Biodegradable Additives in Plastics and discussing the way forward

It has been four years since the directive on the use of oxo biodegradable additives was introduced. Local producers are reluctant and unlikely to comply with this directive as complying with the directive will leave them at a competitive disadvantage with importers of such products who are not required to comply with the directive.

The impacts of the oxo-biodegradable directive should be evaluated over these four years and literature review should be conducted as more recent knowledge is available. Then, the stakeholders should take a decision on whether to continue this directive or not.

For single-use plastics bags, the option of a ban of all single-use plastic bags should be considered by the institutional stakeholders and evaluated, as these plastics do not have any incidence on public health (unlike water sachets for example).

Other implementation techniques like economic incentives, restrictions on the use of plastics, permitting through the EIA procedures outlined above, process and product standards under the auspices of the Ghana Standards Authority could be used. The potential of alternatives to these bags should be studied.

2.6. The Institutional Framework

2.6.1. Gap: Missing Stakeholders in the Institutional Framework of the NPMP

The Ministry of Environment, Science, Technology and Innovation (MESTI) is the lead government institution mandated to deal with the environment, science, technology and innovation in Ghana. MESTI will serve as the coordinating Ministry with direct responsibility over the Resource Recovery Secretariat created by the Policy. Paragraph 4.1.1 of the NPMP enumerates public sector institutions that are key for the implementation of the NPMP.

The following gaps were identified:

- Conspicuously missing from the list above is the Ministry of Health which, as indicated in the report on the regulatory framework, is a key partner for effective waste management in Ghana. Having listed the Public Health Policy, 2007 as relevant to the fight against plastic waste, the NPMP ought to have made provision for the Ministry of Health as a key public sector institution to be involved in the implementation of the NPMP.
- Another relevant public sector institution omitted in the NPMP is the Ministry for Energy which is responsible for policies on renewable energy and the Energy Commission under the Ministry of Energy which is responsible for the implementation of the Renewable Energy Act, 2011 (Act 831).

⁸ Friedrich-Ebert-Stiftung & Human Rights Advocacy Centre, The Law-making Process in Ghana: Structures and Procedures, January, 2011.

- Lastly, the EPA has been identified as having a key role to play under the Resource Recovery Secretariat at paragraph 3.5.1.5 of the NPMP. However, the NPMP does not include the EPA as a key public sector institution for the implementation of the NPMP. Considering the important regulatory mandate of the EPA which includes the administration of the Environmental Assessment Regulations in Ghana, coupled with the EPA's powers of enforcement and control, it would have been more appropriate to designate the EPA as a major public sector agency institution in addition to its role under the Resource Recovery Secretariat.

2.6.1. Recommendation: Assignment of Roles to Relevant Institutions

Having listed the Public Health Policy, 2007 as relevant to the fight against plastic waste, the NPMP needs to make provision for the Ministry of Health as a key public sector institution to be involved in the implementation of the NPMP.

For issues pertaining to renewable energy, the Energy Commission under the Ministry of Energy is responsible for the implementation of the Renewable Energy Act, 2011 (Act 831). For purposes of transforming waste to Energy, the Energy Commission should be part of the institutional framework for the management of plastics in Ghana.

Considering the important regulatory mandate of the EPA, which includes the administration of the Environmental Assessment procedure in Ghana, coupled with the EPA's powers of enforcement and control, the EPA should be recognised as a major public sector agency institution in addition to its role under the Resource Recovery Secretariat under paragraph 3.5.1.5 of the NPMP.

2.6.2. Gap: Overlaps between Institutional Actors and Fragmentation of Roles

Paragraph 3.2.05 of the NPMP identifies "lack of coordination between actors [...] lack of clear mandate roles, responsibilities or actionable goals" among others as a hindrance to effective plastics management in Ghana.

The Ministry of Sanitation and Water Resources (MSWR) is a relatively new government Ministry established for the purpose of formulating and coordinating policies and programmes that will systematically lead to the development of Ghana's infrastructure requirements for sanitation among others.

