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ACRONYMS AND ABBREVIATIONS

CIF Price	Cost, Insurance, and Freight Price
COM-B Model	Capability, Opportunity, Motivation and Behavior Model
GAM	Greater Amman Municipality
GESI	Gender, Equality and Social Inclusion
HDPE	High-Density Polyethylene
JOD	Jordanian Dinar
LDPE	Low-Density Polyethylene
MEL	Monitoring, Evaluation, and Learning
MOENV	Ministry of Environment
MSA	Market Systems Analysis
PET	Polyethylene Terephthalate
PP	Polypropylene
PS	Polystyrene
PVC	Polyvinyl Chloride
SWM	Solid Waste Management
USAID	United States Agency for International Development
WEEE	Waste of Electrical and Electronic Equipment

I. EXECUTIVE SUMMARY

The Recycling in Jordan Activity is a 5-year project funded by the United States Agency for International Development (USAID) and implemented by Chemonics International. The project has three primary objectives:

1. To expand and improve private sector-led recycling markets;
2. To generate greater demand for and utilization of recycling services within the Amman commercial sector; and
3. To improve enabling environment for recycling services and material markets.

Against these objectives the Activity has embarked on various investigations to aid in understanding and informing responses. Central among these is this Market Systems Analysis (MSA), which is informed and underpinned by various technical Annexes.

The market systems analysis process has been informed by and aligned with good practice guidelines on 'market systems development'. It has followed a diagnostic process that seeks to operationalize objectives through sector choice and prioritization, deepen investigations from observing symptoms to identifying root causes of underperformance, and ensuring better targeted and more responsive intervention design. Specifically, the process occurred in the following four stages:

Prioritized Sectors

Different sectors offer different potential 'dividends' against each of the key objectives of any program. Activity objectives were clarified, further defined and applied through a rapid assessment process across a 'long-list' of 16 different sub-value chains. This resulted in a first order prioritization of plastics, metals, paper/cardboard and organic waste. These sectors are all considered in more detail through this report. A second order prioritization included sectors such as old tires, e-waste, glass and textiles. These are considered as 'expansion' possibilities as the Activity moves forward and builds implementation momentum.

Assessed Sector Performance

Each of the prioritized sectors were subjected to more detailed assessment through the application of different and complementary market research methods. Value chain analysis was the primary method, supported by a behavioral assessment method used to 'drill-down' more deeply into commercial waste generators. With all research conducted by in-house staff and partners, all analysis was subject to a 'socratic' process to inform, challenge and improve both the quality of the outputs, and build understanding across all members of the team. The value chains studied were classified into two distinct 'market-channels':

- The Domestic Channel: this includes ferrous metals, plastics (except Polyethylene Terephthalate [PET]), and some cardboard. These products have advanced processing and manufacturing capability available domestically, and primarily produces for domestic end-user markets. This channel tends to be more quality conscious, and hence tends to be more vertically integrated and formally organized. Most inputs are sourced from industrial and other large commercial waste generators typically via contract or tender. As such, this channel tends not to source much from the thousands of self-employed waste pickers, a significant proportion of whom come from more marginalized backgrounds.

- **The Export Channel:** this includes non-ferrous metals (particularly aluminum and copper), PET, and most paper / cardboard. Advanced processing and manufacturing capacity does not exist domestically, so these products undergo minimal value addition (for example, shredding, compacting, bailing, etc.) prior to global export. As such, this channel tends to be more loosely networked with products going through a series of grading / sorting and aggregation steps before being sold to processors who then prepare for export. This channel sources much of its input via thousands of self-employed waste pickers, which sell to and through hundreds of smaller scrap yards and brokers.

These sectors contribute an estimated 30% of total commercial waste, a relatively small proportion of which is currently recycled (the majority heading to landfill). Across these channels and sectors operate several hundred large, medium and small sized firms performing different value chain functions, employing around 18,000 or more workers, and offering a critical livelihood option to at least 2000-3000 waste pickers.

Identified sector Potential and Constraints

While significant in terms of economic output and employment, recycling sector performance – and potential – is undermined by a host of systemic weaknesses that erode value and inhibit expansion. These are identified and explored in detail through this report, but in summary most constraints could be classified under three headings:

- **Informality and inefficiency:** little waste is separated at source, and poor handling practices further introduce contamination which undermines the quality (uses and prices) of recycling inputs. Dealing with this issue of mixed, and contaminated waste is long and convoluted. It is inefficient, erodes value (particularly to waste pickers), and undermines sector competitiveness.
- **Innovation, skills and technology:** there are no innovation partnerships between the recycling sector and national / regional universities or other research centers. Innovation is further undermined by the low utilization of specialized business services that have the potential to impact positively on issues such as productivity and market access. Skills levels are relatively low generally across the sector.
- **Policy and advocacy:** the policy and regulatory environment for the recycling sector is particularly complex and costly to navigate and comply with. Cooperation and organized representation by the sector towards the government is extremely weak and undermines issues of sector advocacy and leadership.

Targeted upgrading Intervention responses

The final part of the diagnostic process, and chapter of this report, concerns Activity responses to the identified constraints and unlocking potential to upgrade and ultimately deliver on desired Activity results. Intervention responses are grouped and aligned with Activity objectives that will deliver:

- Business performance and profitability for private sector companies in the recycling sector improved
- Recycling services expanded and successful models replicated
- Awareness of recycling services among commercial sector improved
- Linkages between the recycling service providers and commercial sector strengthened
- National regulatory policy and enforcement for SWM strengthened
- GAM engagement with the private sector recyclers and waste generators improved

2. INTRODUCTION

The Recycling in Jordan Activity is a 5-year project funded by the United States Agency for International Development (USAID) and implemented by Chemonics International. The project has three primary objectives:

1. To expand and improve private sector-led recycling markets;
2. To generate greater demand for and utilization of recycling services within the Amman commercial sector; and
3. To improve enabling environment for recycling services and material markets.

In pursuit of these stated objectives, the Activity is operationalizing a market systems development approach¹ guided by three interconnected principles:

- Rationale and Objective: More effective and inclusive market systems facilitated by development agencies.
- Framework for Analysis: A lens which helps identify and diagnose constraints and opportunities for market system development.
- Guidance for Action: A set of principles and practices that guide intervention design and implementation consistent with its objectives.

Equipped with its objectives and guided by the approach stated above, the Activity has been actively engaged through its early months of operation in a detailed market systems analysis. This report highlights the approach, findings, and implications of this assessment. In terms of structure, this report is presented as follows:

- Approach and Methods: Introduction to the ‘stepped’ approach, which guided the diagnostic process, and key methods used to generate information that ultimately informed choices and set direction for the Activity.
- Sector Prioritization (Step 1): a rapid appraisal and ranking of potential recycling sectors against key performance criteria.
- Sector Performance (Step 2): a detailed market systems analysis considering issues related to participation, structure, and performance of the priority sectors.
- Sector Potential (Step 3): a consideration of opportunities, drivers, and constraints preventing the potential for sector performance on key Activity objectives.
- Intervention Focus (Step 4): implications for organizing the Activity in response to identified constraints and challenges.

The MSA process has generated significant information and insight. These findings serve as the foundation for this report, which aims to offer a coherent synthesis rather than exhaustive

¹ See “The Operational Guide for the Making Markets Work for the Poor (M4P) Approach”, 2015, SDC-DFID for more details on the thinking and application of the market systems development approach.

representation of the data collected. Further detail is offered in the Annexes to this report and referenced in text where apply.

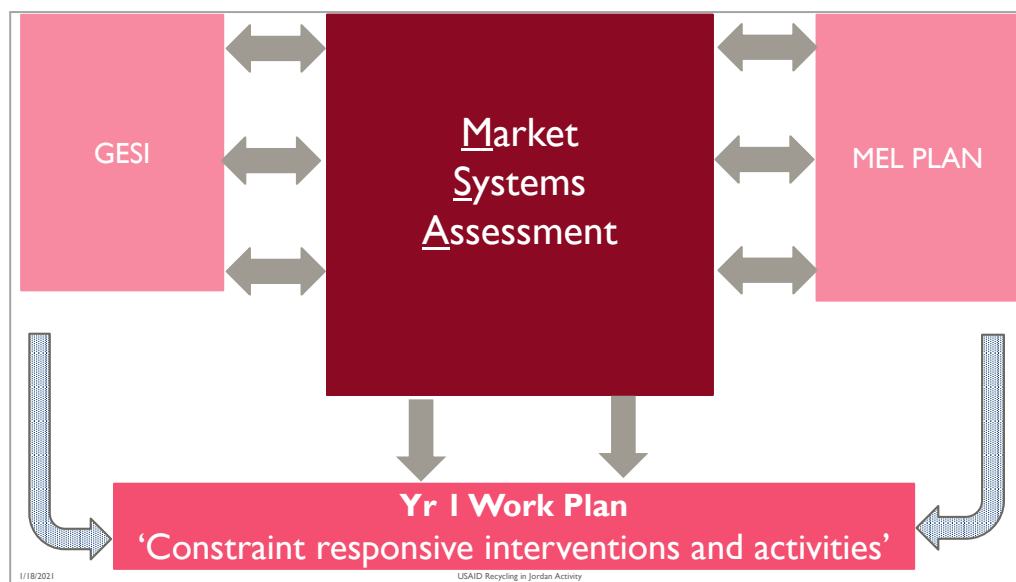
3. APPROACH AND METHODS

The approach followed was consistent with best practices for market systems development. It was also shaped by and connected to parallel investigations and outputs. These two determinants are expanded upon below.

Context and Fit

The MSA was conducted as one investigation amongst others. Discrete, but interconnected, shaping and informing each other. Collectively these various investigations align and inform what the Activity does, how it does it, and how it measures and reports on progress. This is all reflected in the Year 1 Workplan, as shown in Figure 1 below.

Figure 1: MSA context and connections



As shown above, the MSA work informed, and is informed by two parallel data driven tasks:

- **GESI:** The gender, equality and social inclusion (GESI) analysis looked deeply into barriers and opportunities related to entry, operation, and advancement of women, youth, refugees, and other marginalized communities in the recycling sector. Its work is informed by the MSA, which helped to clarify structures, roles, and current patterns of inclusion / exclusion. Likewise, GESI issues were 'overlaid' into the data collection tools used to conduct the MSA. Refer to **Annex II** for the full Gender Analysis.
- **MEL:** Monitoring, evaluation and learning (MEL) ultimately aims to define and operationalize the results and performance framework for the Activity. This is informed by the MSA and GESI assessment, for example, with data on baselines, targets, and sources of information. Likewise, the Theory of Change refined at the start of this assessment process sets a clear objective

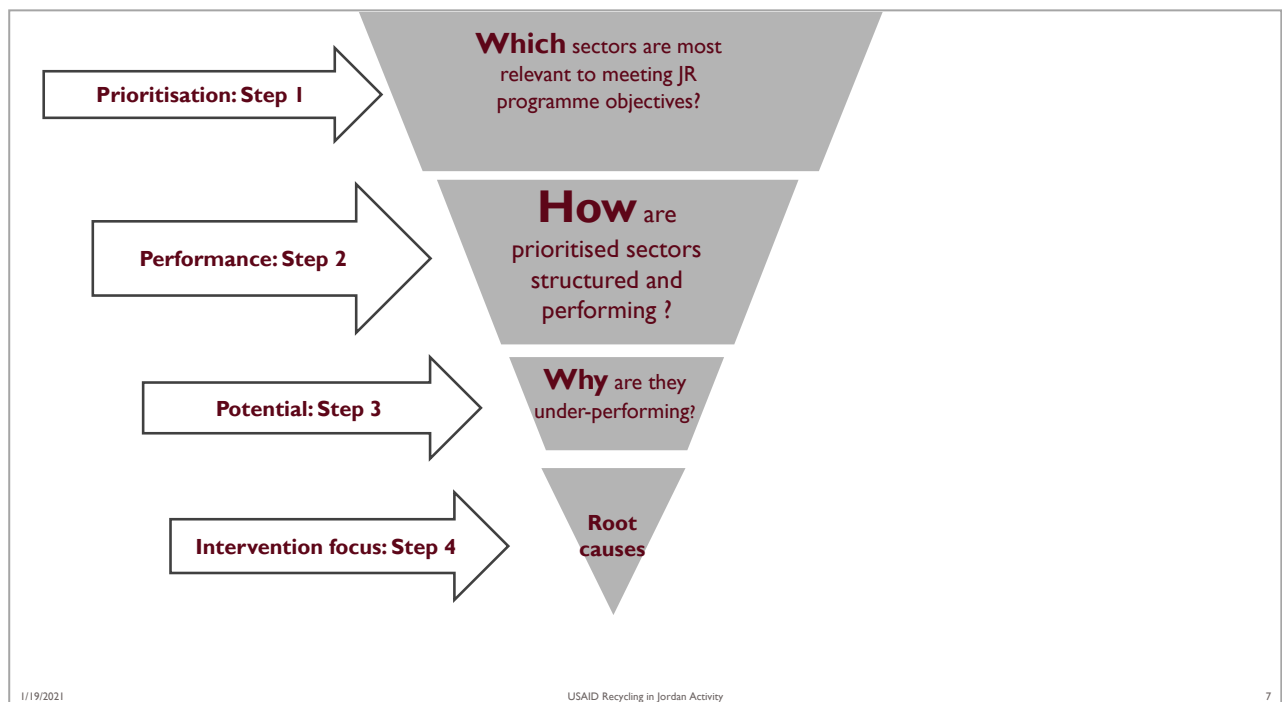
framework, which was operationalized through the diagnostic process (see Sector Prioritization: Step 1, for example).

- Year I Work Plan: the MSA, GESI and MEL outputs all informed the Activity's Year I Workplan, ensuring evidence based and responsive interventions.

Diagnostic Process

The diagnostic process of the MSA moved from the symptoms to the underlying causes of market under-performance, to target more effective interventions. This diagnostic process is outlined in Figure 2 below.

Figure 2: Diagnostic process- from symptoms to causes



The approach was comprised of four critical and interconnected steps:

- Prioritization (Step 1): the recycling sector is comprised of many different products and value chains. This step involved a rapid assessment of these different options against the objectives of the Activity. Those prioritized moved to the next step of the diagnostic process, with others taking a second order of priority (i.e., remaining of interest to the Activity, but not considered further in this particular phase of the MSA).
- Performance (Step 2): for those prioritized products / value chains, this step involved a detailed assessment of their structure and performance. In other words, this step helped the project to understand how things are in the value chain, and why they are that way.
- Potential (Step 3): building from the previous step, Step 3 aims to assess the potential for 'upgrading' the prioritized value chains to deliver on the stated objectives and ambitions of the Activity. Key to this step is to consider both opportunities and constraints.

- Intervention focus (Step 4): following a clear articulation of constraints, and consideration of their relative impact and importance, this final step offers guidance on intervention areas and accompanying organizational implications.

Key Methods

Operationalizing the approach outlined above draws on the use of three primary methods. These are:

- Value Chain Analysis;
- COM-B Behavioral Assessment; and
- Socratic Discussion.

Each of these methods involved reference to secondary information sources, but also considerable primary research much of which is annexed to this report. In terms of depth, across these and the MEL assessments the research garnered more than 500 unique respondents. On the other hand, In terms of breadth, and as shown in Figure 3 below (refer to **Annex I** for the full stakeholder mapping report), the stakeholder picture for the recycling sector is as complex as it is exhaustive. Nonetheless, interviews and responses have to date been generated from more than 90% of these key stakeholder groups.

Figure 3: Key stakeholders' groups in the Amman recycling sector



These methods are explained in more detail below.

Value chain analysis

Following best practices on value chain analysis, the data tools and investigative process (i.e., key informant interviews and focus group discussions) were structured to offer detail, insight and perspective on the following dimensions and dynamics:

- Vertical relationships: looking to understand the processes – or value-added functions – through which products flow from input markets (i.e. raw materials and generation) to output markets (i.e. final products and consumption). What are they? Who is involved? What does transformation look like? What are the differentials between input and output prices, and value addition? This also offers a focus on end-markets / buyers and issues of alternatives / competition as well as competitiveness against these.
- Horizontal relationships: looking within each function in the value chain helps to understand the nature of cooperation between different firms involved in the same type of activity. It also helps to distinguish between different business models used by those performing similar tasks (i.e. technologies, organization, skills, etc.).
- Wider system of supporting functions and rules: firms within the value chain also exist within a wider system of supporting markets – those that add value to the performance of firms in any given value chain and those that create policies, regulations, customs and norms that influence participation and incentivize performance.
- Assessment of leverage potential: the purpose of value chain analysis isn't just to understand what is happening any why. It's also to inform thinking about realizing latent potentials. In this sense the process was focused also on identifying 'where' intervention might be required, and 'who' might support such interventions.

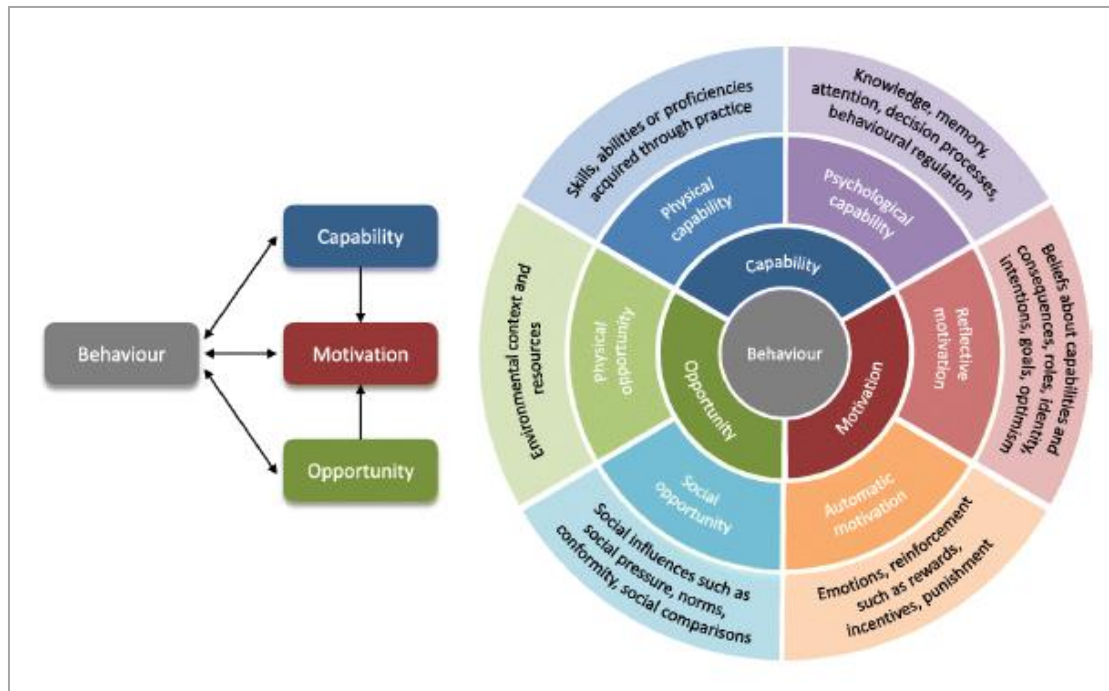
The value chain research was undertaken by Activity staff, with the support and guidance of the Market Systems Development Expert. The primary value chain assessment summaries are presented in **Annex IV** and provide the core foundation for this MSA.

COM-B behavioral assessment

The Activity is solely focused on commercial, rather than household-level waste generators. There are different types of commercial waste generator, displaying different levels of understanding and adoption of alternative waste disposal and recycling practices. If the recycling industry is to grow, and the volume of waste sent to landfill is to decrease, then these waste generators will need to improve their understanding, change their behaviors, and adopt the three r's principles; Reduce, Reuse and Recycle. According to the key informants interviews conducted by the Activity with industries, internal recycling principles are practiced at industrial level especially when the type of material could be recirculated again in the manufacturing process. In addition, one of the interventions in the workplan is to develop guidelines for solid waste management plans which will also take into consideration the 3R's principle.

To understand these challenges better, the Activity commissioned an assessment by Magenta (a delivery partner to Chemonics on this Activity) using their COM-B methodology. The COM-B model, shown in Figure 3 below was applied to waste generators in four sectors: hotels, restaurants and cafes, malls, and hypermarkets.