Section 4.1.1.2 of the Policy calls on MSWR to streamline issues of sustainable plastics waste management within its budget and medium-term Development Plans. Another key role the Policy urges MSWR to play is the adoption of ownership of the Policy's Strategic Actions pertaining to plastics waste management and water supply. It is unclear how the role of MSWR is going to be streamlined with that of MLGRD.

MLGRD is responsible for decentralisation through the 16 regional administrations in Ghana which are further sub-divided into 260 Metropolitan, Municipal and District Assemblies (MMDAs). Section 4.1.1.3 of the NPMP requires MLGRD to mainstream the Policy within the local Government structure. Prior to the creation of MSWR, MLGRD was a lead institution for waste management in Ghana, working through its waste Management and District Health Departments.

The following gaps were identified:

- The National Plastic Management Policy does not address the overlap of functions between MESTI MLGRD and MSWR.

2.6.3. Recommendation: Addressing Institutional Overlaps and Fragmentation of Roles

As stated under Paragraph 3.2.05 of the NPMP, "lack of coordination between actors [...] lack of clear mandate roles, responsibilities or actionable goals" among others are obstacles that need to be surmounted to ensure effective plastics management in Ghana. It is important to address these major problems to effectively implement the NPMP in Ghana.

To ensure a smooth implementation of the NPMP, it is imperative for the Policy to take cognisance of the potential overlap in functions with respect to MESTI, MLGRD and MSWR. A clear indication of the

specific roles that each of these Ministries will play in the implementation of the NPMP would obviate potential turf wars that could adversely affect the implementation of the NPMP.

There are a number of reasons for the MESTI to strongly coordinate with the MLGRD for dealing with plastics in Ghana.

In the first place, MLGRD has a comprehensive medium to long term strategy in place to deal with solid waste and plastics waste in Ghana. Secondly, MLGRD is responsible for decentralisation through the 16 regional administrations in Ghana which are further sub-divided into 260 Metropolitan, Municipal and District Assemblies (MMDAs). Section 4.1.1.3 of the NPRP requires MLGRD to mainstream the Policy within the local Government structure. Furthermore, MLGRD has been mandated to manage the Fund, under Act 863, the NPMP must follow the requirements of the law and allow MLGRD to fulfil its legal mandate. Finally, as indicated on section 2.4 supra, MLGRD has additional waste management functions under other laws in Ghana. For the foregoing reasons, the MLGRD should be a major partner of MESTI in the implementation of the NPMP while this role seems to be currently assigned to MSWR.

2.7. Accountability

2.7.1. Gap: Lack of Accountability

Paragraph 2.2.5 of the NPMP states lack of accountability, lack of enforcement and lack of political will as three governance issues that have not inured to the benefit of effective plastic management in Ghana. To address these issues, the NPMP sets to monitor and evaluate the strategic actions outlined in the NPMP, undertake compliance audit reviews, develop an effective policy framework for collaboration with appropriate agencies to ensure environmental compliance and enforcement. To enhance good governance, inclusiveness and shared accountability, the National Plastic Management Policy at paragraph 3.5.15 makes provision for the establishment of a Resource Recovery Secretariat under the supervision of MESTI and the EPA.

The EPA has a range of enforcement powers under the Environmental Protection Agency Act, 1994 (Act 490) and the Environmental Assessment Regulations, 1999 (L.I.1652) that could be used to ensure compliance with its applicable laws and regulations. For instance, Section 13 of Act 490 empowers the EPA to issue enforcement notices in respect of activities that pose a serious threat to the environment or human health.

The following gap was identified:

- Although the various policies identify lack of enforcement of applicable laws as a major obstacle to waste management in Ghana, they omit the judiciary and other dispute resolution institutions as part of the institutional framework for waste management in Ghana.

2.7.2. Recommendation: Ensuring Transparency and Accountability

In addition to the solutions listed to address the issues of lack of accountability, lack of enforcement and lack of political will enumerated under Paragraph 2.2.5 of the NPMP additional measures should be put in place.