Figure 4: Full definition breakdown of motivation, capabilities, and opportunities



- Motivation is viewed as an expression of an individual's desire to change or adopt a new behavior.
- Capability relies on the individual's capacity to change or adopt a behavior, such as having the necessary physical ability, knowledge, and skills.
- Opportunity captures external factors that enable or motivate behavior, including changes to the environment and social opportunities.

As shown above, COM-B considers both the individual determinants behind a behavior, as well as the sociological and environmental ones. The detailed report can be found in **Annex III**.

Socratic discussion

As indicated above the detailed value chain interviews and assessments were all conducted by Activity staff. Likewise, the COM-B behavioral assessment was conducted by Magenta, a delivery partner to Chemonics on this Activity. Doing this all 'in-house' presented various team building and capacity related challenges. However, it also presented opportunities to learn and forge as a team. Central to this was the opportunity to engage and enliven a process of Socratic discussion that involved:

An iterative process of 'assessment leads' regularly reporting back to their colleagues and peers on what they found and what conclusions they were drawing. This allowed for contestable challenge where those listening were able to question and probe, inviting the presenter to incorporate this feedback into their work going forward. To review. To reflect. To find out more. To build and improve the evidence base and quality of findings and implications.

This process significantly aided cross-team learning and ensured a more 'democratic' approach to data generation, data interpretation, and emergent findings and implications. This common understanding and ownership ultimately informed what the Activity will do, why, and how.

STEP 1: SECTOR PRIORITIZATION

Against a target of 12, an initial list of 16 distinct sub-value chains was considered. These were:

Table 1: List of considered value chains

Plastic sector	Polyethylene Terephthalate (PET)	Metals sector	Ferrous metals
	High-Density Polyethylene (HDPE)		Non-ferrous metals
	Polyvinyl Chloride (PVC)	Organic sector	Organic waste “food waste”
	Low-Density Polyethylene (LDPE)		Cooking oil
	Polypropylene (PP)	Other waste sectors	E-waste
	Polystyrene (PS)		Glass
Paper/Cardboard sector	Paper		Textile waste
	Cardboard		Old tires

For reasons related to capacity – time and resources – and probity (i.e. starting smaller, building momentum and expanding over time) it was decided to apply a rapid prioritization to the above long list of potential sectors of Activity engagement and intervention. The objective was to emerge with a group of first-order priority sectors that would be subject to deeper assessment and analysis now; and second-order priorities which the Activity can revert-back to over time and as implementation proceeds.

Consistent with best practice market development principles, the framework used for prioritization centered on a rapid assessment of each sector against a set of key Activity objectives and interests. The basic framework is shown in Figure 5 below; and a detailed set of assessment criteria is shown in Table 2 below.

Figure 5: Framework for sector prioritization



As shown above, the framework used for prioritization was to consider issues of relevance, opportunity, and feasibility in respect of core Activity objectives interpreted in respect of three key results:

- Increased value of the private recycling sector;
- Increased volume of waste diverted from landfill to the recycling sector; and
- Inclusive patterns of growth that offer improved opportunities for women, youth and marginalized groups.

This framework was operationalized through the application of a set of more detailed criteria, which are shown in Table 2 below.

Table 2: List of prioritization specific criteria

Category	Criteria
Relevance	Waste Volume – size and significance?
	Jobs – number and type?
	GESI Representation (inclusion) – where and how many?
Opportunity	Commercial growth prospects – growing output and profits?
	End market stability (access) – markets and market access?
	Job quality (health and safety related) – safe or unsafe?
Feasibility	Alignment with GAM GoJ priorities – policies and plans?
	Alignment with USAID priorities – country strategy?
	Activity scope – instruments / skills available – team and modes?
	Activity scope – partners / leverage potential – number and type?

A rapid assessment was made applying the above criteria to the 16 value chains. A ‘traffic light’ system was used which attempts to show two things: 1) Returns against the different criteria of different value chains in absolute and relative (to each other) terms; and 2) Red flags which might represent ‘blockers’ to making immediate progress relevant to the value chain. The outcome of this rapid appraisal process is shown in Table 3².

² Key for subjective traffic light scoring: RED = potential critical factor / blocker; AMBER = concerns, but not necessarily insurmountable; GREEN = seems positive and supportive.

Table 3: Traffic light system of value chain prioritization

	<u>Plastics</u>	<u>Pap/Board</u>	<u>Metals</u>	<u>Organic</u>	<u>Glass</u>	<u>Cooking Oil</u>	<u>E-Waste</u>	<u>Old Tires</u>	<u>Textile</u>
<u>Relevance:</u>									
Waste volumes									
Jobs									
GESI Representation									
<u>Potential:</u>									
Commercial growth prospects									
Market stability									
Job quality									
<u>Feasibility:</u>									
Alignment with GAM / GoJ									
Alignment with USAID									
Instruments / skills									
Partnerships / leverage									
	✓	✓	✓	✓	✗	✗	✗	✗	✗

First Order Priority Sectors

The rapid prioritization assessment, as highlighted in Table 2 above, yielded a focus on the following sectors / value chains:

Table 4: First order priority sectors

Sector	Key reasons
Plastics	<p>Jordan has a fairly well-developed plastics value chain recycling all forms of plastic, for a range of domestic and export products; with the exception of PET which is exported. With close to 614 companies operating in the plastic industrial sector, employing around 13,000 of workers, and valued at around \$1.5bn³ in 2020, the plastic sector represents around 5% of total industrial output in Jordan⁴. The prolonged decline in global oil prices has made virgin plastics more competitive against recycled plastics. This has had an effect on the local industry, which has tried to respond accordingly. There is a real opportunity to do more, with motivated partners and solid market access.</p> <p>The current plastic waste sector in the recycling market in Amman includes 6 plastic sub-value chains that indicated around 4000-6000 ton per month of plastic waste entered the value chain and recovered in domestic end-market industries except for PET, of which there is 30% PP, 20% HDPE, 35% LDPE/LLDPE, 10% PVC, 5% PS. while PET is exceptional because the pre-consumer PET that is generated from factories is collected for export purposes. There is currently no PET recycling industry on Jordan.</p>
Metals	<p>Whilst lower in waste volume terms than plastics, the metals sector is also long established and significant in size. Ferrous metals – specifically iron and steel – are fully recycled and used domestically. Melting factories produce rebar, steel pallets and other products used primarily as key inputs – arguably strategic inputs - to the domestic construction sector. Non-ferrous metals (particularly aluminum and copper) are generally exported, typically with little value-added processing. Exports of non-ferrous metals are estimated to be 15-25,000 tons in 2019⁵. Estimates show the metal sector employs around 6000 full time and formal workers⁶. As a global commodity metal prices are affected by global trends; but the sector remains generally competitive albeit with weak regulations, little cooperation, and low Research & Development / technology engagement. Much room/ technology engagement much scope remains for improved efficiency and returns across the sector.</p> <p>The current metal waste sector in the recycling market in Amman includes 2 sub-value chains (ferrous and non-ferrous).</p>

³ Jordan Chamber of Industry, 2020

⁴ Jordan Chamber of Industry, 2019

⁵ <https://www.intracen.org> – Jordan exports profile - 2019

⁶ Estimate given in KIIs with steel end-market industries in Amman

<p>Paper / Cardboard</p>	<p>Overall, there are an estimated 1500 - 2000 people⁷ employed at the various levels of the paper and cardboard value chain in Amman from waste pickers to cardboard manufacturers. Much of this sector is oriented to export markets with little value added in Jordan at the present time. However, there are around 20 small scale paper recycling mills in Amman and Zarqa working to produce basic products (i.e. egg tray cartons)⁸ by use of paper waste. The sector has been growing in both volume and value terms.</p> <p>The current paper/cardboard waste sector in the recycling market in Amman includes 2 sub-value chains (paper and cardboard).</p>
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The above waste sectors represent around 30% of the total volume of the total commercial waste stream⁹. Between them they employ an estimated 18,000 workers (as shown in Table 1 above) and offer critical livelihood opportunities for other segments involved in the value chain. This comprises an additional estimated 3000-5000 waste pickers, and around 1000-1500 itinerant buyers¹⁰. There is a relatively high proportional representation of men and youth among the most vulnerable and marginalized groups, though women participate in significantly fewer numbers across the whole value chains at both levels of the formal and informal sector, where they are almost entirely absent. This is for various reasons, but an often-cited reason is that there is limited interest /competition for jobs and income earning opportunities in this sector, as Jordanians who are not attracted by the nature of this work and often have access to alternatives, unlike those from more marginalized backgrounds.

Organic waste is a 'special interest' case as indicated with a 'red-tick' in the above assessment. Around 50% of commercial waste by volume is classified as organic¹¹. Hitting Activity targets on the volume of waste diverted from landfill toward recycling is to some reasonable extent dependent on successful intervention in the organic waste value chain. However, there are currently no actors engaged in the recycling of organic waste.

There are potential markets (e.g., animal feed) and applications (e.g., biomass energy), both domestic and export in orientation. However, these will require significant planning and strategic investment in 'new technologies' capable of transforming organic waste into products with a real commercial value. For these reasons organic waste – for which there is currently no value chain active in Jordan – isn't considered for deeper assessment in this early phase of the Activity. However, it will be considered urgently and strategically by the Activity in the early implementation phase.

Second Order Priority Sectors

The second order priority sectors are deemed to have some intervention and upgrading potential, but as shown in Table 2 there are several 'red flag' assessments that provide cause for further reflection before due consideration can be given to classifying these as genuine upgrading opportunities for Activity engagement.

⁷ Field estimates collected by the Activity.

⁸ Key informant interviews with operational managers in used paper/cardboards recycling plants in Amman and Zarqa.

⁹ Waste characterization studies conducted in 2010 and 2011 by the Royal Scientific Society (RSS) for commercial and residential districts in Amman

¹⁰ Field estimates collected through KIs conducted with several value chain market actors.

¹¹ Refer to footnote no. 6

The other second order priority sectors includes common special waste streams generated from a business that requires additional or specific handling for proper recovery or disposal such as but not limited to used vegetable cooking oil waste, electric and electronic waste (WEEE), old tires, and textile. These wastes require a special administrative assessment, additional processing, special transportation, special packaging, and/or additional disposal/treatment techniques due to the quantity of material generated and/or its unique physical, chemical, or biological characteristics.

Despite their high environmental impacts, the value chains of these special waste are less developed in the local market compared with the primary waste sectors in Amman and thus, large volumes end up in landfill sites or illegal dumping.

The volume, price, and job dimensions of the second priority sectors are smaller, frailer, and susceptible to the challenging legislative business enabling environment, bureaucratic environmental licensing, weak feasible infrastructure and investments, inconsistent supply, and uncertainty in market data.

Table 5: Second order priority sectors

Second order priority sectors	Key reasons and potential
Used vegetable cooking oil waste	Jordan has currently very little value chain for the collection, sorting, storage and treatment of the used cooking oil waste generated from the hotels and restaurants where only two private collection companies are registered and licensed from MoEnv. In addition, few numbers of individual informal collectors and around 2-4 companies are involved in collecting the cooking oil where most of the quantities are exported with estimates of potential capacity up to 15,000 tons per year.
Waste of Electrical and Electronic Equipment (WEEE)	Around 8500-9000 pieces/ year of electrical and electronic equipment are generated in Jordan that are recycled and exported. Whereas Jordan imports annually about 86 thousand tons of WEEE ¹² . The current value chain in the market is not well established and few companies that get licensed from MOENV to collect, store, and dismantle WEEE pieces such as PCs, white goods, batteries, mobiles, and flat screens, etc. These companies have agreements with the key WEEE generators in Amman (telecom, electrical, computer, mobile retail shops, etc.) and offer the safe disposal of this e-waste in their facilities. The plastic and steel portions are locally recovered while the collected gold, silver and other precious metals are exported. Inconsistent supply of the waste, collection barriers, poor equipment/infrastructure, and a disorganized business enabling environment are limiting the performance, volume, and value of this sector.
Old tires	Approximately 3.5 million pieces/year of the waste tires are recycled and utilized in products fabrication and energy recovery in Jordan while (11) Retread tires companies, (3) energy recovery factories, (3) rubber recycling companies, and (5) industrial fuel companies are registered and

¹² The source: Key informative interviews with market actors in the value chain.

	<p>licensed to perform in the value chain. They buy and collect used tires from the local market for their industry (22-25 JOD/ton)¹³.</p> <p>Used tires are used as fuel in cement factories and shredded to produce soft playground surfaces. Sometimes, waste pickers burn discarded tires in open fires to retrieve the metal wires, causing environmental and health problems. While there are regulations related to waste tire disposal and reuse, Jordan currently has no clear target for treatment or reuse. Additional institutional and capacity building efforts are needed to improve existing business models in the value chain to enable their replicability and scale-up.</p>
Glass	<p>Currently, there is no glass recycling taking place in Jordan where minimal glass bottles are collected by producers for reuse purposes.</p> <p>Lack of local glass industry in the country so far and high transport costs associated with export to regional markets indicate a very weak internal demand with no commercial value. Market led options or alternatives will be explored to fill this gap in the recycling sector in Jordan.</p>
Textile	<p>Textile scraps, originating mostly from garment industries and post-consumer waste, usually end up in the landfill, as the local market in Jordan has a very small valorized stream for this kind of waste with high seasonal variability. Synthetic scraps, in contrast, are sometimes sold to local companies for furniture fill. Cotton scraps are sold to specialized brokers and exported mainly to Egypt for reprocessing.</p>

STEP 2: SECTOR PERFORMANCE

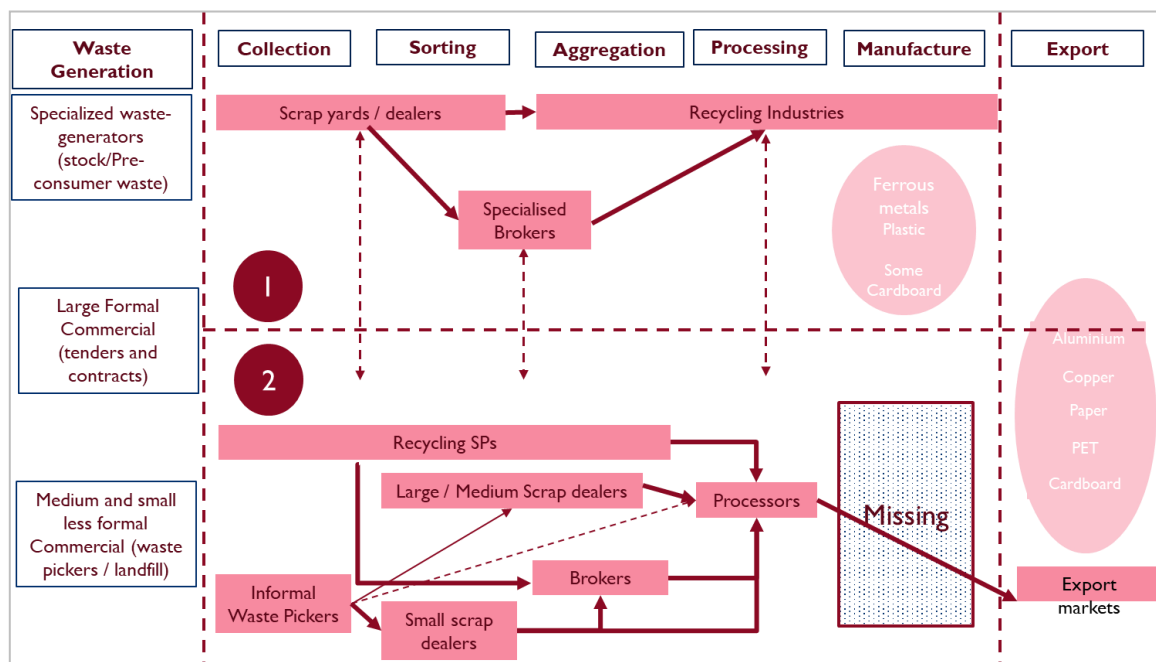
Step 2 concerns a deeper assessment of those first order priority sectors indicated in the previous Step. This assessment draws primarily on the value chain and COM-B methods referred to earlier in this report. The presentation of data is structured according to best practice guidelines associated with value chain analysis.

Mapping, Channels and Products

Value chain maps have been produced for each of the prioritized value chains. However, given the significant similarities and overlaps in terms of 'functions' and 'actors', this assessment has developed a composite / overarching value chain map for all prioritized sectors (please note value chain maps are usually presented vertically. The one here is presented horizontally solely for presentational purposes). This is shown in Figure 6 below.

¹³ Project estimation

Figure 6: Overarching value chain map for prioritized sectors



As shown above, there are two primary channels in the recycling sectors of focus. These are:

1. **Domestic Channel:** this concerns ferrous metals, plastics (except PET), and some cardboard. This channel involves more domestic value addition, and hence is more quality conscious than the export channel. In response to such quality drivers, this channel is relatively more vertically integrated, formal and relationship based. Recycling industries is the term used to refer to manufacturers who also engage in processing and aggregation functions (see below). Through their relationships with scrap yards and dealers they source the bulk of their material inputs as 'off-cuts' from industrial manufacturing plants; and through tenders / contracts for specialist clearance from large waste generators / demolition sites. Interviews demonstrated that marginalized groups are quite strongly represented in manual factory roles, and women in more administrative roles in these factories. This channel isn't highly inclusive of waste pickers and/or itinerant buyers.
2. **Export Channel:** this concerns non-ferrous metals (e.g. aluminum and copper), PET, paper and cardboard. Value chains for which there is no domestic advanced processing or manufacturing capacity. These processes typically demand high volumes and intensive use of energy and water – all factors that Jordan is less competitive in compared to other countries in the region (e.g. Saudi Arabia) or wider afield. This means that such products undergo only limited value addition – such things as sorting, grading, cleaning, shredding, bailing and packaging, etc. – prior to being exported. However, the competitiveness of these value chains lies in more efficient sorting, cleaning, grading and aggregation functions further down the value chain and closer (ideally 'at') the level of the waste generator. The cost of sorting large volumes of contaminated mixed waste is both inefficient and erodes 'quality' and hence price of some products (e.g., paper). This channel is described as more of a 'networked' organization of looser and much wider sets of relationships. The sector is reliant on thousands of waste pickers (including many from more marginalized groups), who sell mixed waste to scrap yards or brokers they know. This network of scrap yards and brokers collaborate as they sort, grade, and sell to / buy from each other, in

order to both specialize and aggregate as the product moves up through the value chain towards processing and ultimately export.

Functions and Actors

Several different functions are highlighted in Figure 6 above and described more fully as follows:

Manufacturing / Recycling Industries

These industries have domestic manufacturing capacity for ferrous metals (iron and steel), plastics (except PET), and a small scale of cardboard.

- Metals: Activity research shows there are currently 5-8 metal recycling industries – aluminum smelters and steel mills - operating in Amman and Zarqa. The gross capacity of these industries is estimated to recover 9,000 – 12,000 tons / year of aluminum and between 14,000 – 20,000 tons / year of iron and steel scrap waste¹⁴. Exports are mainly taking place for aluminum alloys and copper waste. Some of these smelters produce finished iron cast-based products for heavy equipment and machinery. Those non-ferrous metals that are exported are often subject to some basic mechanical compression in preparation for shipping.
- Plastics: Activity research confirms around 614 plastic industries and manufacturers¹⁵ are working across Jordan typically using technologies such as injection, blow-molding, and film extrusion for the production of products such as water tanks, chairs, buckets, packaging for food, textiles, food trays and bags. The sector also plays an important role providing input materials for a range of other domestic industrial sectors. Some more basic products can be made using solely recycled granules. More, and typically higher value products, can be made using differing ratios of recycled to virgin plastics. While ‘quality’ thresholds apply to these ‘mixes’, they are also affected strongly by price – with virgin products substituting for recycled inputs if prices (linked to fluctuations in global oil prices) start to align.
- Paper / Cardboard: there is only one industrial scale paper mill in Jordan, based in Zarqa – The Jordanian Paper and Cardboard Company. It is currently working only at a fraction of its potential capacity (interviews confirmed less than 1000 tons / month). Additionally, there are 8 cardboard manufacturers and 15-20 small paper mills (classed as ‘craft establishments’) that have been identified as operating between Amman and Zarqa¹⁶. They use both domestic and imported recycled materials in their production. Estimates indicate that Jordan currently has a local manufacturing capacity of around 27,000 – 32,000 tons per year; with the bulk of around 100,000 tons exported¹⁷.