One such measure would be to evoke the enforcement powers of the EPA under Act 490 and L.I.1652. For instance, Section 13 of Act 490 empowers the EPA to issue enforcement notices in respect of activities that pose a serious threat to the environment or human health. Another way of addressing these issues is acknowledging the vital role the judiciary and other dispute resolution institutions play to ensure justice and promote accountability. In addition to the Courts, there is an Alternative Dispute Resolution Centre which has been established pursuant to Section 114 of the Alternative Dispute Resolution Act, 2010 (Act 798) for purposes of arbitration and mediation as alternatives to the adversarial judicial system for the resolution of disputes. The Commission on Human Rights and Administrative Justice (CHRAJ) which is mandated under the Constitution and the Commission on Human Rights and Administrative Justice Act, 1993 (Act 456) to investigate allegations of corruption and deal with issues of administrative justice, among others can also promote transparency and accountability in the implementation of the NPMP.

The Resource Management Secretariat should take note of the important roles of the judiciary, the Alternative Dispute Resolution Centre, CHRAJ and other quasi-judicial institutions in addressing accountability and enforcement issues.

2.8. The Role of the Resource Management Secretariat

2.8.1. Gap: Missing Stakeholders in the Resource Management Secretariat

Section 4 of the Ministry of Environment, Science, Technology and Innovation, Government of Ghana, National Plastics Policy: Resource Secretariat: Initial Structure and Staffing (Resource Secretariat Document) identifies government ministries, government agencies, traders, producers, waste management institutions, civil society and academia as key stakeholders to be part of the governance structure of the Resource Recovery Secretariat. Apart from the MESTI, the Resource Recovery Secretariat Document identifies the Ministry of Sanitation and Water Resources, Ministry of Trade and Industry, Ministry of Finance and Economic Planning and Ministry of Education as the Ministries to be represented under the proposed governance structure of the Resource Management Secretariat.

The Environmental Protection Agency, the Department of Factories Inspectorate, the Ports and Harbours Authority, the Food and Drugs Authority and the Ghana Standards Authority are identified as the main government agencies that need to be represented on the governing structure of the Resource Management Secretariat.

The following gaps were identified:

- Conspicuously missing are the MLGRD and the Ministry of Health which are indispensable stakeholders for waste management in Ghana.
- The Resource Recovery Secretariat Document lists Local Government Waste Management Authorities, waste collectors, plastics collectors, recyclers and remanufacturers as key stakeholders. However, the Secretariat does not assign Local Government Waste Authorities roles that will enable them take part in decision-making.
- Another problem identified at paragraph 2.2 of the Implementation Plan is that as part of the activities earmarked for 2019 the Secretariat is to develop “a plan for the effective and equitable disbursement of the Plastic Waste Recycling Fund.” However, Act 863 clearly designates the MLGRD as the institution responsible for the Fund. The Implementation Plan does not assign MLGRD any role in respect of the Fund. This is a major gap that could have serious repercussions on the implementation of the NPMP. Since all policies are subject to law and the law specifically assigns MLGRD that role, legally, it would not be feasible to assign that same role to MESTI under the NPMP unless the law is amended to grant MESTI that role.

2.8.2. Recommendation: Involving Relevant Stakeholders in the work of the Secretariat

The Secretariat should act in accordance with the prevailing law and allow MLGRD to perform its statutory function of managing the Fund. Since it is the statutorily mandated ministry to perform this role, it is a key decision-making partner and must be represented on the governing structure of the Resource Recovery Secretariat. Otherwise, Act 863 should be amended to designate another institution to be responsible for the management of the Fund (such as The Ministry of Health and the Local Government Waste Authorities roles should also be assigned roles in the work of the Secretariat.

2.9. Cabinet Approval of the Policy

2.9.1. Gap: The NPMP is not yet passed

The approval of the NPMP is a lengthy process and the NPMP is not yet passed.

2.9.2. Recommendation: Approval and Implementation of the NPMP

The implementation of the NPMP has been tied to some time lines outlined in the Work Plan in the Implementation Plan. To curtail any further delays in the implementation of the NPMP, Cabinet needs to approve it as quickly as possible and make it easily accessible to relevant stakeholders and the public.