Processing

Processing activities span from those advanced activities that provide inputs for domestic manufacturing, to basic types of processing for export markets.

¹⁴ KFW study (2017) titled “Evaluation of the Recycling Markets and Market Options for Secondary Raw Materials and Products Derived from Waste” Solid Waste Management Project, GAM, Jordan.

¹⁵ Jordan Chamber of Industry (2020).

¹⁶ Key informative interviews with the operational managers of used paper/cardboards recycling plants in Amman and Zarqa.

¹⁷ KFW study (2017) titled “Evaluation of the Recycling Markets and Market Options for Secondary Raw Materials and Products Derived from Waste” Solid Waste Management Project, GAM, Jordan.

- Metals: typically, this involves smelting in preparation for domestic manufacturing (as mentioned above). There are 8 large ferrous steel mills ¹⁸ (mainly domestic steel and iron scrap waste) that produce finished rebar for building and construction. Those ferrous metals are locally recovered in these industries and are often subject to export tax (50 JOD per ton) to protect the domestic production in the local market.
- Plastics: There are an estimated 40-80 plastic processors/crushers producing different quality grades of plastic flakes, pellets, and powder in Jordan (mainly in Sahab and Zarqa)¹⁹. More advanced processing, such as technologies for recycling PS (polystyrene/Styrofoam-EPS) do not exist. Given the lack of a PET recycling plant in Jordan so far, the post-consumer PET bottles are compacted and bailed for export, but this global market collapsed in 2018 when China stopped importing plastic. The pre-consumer PET waste generated from factories and manufacturers continues to be exported to global markets in Turkey, India, and southeast Asia countries who are considered to have large textile industry that convert PET to polyester and fabric strings.
- Paper / Cardboard: There are 6-8 used paper/cardboard recycling plants oriented toward the export market, of which only 2 are large scale plants in Amman and Zarqa (co-owned by foreign paper manufacturers)²⁰. Core processing functions involve grade-based segregation, followed by mechanical shredding and bailing in preparation for shipping to export markets.

Aggregation – scrap yards and brokers

There are two key aspects of value addition from an aggregation perspective. Firstly, with significant supplies coming from mixed waste sources, picked by thousands of individual waste pickers and sorted / sold by a network of scrap yards and brokers, the first value added function of aggregation is pooling – or warehousing – of sorted and graded products, building supplies, over time, and on-selling when required volume demands are met.

All value chains prioritized in this analysis are strongly influenced by global trends and fluctuations in global prices. There is a ‘volatility’ to be ‘managed’, and this management relates to the second value add of the aggregation function. Pooling, warehousing and managing price volatility – selling only when prices are ‘right’ (or right enough). This can help manage, at least to some degree, the impact of price ‘shocks’ on the many thousands of firms, workers and self-employed waste pickers working to low margins and low wages.

Scrap yards range from very small and generalized, to larger and more specialized operations. The same applies to brokers. In terms of numbers, there are an estimated 200-300 scrap yards and brokers involved in the metals value chain, and 250-350 in the plastics value chain (mainly concentrated in East Amman, Sahab, South Amman, Muwaqqar and Zarqa)²¹.

¹⁸ Data collected through an interview with the owner of a ferrous smelter/mill in Amman.

¹⁹ Data collected through an interview with several owners of plastic processors in Sahab and Zarqa. The records of MoEnv indicates that 40 of these plastic processors are registered and licensed.

²⁰ Key informative interviews with the operational managers of used paper/cardboards recycling plants in Amman and Zarqa.

²¹ This estimate refers only to field interviews with several market actors in the value chains and may increase or decrease as the project continues.

Sorting and Collection

Very little waste is separated at source (i.e., waste generators separating waste as it is generated). Those relatively few that do practice waste separation at source tend to have contracts from the small number of relatively new specialized recycling service providers. Most waste is mixed and needs to be sorted by type, then further sorted by grade. This lack of source separation significantly increases cost, reduces quality / price (of now contaminated products) and undermines competitiveness of the recycling sector. This also explains why such relatively small volumes of potentially recyclable products are actually recycled vs sent to landfill (which is the dominant practice).

Collection and sorting by type are generally done by the several thousand self-employed waste pickers working widely and independently across the Greater Amman Municipality (GAM). They then sell to scrap yards, which then further sort by grade before aggregating or, alternatively, selling to aggregators. The system is low skilled, informal and generally suffers from a host of 'inefficiencies' that depress prices and margins throughout the value chain. This falls heaviest on the returns to labor for those waste pickers at the foot of the value chains.

Some collection and sorting are more organized and professional in nature. This concerns waste coming from contracted demolitions and clearances, as well as off-cuts from industrial processes.

Waste Generation

For the purposes of this market assessment – and given the value chains of focus – three classifications of waste generator have been identified:

- Specialized: these are industrial entities that generate primary waste through their production processes. Such waste is collected, and if not reused directly by them, enters the recycling value chain typically via a mix of scrap yards, and brokers.
- Large Commercial: for the purposes of this market assessment, large commercial refers mainly to those waste generators who allow access to their waste via tenders and contracts. This does include some of the more 'environmentally aware' hotels and malls referred to mainly under the 'medium and small commercial' category.
- Medium and small commercial: for the purposes of this assessment this category covers hotels, cafes & restaurants, malls and hypermarkets operating in GAM.

Of the 98,995 GAM registered commercial waste generators, less than 5% of these generate 100 kg or more waste per day, as a group contributing more than 50% of total commercial waste in Amman. This, in turn, is more than 20% of total waste generation²². These small- medium (100-299 kg/d), medium (300-599kg/d), medium to large (600-2739 kg/d), and large (>2740kg/d) commercial waste generators produce a combined total of circa 682 tons of waste per day²³.

²² GAM data records (2019/2020)

²³ The waste generation is projected based on the GAM estimate criteria for the waste collection fees categories from the commercial generators in Amman.

Prices and Markets

Ferrous metals, plastics and some cardboard are mainly consumed domestically. The bulk of used cardboard, along with paper, pre-consumer PET and non-ferrous metals are sold to export markets. Jordan's primary trading partners for paper and paperboard have included Saudi Arabia, Iraq and the United Arab Emirates. The packaging sector in Jordan exported various paper products with a total value of 141 million USD in 2018 while importing paper products for the domestic use with a total value of 324 million USD (an estimated 7% of which was made from recycled paper, this represents 23 million USD)²⁴.

According to Activity research, the average collected paper and cardboard per professional waste picker is estimated at 80 – 100 kg per day with a selling price in the range of 25 -35 JOD per ton (depending on quality and quantity). Processing costs are typically between 10-15 JOD per ton. The final Cost Insurance and Freight selling price of paper is 30 – 40 JOD per ton while the duplex type with minimum ink content reaches 60 – 70 JOD per ton.

Jordan consumes most recycled plastic domestically. Activity research indicates that the current selling prices of plastics to the recycling plants are as follows²⁵:

- PP: 130-150²⁶ JOD/ton which after washing/granulating, increases to between 250-350 JOD/ton.
- PE (film packaging): transparent sells for 150–170 JOD/ton and colored for 100-110 JOD/ton.
- HDPE: sells for between 80-150 JOD/ton and after shredding for between 200-240 JOD/ton. The dense HDPE materials such as irrigation pipes sell for slightly higher prices at around 220-300 JOD/ton.
- LDPE: sells for between 80-150 JOD/ton, which, after shredding, significantly increases to between 200-240 JOD/ton.
- PVC: sells for 130-150 JOD/ton.
- Mixed plastic types: sell for 80-100 JOD/ton.

In the plastic value chain, 4000 – 6000 tons per month of plastic waste are currently processed and recovered by domestic plastic industries to manufacture new products from recycled plastics²⁷. Due to lack of PET recycling in Jordan, only up to 2000 tons²⁸ per year are collected from industrial sources and exported as PET waste for recycling in Turkey, India, and southeast Asia (though this has been impacted since 2019 when China banned the import of plastic waste).

In the metals sector, aluminum waste is the most valuable / in demand by the market in Amman and it has different types or forms which are highly requested by the recyclers. According to research aluminum cans amounted to about 76.8% of the aluminum waste, while the aluminum foils were

²⁴ Jordan Chamber of Industry

²⁵ The source of the prices and quantities estimates are the field interviews and market assessment surveys done in the project. The estimates may increase or decrease according to the market trends and seasonality.

²⁶ The source of prices is the interviews conducted with market actors in the project.

²⁷ This estimate refers only to field interviews with several actors in the plastic value chain.

²⁸ Source: Interview

about 23.2%. Combined, they constitute about 0.5% of the commercial waste generation in Amman²⁹.

Soft drink cans of 100% aluminum mostly collected by waste pickers and then sold up the value chain in prices range between 500-800 JOD/ton while light steel waste prices typically fetch between 80-120 JOD/ton³⁰. With respect to metal exports, around 4000 tons of copper are exported annually, at prices ranging between 2000-4000 JOD/ton³¹.

Supporting Services and Interconnected Markets

As demonstrated, the recycling sector in Jordan is a significant employer and offers critical livelihood opportunities for many thousands of poorer and more marginalized groups who struggle to access opportunities with 'higher social / economic barriers to entry'. In spite of this, and as highlighted above, the recycling sector is limited in both scope and sophistication. Domestic markets are fairly small, products are fairly narrow in scope, value addition processes limited, and value chains racked with inefficiencies. Given such prevailing factors, it's not surprising that supporting services and interconnected markets that can help drive growth are very limited in scope. The following observations emerge from Activity interviews with actors across all functions, and all value chains.

- **Business advisory services:** there were few examples of firms outsourcing any specialist business service functions. Most times these are performed internally by the firm – often by managers, though sometimes through specialist positions (i.e. HR, finance, marketing etc.) existing at larger processing and manufacturing establishments. While grading and certification processes are important (particularly in plastics where quality affects use in different end products) there was no evidence of any specialist services or functions in this regard.
- **Financial services:** Most of the recycling industry actors that were interviewed are reluctant towards accessing financial institutions (banks and micro finance institutions) as well as non-financial resources (such as leasing services). In addition, most of the respondents did not acknowledge that Access to finance is a problem. Furthermore, there was limited evidence of specialized industry financial products being available. For example, transactions between waste pickers and scrap yards are all done in cash, and usually via daily transactions. This is highly inefficient, and risky, where frequent 'cash outages' result either in lower prices to poorer waste pickers or higher costs to them having to travel further to sell to those scrap yards flush with sufficient cash.
- **Export marketing:** most exporting firms interviewed identified networks, marketing, and related administration (e.g., logistics planning, certification etc.) as critical success factors. Yet, these functions were all conducted internally, with limited evidence of any use of strategic or specialist services in these areas.
- **R&D / technology:** no concrete evidence was found with respect to R&D / technology partnerships between firms in the recycling sector, and, say, academia. In such a fast-evolving technology landscape across recycling markets globally, this is a particular surprise and arguably significant barrier to the future competitiveness of Jordan's recycling sector.

²⁹ Interview with the owner of non-ferrous metal end-market industry in Amman.

³⁰ Same source no. 24

³¹ Same source no. 24

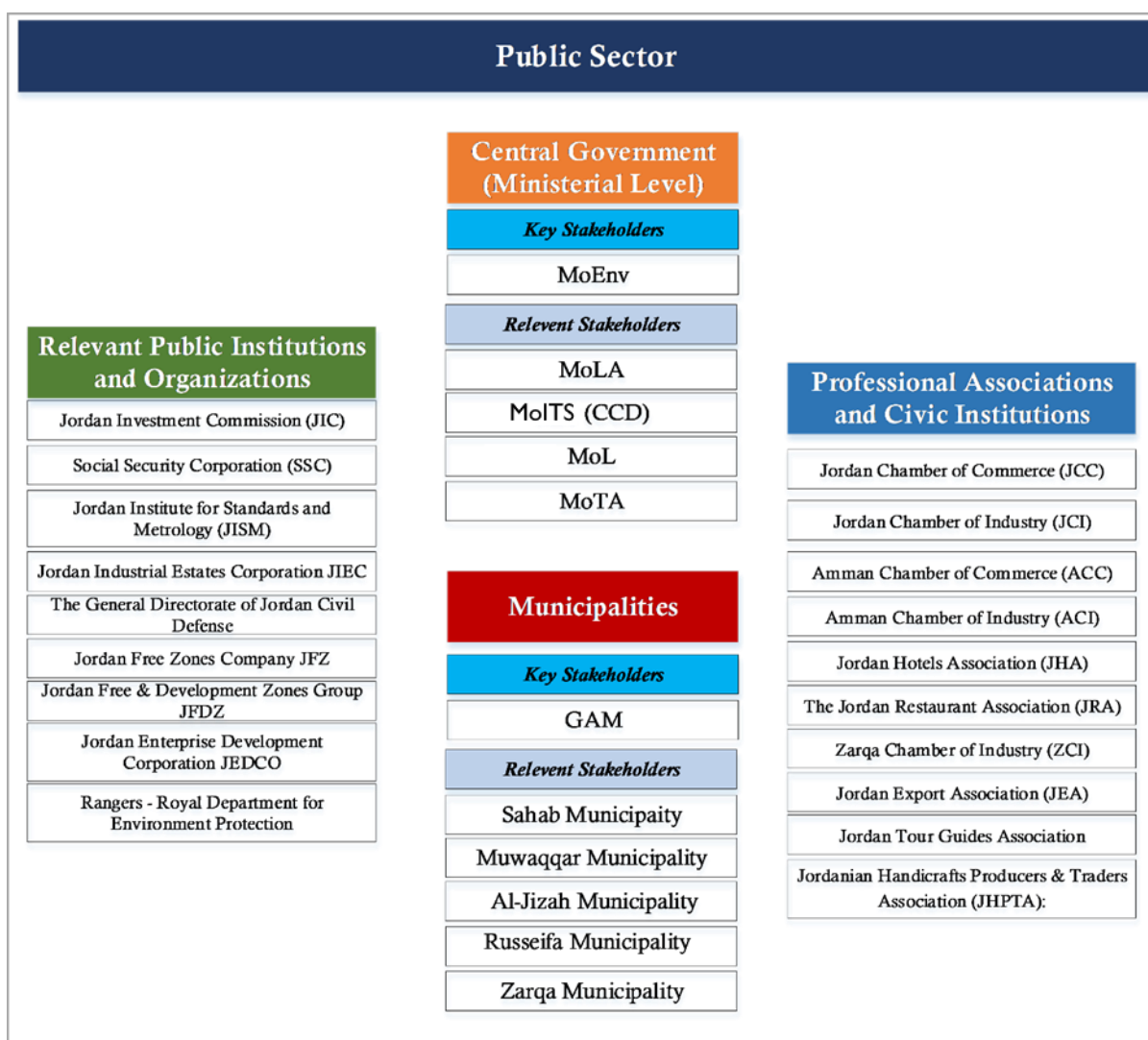
- Cooperation and Advocacy: there is evidence of firms cooperating in different ways to overcome operational challenges. However, there is no formal cooperation with respect to more strategic challenges, such as policy advocacy towards Government on a host of issues that matter in the present and the future of recycling in Jordan. Many firms are members of the Jordan Chambers of Commerce, and Industry. Though there was no evidence of there being a 'Recycling Chapter' – or similar – being used to help engage and inform the Government.

Governing Policies and Regulations

The recycling sector isn't an industrial classification per se, and hence most of the policies, rules and regulations that impact the recycling sector relate more specifically to product types, and functions in the value chain. The resulting situation is that there is much complexity and limited cohesion across the sector as a whole. Alongside the complex sets of 'rules' lies a complex set of stakeholders responsible for setting, informing, and enforcing according to their specific mandate and/or area of responsibility. This runs through all levels from local to national level bodies.

This complexity is considered in detail in the Activity report entitled "Stakeholder identification and mapping" (refer to **Annex I**). For the purposes of this market assessment report, the complex stakeholder environment is simply presented for reference – rather than detail – in Figure 6 below.

Figure 6: Key 'rules based' stakeholders relevant to the Jordan recycling sector



Marginalized Groups

There is robust survey evidence that many people from marginalized backgrounds are employed in manufacturing and processing factories. Women often hold more administrative positions with these same employers. However, recycling offers a critical livelihood for many thousands of poorer and more marginalized people (for example refugees and those from the Dom communities) working as waste pickers. Returns are low and dangers are high, but barriers to entry are low and therefore do at least offer opportunities hard to find in other sectors.

STEP 3: SECTOR POTENTIAL

The previous step presented a detailed assessment of the structure and performance across the chosen value chains, and with particular respect to the Recycling in Jordan Activity objectives. It was an assessment of 'what is'. Step 3 looks forward to considering 'what could be' in response to delivering on the three core objectives of the Activity.

As shown earlier in this report, these objectives are operationalized through translating them into key value chain upgrading ‘terms’, which means focusing on the potential to:

- Increased **value** of the private recycling sector;
- Increased **volume of waste diverted** from landfill to the recycling sector; and
- Inclusive patterns of growth that offer **improved opportunities for women** and marginalized groups.

The potential, and key constraints inhibiting that potential are considered below.

Value

As shown above, the ‘value’ (i.e. competitiveness) of the recycling sector in Jordan is inhibited by a number of key drivers. These are explored below.

Weak and disconnected policy and regulatory frameworks

As confirmed earlier, the recycling sector isn’t classified as an industrial sector in its own right. As such there is a lack of coherence in the myriad of policies, rules, regulations and inspection bodies – at all levels of Government relevant to the different products (i.e., product specific considerations) and functions (e.g., handling, manufacturing and exporting) of the recycling sector.

Some key issues affecting sector competitiveness and eroding value include:

- **Export Taxes:** tax rate levels, and more critically the frequency in changes of tax rates and thresholds, both affect the profitability and financial planning of firms. For example, in the paper value chain several manufacturers closed their operations in the past five years. Those continuing to operate all report a decline in revenues. Firms cite the imbalance between export taxes undermining their ability to be price competitive in foreign markets, while import duties aren’t necessarily pegged at rates that would ensure a ‘level playing field’ with importers competing in the Jordanian market. By way of example, the export duty tax is 50 JOD/ton for steel exports. This represents 10% of local prices and 5% of the global price. Likewise, the 30 JOD/ton for aluminum and copper exports represent around 3% of the global price. More so, used paper and cardboard are subjected to export taxes of 35 JOD/ton that represented as much as 40% of the global unit price.
- **Standards and Data:** there is a lack of published / accessible data on the recycling sector. This inhibits the public sector in making informed and evidence-based policy for the recycling sector. It also affects the planning and any evidence-based advocacy from the sector towards Government.

There are signs of progress and momentum with respect to the above challenges. For example, the recent Waste Management Framework Law (16/2020) offers an opportunity and momentum that can be taken advantage of to good effect. However, the weak and disorganized advocacy capacity of the recycling sector towards Government needs to be addressed, if this opportunity is to be realized.

Limited markets and market access

Competition in export markets for the intermediate low value added 'commodity' type products that Jordan exports is based on quality in terms of grades, but as any commodity price is the only real competitiveness measure. As a smaller exporter, Jordan is a price-taker in these highly competitive export markets. Managing exposure to such global markets add significantly to planning and positioning, through tackling issues such as:

- Trade Deals: Jordan has a number of free and preferential trade deals in place with many countries and trading blocs globally. However, the lack of representation of recycling sector interests in these discussions and/or implementation arrangements arguably means that sectoral interests are not being fully considered; and/or information on new arrangements and opportunities are not being effectively communicated toward actors in the recycling sector.
- Information and Export Services: there is a reported lack of key trade information available and responsive to exporters in the recycling sector. Moreover, there is limited use of any specialist export services from providers in Jordan, and/or elsewhere. They tend to rely on owner / manager personal relationships internationally. Better and more timely information would arguably help exporters build new relationships and become more agile in responding to market trends, threats, and opportunities.
- Global Representation: again, the lack of visibility and engagement with Government, as well as the lack of formal or structured industry cooperation means that its recycling exporters are not adequately supported or represented globally.

An alternative way of competing, and moving away from such fierce global price competition, is to open new processing and manufacturing facilities that could supply domestic, and export markets (but competing on issues of differentiation, quality and other factors – rather than just price). The viability of such strategic investment initiatives would need to be assessed, but with global markets changing so rapidly – technologies, products and standards for example – new value-added opportunities might well exist in Jordan and need to be explored further.