2.10. Data Management

2.10.1. Gap: Poor Data Management

The poor monitoring of data on waste, plastics and environmental management is a major challenge for the stakeholders of the plastic sector. First, it should be noted that data on plastics need to arise from different sources:

- Waste management stakeholders (MSWR, assemblies, MLGRD, service providers), as plastic is collected partly with mixed MSW, and as waste characterisation campaigns provide important information on the amount and types of plastic in households, commercial and industrial waste
- Plastic management stakeholders (MESTI, service providers, collectors, aggregators, etc.), as plastic is partly collected separately from mixed MSW by specific actors (informal, formal) that focus on recyclables before being recycled by actors of the plastic chain
- Financial management stakeholders (Ghana Revenue Authority (GRA)), as plastic imports and exports are subject to taxation by the GRA Customs Department
- Environmental and water management stakeholders (MESTI, MSWR), as plastic can leak into the environment and be found in water sources, beaches, streets, drains, open dumpsites, etc.

Yet, there is no reliable data collection and analysis by the public sector. The ministries (MSWR, MESTI, MLGRD), agencies (EPA) and local assemblies (AMA, TMA, etc.) have not implemented a system for the coordinated collection and monitoring of plastic management data. This situation is worsened by the fact that municipal solid waste is managed by 8 different assemblies in Accra. The lack of a defined methodology, of exchange of data and of reporting to an entity in charge of data consolidation is a challenge for the development of accurate and reliable information on the waste, plastic and environmental sectors; while this information could support decision-making.

Currently, the following challenges can be observed:

- Waste management data is fragmented between different assemblies and not consolidated, the methodology is not clearly stated, reporting by the service providers is uneven
- Plastic management data is not collected by the public sector that will rely on figures obtained through different studies (universities, students, international organisations, etc.). This creates a lack of continuity and absence of common methodology in the data
- Financial management data is available at the Ghana Revenue Authority (imports and exports of plastics) but not analysed and consolidated by other public sector stakeholders in charge of plastics management (for example, MESTI)
- Environmental and water management data in relation to plastic pollution is not collected by the public sector that will rely on figures obtained through different studies (universities, students, international organisations, etc.). This creates a lack of continuity and absence of common methodology in the data.

It should be noted that poor data management was identified as a key challenge by the Waste Recovery Platform of the UNDP and that this Platform intends to make existing data available to the different stakeholders via its website.

2.10.2. Recommendation - Monitoring Data on Plastic Management

The following stakeholders would need to coordinate for better data management:

- The Assemblies, MSWR and MLGRD for data on waste management
- The Ghana Revenue Authority for data on plastic imports / exports with the entity in charge of plastic management (MESTI or its agency, the EPA)

- The EPA and MESTI for data on companies involved in recycling, producing, manufacturing of plastics and data on plastic leakage into the environment (with the MSWR and other ministries or agencies responsible for water resources and wildlife)

Accurate information about waste, plastic and environmental management would enhance decision-making, policy formulation, legal reforms, etc. by relevant institutions and stakeholders. The monitoring of data on plastic management requires the definition of a data management strategy on plastics for the whole of Ghana. For example, in addition to clear channels for coordination between institutional stakeholders, this strategy could include the development of a knowledge centre on plastics, that could both deliver training, capacity building and certifications, and support research and data monitoring on plastics management.

3. Conclusion

From all indications, the Government of the Republic of Ghana is committed to effectively dealing with the management of plastics in Ghana. The NPMP, its Implementation Plan and its Resource Management Secretariat Document are all steps in the right direction. However, the foregoing gaps outlined in this report need to be thoroughly addressed if the obstacles encountered in the past in trying to address these challenges are to be avoided. To effectively implement the NPMP, recommendations are made to address the identified gaps.