Quality Standards and Certification

Quality standards and certification issues are mainly with respect to domestic market access and recycled inputs competing against virgin alternatives. As reported above, the recycling sector generally isn't quality driven – at least beyond some basic levels and standards. This has led to a two-fold problem, particularly affecting the plastics sector. Recycled plastics can be used in lieu of virgin plastics for a wide range of purposes. However, the lack of quality– real or perceived – often means that the full potential of use and demand for recycled plastics isn't realized. Using more, and higher grades of recycled plastics for more, and higher value products has the potential to significantly increase the price (and value) of recycled plastics.

Overcoming these barriers would require enhancing product quality services and certification, while also improving placement / branding information and services that can help overcome lingering perceived quality issues associated with recycled products.

Access to Quality Inputs and Low Skills

A significant driver undermining value in the recycling sector, particularly plastics and paper / cardboard, is the quality of inputs. As mentioned above, there is very little separation at source of

potential recycling inputs. Resulting contamination either lowers the products' grade (and hence the price) or renders it effectively worthless. Due to the lack of separation at source, separation occurs at mixed waste streams, typically by waste pickers (who are operating 'informally') with minimal skills and knowledge about quality standards. This not only increases contamination and health and safety hazards, it also significantly increases the cost of sorting, grading and aggregating functions.

Inefficiencies and Exploitation

There are highly observed market inefficiencies which erode price margins and returns and undermine sector competitiveness. In the metals sector, and particularly around iron and steel, export tariffs mean products are not price competitive on international markets. There might be good reason for this – in seeing such products as being of strategic interest to Jordan. However, it has been reported that in knowing this, large buyers sometimes seek to abuse and exploit this situation offering prices 'deflated' relative to imported alternatives.

Again, closer engagement and representation to Government can help tackle such market abuses. As mentioned in the previous Chapter, there is very little use of specialist business and/or financial services which have the potential to add value through reducing transaction costs (of various types). Working with the sector to explore how such services can add value, and encouraging their use has real potential to overcome considerable observed market inefficiencies.

Inefficient Technologies

The value chain assessments also considered technologies - particularly used in processing functions – and highlighted various impediments and inefficiencies that could be improved through upgrading to realistic and affordable alternatives. For example, much processing is heavily dependent on power. Yet, many machines operate using diesel rather than electricity. Sometimes this is because of the lack of quality connections and infrastructure in the workspace. It was also reported that many processors are not being classified as 'industrial', but rather as 'commercial' electricity users, hence are charged a higher tariff than arguably they should be entitled to. Again, the lack of organized cooperation and advocacy toward the Government means this constraint has gone unchallenged.

Weak Research and Development (R&D) Activity

Globally, in response to climate change imperatives, recycling and associated sectors and markets are going through rapid and revolutionary changes. The lack of any formal engagement or partnership with established universities and research bodies in Jordan (or regionally) is a serve limitation to the future investment, growth and positioning of the recycling sector in Jordan. Owners and managers of large firms in the recycling sector reportedly regularly visit international trade fairs and conferences. They are aware of such trends and open to such possibilities but have so far not been able to forge the right kind of linkages and partnerships that could help them take advantage of such potential.

Impact of COVID-19 pandemic

There have been a number of – hopefully short term, but nonetheless – significant impacts of COVID-19 responses and restrictions in Jordan and globally on the recycling industry. Export markets have been undermined by reduced economic activity, as well as the impact of closed borders on global travel and transport capacity. Domestic markets have been hit by the general economic downturn too. For example, the postponement of construction projects has hit hard

those involved in the metals value chain. It is concerning that self-employed waste pickers have been affected not only by depressed demand and prices, but by lockdown and curfew restrictions. Such workers are highly vulnerable to such shocks and stresses, and often have limited coping options to mitigate the worst effects.

Volume

With the exception of metals, presently only a small proportion of waste with recycling potential enters the recycling sector. Most recyclable materials are simply directed to the landfill. As reported above, overcoming sectoral 'value' constraints will open new markets, and increase the potential 'value' (prices) of recycling inputs. Encouraging the diversion of waste from landfill to recycling will demand the sector's growth and ability to successfully incentivize demand for commercial waste. Parallel to this requires understanding and responding to supply (i.e., waste generators being open to supplying inputs to recycling sector buyers) barriers. Understanding such barriers was the focus of the COM-B research underpinning this MSA.

The COM-B research involved interviews and focus group discussions with both 'doer's and 'non-doer's' (i.e., those who currently use or do not use waste collection services offered by specialist recycling firms and/or open themselves to waste pickers). The following barriers and constraints to behavior change were identified from this research:

Capability

Capability of commercial waste generators were explored as a factor in determining whether a company recycles or not. Specifically, this looked at physical and psychological capabilities, such as decision-making processes, corporate policies, sorting capabilities, man-power profiles, wages and costs, physical infrastructure, financial means, and knowledge and awareness. The following have been identified as the three primary – self-reported - capability barriers to recycling:

- **Waste Generators lack awareness of the recycling concept and the services available.** Non-doers reported lower levels of awareness than doers of recycling and the availability of service providers.
- **Waste Generators lack finances to afford private sector services and the tools and equipment required.** Non-doers were more likely than doers to express perceptions of recycling as being costly and financially burdensome.
- **Waste Generators lack physical space to place containers and sort different types of waste.** Non-doers were more likely than doers to express concerns around the availability of the physical space needed for sorting waste.

These perceptions are often not matched by reality. For example, lack of finance was mentioned as a barrier without demonstrating understanding of the costs or benefits of moving from disposal to recycling. However, some firms allowing the use of waste pickers reported it cost them nothing yet reduced their waste by significant amounts (up to two-thirds in some cases), which reduced significantly their costs paid to GAM for waste disposal services.

Opportunities

quality of services as a factor determining whether the company recycles or not. Specifically, this looked at physical opportunity and social opportunity, such as the availability and quality of services, social norms and influences, and knowledge and awareness of the services available. The following have been identified as the three key opportunity barriers to recycling:

- Waste generators **lack awareness** about the availability of recycling services and perceive the services provided by the private companies as **expensive and unreliable**.
- Waste generators perceive that **private sector companies have limited capacity** and can only recycle select items, such as cardboard and cooking oil.
- Waste Generators realize that recycling is **not aligned with social norms** and there is no social pressure, as not recycling is considered ethical or acceptable by society.

Again, perceptions are ‘realities’ for those interviewed, but these perceptions and their reality can be challenged and righted through information and engagement. For example, there might not be social pressure in Jordan to recycle. But there might well be a (growing) section of Jordanian consumers interested in environmental issues who may show a degree of spending loyalty to those ‘first movers’ who uptake and promote their recycling and ‘green’ credentials. Such potential is yet to be fully explored or unlocked.

Motivations

Motivations of the commercial waste generators were explored to understand the primary factors that drive the behavior of doers, and what could possibly be the factors that influence the non-doers behavior. The following were identified as the three key drivers to recycling:

- Provision of waste disposal and recycling services at a lower-than normal cost will encourage the waste generators to adopt recycling behavior.
- Incentives such as discounts, tax exemptions, free publicity and provision of free recycling tools and equipment will motivate waste generators to take up recycling behavior.
- Clear corporate policies regarding waste disposal and recycling activities compel companies to adopt recycling behavior.

The above listed motivations reflect responses from interviewees. They are not recommendations or interventions to be pursued by the Activity. But they do inform the kind of expectations and interests that resulting intervention planning needs to be responsive to.

Inclusion

As confirmed above, the recycling sector offers critical income earning opportunities for thousands of self-employed waste pickers and factory employees. However, whilst participation is possible, there are severe limitations on their potential - to upgrade, to improve and to step-up into other higher quality vocations.

Waste picking is generally considered socially as a 'low' and 'dirty' activity, and sometimes equated to begging. This has several negative consequences for waste pickers, such as:

- **Access:** this is often difficult, resulting in waste pickers having to operate 'quickly' and 'in darkness' as incognito as possible. Often, they are chased off, and sometimes subject to verbal abuse and violence.
- **Operations:** working informally and under such difficult conditions restricts their ability / incentive to invest in upgrading their operations – and hence limiting their advancement and business / earning potential.
- **Social status:** being seen generally as a 'socially undesirable' activity, particularly for women, those engaged in waste picking activities are often subject to social stigma that can negatively impact on many aspects of their lives and those of their children.

The Activity is conducting a much deeper assessment of barriers, implications and opportunities for women and marginalized groups working in the recycling sector. This will further inform Activity thinking and planning in respect of the Activity's 'inclusion' related objectives.

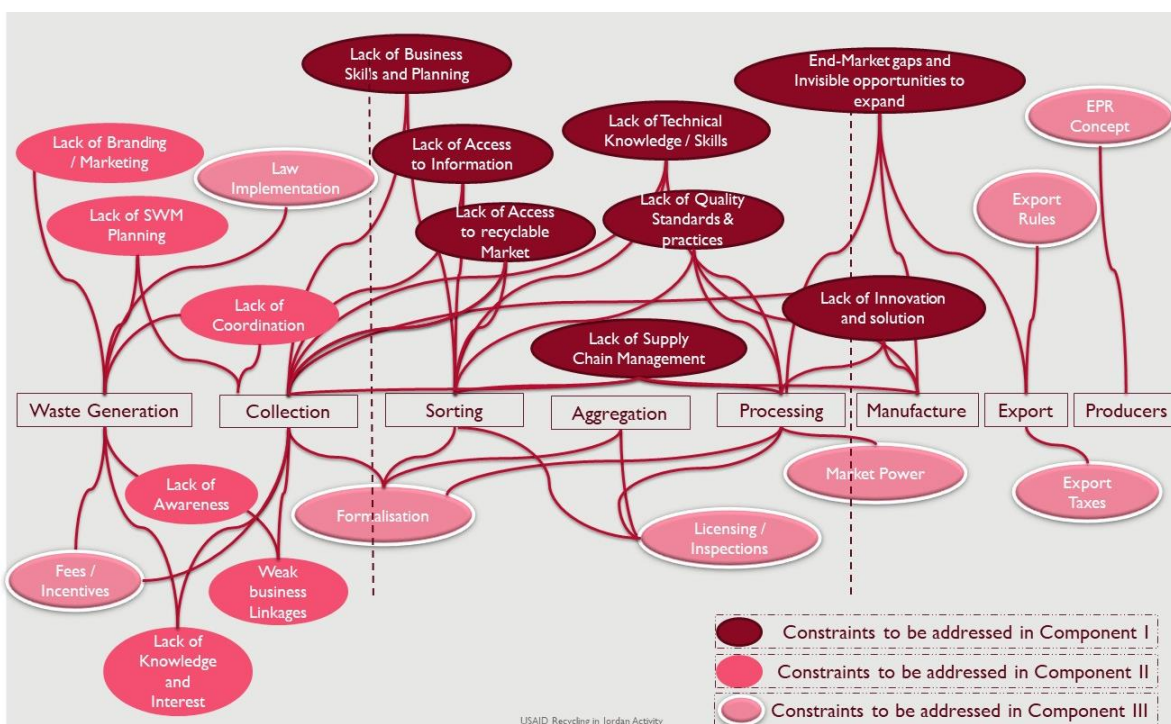
STEP 4: INTERVENTION FOCUS

This final step in the MSA concerns transitioning from analysis to action – moving from constraints and potential to interventions and results – and considering implications on organizational structure and mandate.