Gaps	Recommendations
<p>Non-operational Plastic Waste Recycling Fund</p> <ul style="list-style-type: none"> • The PWRF is not operational • Act 863 categorically states that the MLGRD is responsible for the management of the Fund and not the Resource Recovery Secretariat as envisaged in Paragraph 3.5 of the <u>Resource Recovery Secretariat: Initial Staffing and Structure Document</u>. • Not a clear definition of the activities that could be financed 	<p>Issuing and implementing guidelines on the Plastic Waste Recycling Fund and ensuring a coherent management of the fund</p> <ul style="list-style-type: none"> • Operationalise the PWRF • Need to modify the NPMP draft to identify the MLGRD as managing the Fund in line with Act 863 or to amend the Act 863 for the NPMP to be effective • Clearly define the activities financed under the Fund
<p>Gaps in the policy framework</p> <ul style="list-style-type: none"> • Lack of information on two key policies, the National Environment Policy (NEP) and National Environmental Sanitation Strategy and Action Plan, 2010 (NESSAP) 	<p>Consolidation of relevant policies</p> <ul style="list-style-type: none"> • Provide information about how relevant NESSAP and NEP will be in the implementation of the NPMP
<p>Potential overlap between the Environmental Fiscal Reform Policy and the NPMP</p> <ul style="list-style-type: none"> • Of the seven thematic areas under the SEA of the EFR Policy, the most relevant is waste management which focuses on packaging, product and plastic tax and EFR incentives for municipal waste management 	<p>Incorporating the draft Environmental Fiscal Reform Policy into the NPMP</p> <ul style="list-style-type: none"> • To avoid overlapping or conflicting with the Plastic Waste Recycling Fund, the taxation component of the EFR should be streamlined with the environmental tax imposed under Act 863
<p>Gaps in the regulatory framework</p> <ul style="list-style-type: none"> • Lack of comprehensive law on solid waste management, plastics management 	<p>Relying on existing legislation on general environmental issues, pending legislative reforms</p> <ul style="list-style-type: none"> • The legislative reforms should be a long-term measure, in the meantime existing legislation should be used
<p>Non-compliance with the 2015 ban on plastics less the 20 microns and the use of oxo-biodegradable additives in plastics</p> <ul style="list-style-type: none"> • Non-compliance regarding the use of oxo-biodegradable additive • Non-compliance regarding the use of plastics bags below 20 microns 	<p>Evaluating the effects of the 2015 ban on plastics less the 20 microns and the use of oxo-biodegradable additives in plastics and discussing the way forward</p> <ul style="list-style-type: none"> • Evaluate the effect of the oxo-biodegradable policy, re-consider its use in light of more recent knowledge • Evaluate the impact of a potential ban of single-use plastic bags and/or consider the implementation of economic incentives, the promotion of alternatives, etc.
<p>Missing stakeholders in the institutional framework of the NPMP and overlaps between institutional actors and fragmentation of roles</p>	<p>Assignment of roles to relevant institutions and addressing institutional overlaps and fragmentation of roles</p>

Gaps	Recommendations
<ul style="list-style-type: none"> • Missing strong roles for the Ministry of Health, Ministry for Energy • The NPMP does not include the EPA as a key public sector institution for the implementation of the NPMP • The National Plastic Management Policy does not address the overlap of functions between MESTI MLGRD and MSWR 	<ul style="list-style-type: none"> • Ensure that roles are clearly assigned for the implementation of the NPMP to the Ministry of Health, Ministry for Energy and the EPA in the implementation of the NPMP • The MLGRD should be a major partner of MESTI in the implementation of the NPMP while this role seems to be currently assigned to MSWR
<p>Lack of accountability</p> <ul style="list-style-type: none"> • Omission of the judiciary and other dispute resolution institutions as part of the institutional framework for waste management in Ghana 	<p>Ensuring transparency and accountability</p> <ul style="list-style-type: none"> • The Resource Management Secretariat should take note of the important roles of the judiciary, the Alternative Dispute Resolution Centre, CHRAJ and other quasi-judicial institutions in addressing accountability and enforcement issues.
<p>Missing stakeholders in the Resource Management Secretariat</p> <ul style="list-style-type: none"> • Missing are the MLGRD and the Ministry of Health which are indispensable stakeholders for waste management in Ghana • The Secretariat does not assign Local Government Waste Authorities roles that will enable them take part in decision-making • The Implementation Plan does not assign MLGRD any role in respect of the Fund while Act 863 clearly designates the MLGRD as the institution responsible for the Fund 	<p>Involving relevant stakeholders in the work of the Resource Management Secretariat</p> <ul style="list-style-type: none"> • Need to modify the NPMP draft to identify <ul style="list-style-type: none"> ○ The MLGRD as managing the Fund in line with Act 863 or to amend the Act 863 for the NPMP to be effective ○ Assign role to the Ministry of Health ○ Assign roles to the Local Government Waste Authorities
<p>Delay in approving the NPMP</p>	<p>Approval and implementation of the NPMP</p>
<p>Poor data management</p> <ul style="list-style-type: none"> • Lack of continuity, no clear methodology, lack of coordination between different institutions having data 	<p>Monitoring data on plastics management</p> <ul style="list-style-type: none"> • Definition of a clear data management strategy including methodology, coordination channels, etc.

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Annex T – Proposed Training Programme

The following training programme will be implemented by the APMP team in December 2019.

Date	Activity
10/12/2019	<p>For plastic actors – aggregators, start-ups, recyclers</p> <p>Introduction to general waste:</p> <ul style="list-style-type: none"> • An opportunity to understand the aims and issues of the group and also run introductory training for the entire group; • Waste composition and understanding how this changes seasonally/overtime etc. • Identifying potential buyers for your material and how to identify potential markets • Maximising value – this is a practical focus on how best to manage source segregation, how to understand how to make the most money out of your waste. • Developing a business case and understanding profit, income, costs etc. • Creating value from waste. <p>Introduction to plastics:</p> <ul style="list-style-type: none"> • What are they and why are they so widely used? • Different types of plastic polymers; • Collection solutions / tips. • Health and safety induction, what waste pickers working with your businesses should be taught • Different types of plastic recycling; including costs of machines
11/12/2019	<p>For informal actors</p> <p>Developing waste businesses:</p> <ul style="list-style-type: none"> • Background research; • Develop end-markets; • Principles of maximising value in waste; • Different types of plastic recycling; including costs of machines • Different types of equipment and costs • Regulatory requirements to operate a recycling business (formalisation) • Developing a waste business case. • Accounting and recording (materials, quantities, calculation through a register)
12/12/2019	<p>For assemblies and service providers</p> <p>Introduction to general waste:</p> <ul style="list-style-type: none"> • An opportunity to understand the aims and issues of the group and also run introductory training for the entire group; • What is waste; • The impact of waste; • Introduction to opportunities from waste livelihoods. • Waste management: contracts, reporting, data collection <p>Plastics management - key facts about plastics:</p> <ul style="list-style-type: none"> • Impact of plastic pollution; • Alternatives to plastics consumption; • Introduction to plastics polymers and recycling; • Source segregation • Plastic collection: transfer stations, plastic bins, buying centres, etc. • The zoning system in Accra: opportunities for better collection of plastics <p>Promoting plastic awareness - social activities to engage in (beach clean-up events) and existing initiatives (recycling goods, collection initiatives, mobile apps, etc.</p>
13/12/2019	<p>Participatory planning day</p> <ul style="list-style-type: none"> • Key stakeholders – scale-ups and municipal sector;

	<ul style="list-style-type: none"> • Summarised what has been learnt during training; • Analyse key issues and challenges in the sector and develop stakeholder analysis; • Within key stakeholder groups, undertake SWOT analysis; • Identify key actions from groups over the next 18 months
16/12/2019	<p>For the actors involved in IEC (municipalities, service providers, NGOs)</p> <p>Training the trainers:</p> <ul style="list-style-type: none"> • Communicating around waste • Communicating waste prevention, recycling, • Key facts around plastic waste • Source segregation – where, who, how • Different communications tools