Constraints as they Apply through the Value Chain

The previous Chapter highlighted a host of constraints impeding the realization of potential in respect of key Activity objectives and interests. Figure 7 below goes one step further and connects these constraints to specific parts of the value chain – which function they are constraining, and who they are directly affecting.

Figure 7: Underlying causes of underperformance through the value chain



Component I: Private Sector Recycling Markets Improved and Expanded

In the absence of a public-led recycling system in Jordan, the private sector has been involved in recycling activities for several decades. The sector is made up of many large and long-established firms at higher functional levels in the value chain, yet it is still nascent, unorganized and suffering from high levels of informality and inefficiency.

According to the findings of the market systems analysis conducted by the Activity to inform year one work plan, the following constraints have been identified that limit the performance and growth of private sector-led recycling services:

- **Informal, unregulated, and highly disintegrated horizontal linkages amongst the value chain.** The value chain starts at the source where waste is generated. Current practices depend on informal waste-picking activities to collect different valuables from household and commercial waste streams. Collected recyclables then travel along the value chain, passing through scrap dealers, brokers, and processors, until they reach their destination at local manufacturers or are exported as raw material. Currently, a significant portion of the above-mentioned transaction is cash driven and dependent on the appetite and conditions of end markets.
- **The lack of integrated supply chain management practices.** This severely affects access to a regular supply of quality and quantity of inputs suitable for manufacturing.
- **Low level of knowledge at the collection and sorting levels of the value chain on good sorting and handling practices.** Current poor practice has two negative effects: contamination that reduces the quality, price and utility of different inputs, and; secondary sorting is often required, which increases the cost of inputs, reduces margins, and undermines sector competitiveness. Furthermore, the majority of smaller waste collection actors – firms and individual waste pickers – lack the business skills required to deliver a quality ‘waste solution’ to large commercial waste generators.
- **Inefficient and overpriced aggregation.** Aggregation is an important function in all value chains. However, this function is particularly inefficient and costly. The value difference (i.e. cost of goods received, then supplied) is significant and undermines the profitability of lower functions in the value chains. The excessive market power of aggregators rests in their ability to finance and store the accumulation of larger stock volumes, their knowledge of upstream market requirements and the quality of their relationships with upstream buyers. Whilst such traits are all value adding, the margins charged are excessive and represent a premium due to inefficiency.
- **The lack of quality standards and associated grading practices is inhibiting sector growth and performance in a range of different ways.** Many recyclers still employ environmentally unfriendly recycling techniques and technologies that degrade the quality and volume of materials, reducing manufacturers’ demand for recyclable feedstock. Certified higher quality recyclables would allow manufacturers to increase the proportion of domestically recycled material against imported virgin grades. This would increase demand for recyclables. It would also offer significant price opportunities to processors and/or manufacturers. Higher

quality recyclables might also be suitable for use in a much wider range of products. This may also stimulate significantly improved volume and price opportunities for recycling processors and their supply chain partners.

- **The export of intermediate products is largely driven by a lack of key domestic industries that could make use of such inputs.** Such industries typically require certain pre-conditions in order to be internationally competitive. They demand a large critical minimum scale of operation which is hard to achieve in a smaller country like Jordan. However, it might still be feasible to tackle certain competitiveness factors and encourage the strategic investment into new industries that can make use of recycled inputs that are currently exported. For example, through the uptake of new and more efficient manufacturing technologies, switching to cheaper energy sources (e.g. solar), and negotiating more beneficial tariffs with key energy suppliers.
- **Weak business enabling environment.** High energy cost and tariffs for electricity and fuel and the inconsistency and instability of government decisions on export/import duty taxes lead manufacturers to lose their competitive advantage over their regional competitors. Energy consumption comprises 25% of the cost per ton of iron and 45% of the plastic production cost³². All factories outside Jordan – namely, Egypt and Saudi Arabia – have much less energy cost and electricity tariffs. Export tax rates, fluctuations, delays in export tax rebates, export rules and procedures combined with their applications is an impediment to the export of various finished products, such as iron plates and rebar. The size of the export tariff as a percentage of product value is significant, at 5-15%. This inflates prices to levels which render them uncompetitive in export markets. Furthermore, the rates of export duty are reviewed typically every 6 months for steel and 12 months for others and are often subject to revision. For example, no export duties are being levied on the sector during the onset of the COVID-19 pandemic. Whilst well meaning, firms are not taking much advantage of this as they are unsure when, and at what rates, the Government of Jordan will reinstitute export duties. The combination of high rate levels and uncertainty over changes to rate levels is a significant impediment to accessing and building export markets for various finished products. Constraints related to the policy context will be tackled through the Activity's business enabling environment efforts under Component 3.

Responding to these types of constraints and delivering on the objective of expanding and improving private sector-led recycling services implies the initial following intervention focus:

1. Improve business performance and profitability for private sector companies in the recycling sector.
 - Improve businesses capacity (managerial, technical, and access to information).
 - Improve quality and quantity of recyclable materials.
2. Expand recycling services and replicate successful models.
 - Identify end-market gaps and business opportunities.
 - Support innovative business solutions.

³² Source: Interviews

These areas will be further explored and expanded upon in the Workplan which is informed (as shown earlier) by this market assessment and other parallel investigations.

Component 2: Demand for and Utilization of Recycling Services within Amman's Commercial Sector Increased

As confirmed, the vast majority of commercial waste generators in Amman currently use municipal waste collection services that take their waste straight to the landfill, nearly 98.4% of those rely on GAM services, while the remaining 1.6% use private waste haulers to divert their waste to the landfill based on service level contracts and some of them include formal recycling services. As an estimate, around 1000 – 1500 of the medium and large businesses in Amman allow informal waste pickers access (i.e. sorting and extraction of recyclables) to their waste prior to disposal. Changing this will require increased and sharpened demand from the recycling sector for inputs from commercial waste generators. But it will also require changed behavior from commercial waste generators. As confirmed above, constraints to such behavior change include:

- **Low level of general awareness, knowledge and understanding of recycling** and its contribution to greener and cleaner environment across society, and across large waste generators, including key decision makers/managers in charge of waste disposal.
- **Low level of awareness of the recently enacted Waste Management Law No. 16 for the year 2020.**
- **Low level of awareness of existing financial incentives** offered by GAM if the commercial sector hires private service providers to handle solid waste management instead of GAM.
- **Lack of business linkages** and connections between waste generators and potential recycling services. The knowledge of service providers that offer recycling services to commercial waste generators is limited, hence business linkages are weak.
- **Lack of regulations that incentivize key waste generators** to engage with recycling practices.
- **Weak regulatory frameworks around building and planning requirements** (e.g. size and layout of waste collection areas among key waste generators, such as malls, hypermarkets, etc.).
- **Lack of incentives to seek out such recycling services** (linked to low awareness / understanding; and lack of business formalization on the side of recycling service providers which undermines service quality, pricing and marketing).
- **Competition from GAM.** Rates and charges of public services are not aligned with rates of recycling services. Public services and subsidies for disposal is crowding out private and commercial services aimed at recycling.
- **Related to low levels of awareness on recycling generally,** it was found that most of the interviewed commercial waste generators during the COM-B behavioral assessment don't have the capacity to engage in any waste management planning. This significantly undermines any potential increase in demand for engaging recycling services.

- From a practical viewpoint, **physical space and regulatory requirements related to permitting separation and storing of recyclables at source of generation are additional obstacles facing sorting at the waste generator's premises.**

Responding to these types of constraints and delivering on the objectives of increasing the demand and utilization of recycling services by commercial waste generators implies the following initial intervention focus:

- I. Increase awareness of recycling and recycling services among the commercial sector.
 - Galvanize commercial sector interest and knowledge of recycling.
 - Cultivate a motivation to recycle by educating waste generators on SWM and Recycling.
- 2- Strengthen and expand business linkages between the commercial sector and recycling service providers:
 - Establish a business case for recycling among the commercial sector.
 - Expand business to business linkages by presenting recycling value propositions.
 - Support commercial sector to develop, implement and monitor SWM plans. These plans will reflect the 3Rs principle; Reduce, Reuse, and Recycle.

These interventions are elaborated under the following sections. Again, these areas will be further explored and expanded upon in the Workplan which is informed (as shown earlier) by this market assessment and other parallel investigations.

Component 3: Business Enabling Environment for Recycling Services and Material Markets Improved

Despite the various positive environmental, health, social and economic benefits of integrating proper recycling activities as an essential component of the solid waste management system, the recycling sector in Jordan remains unorganized, under-developed, and suffers inadequate local and national support.

Currently, there is a considerable interest in the recycling market and many players are involved across the value chain. However, the complexity of multi-faceted challenges is hindering the recycling sector from realizing its full potential to become a sustainable profitable business, leaving it short of achieving its desired contribution towards the integrated solid waste management approach. Some constraints are market driven while others are influenced by prevailing institutional, regulatory and legislative frameworks. The objective of this Activity is to turn these constraints into opportunities that will increase the commercial sector's utilization of recycling services and ultimately reduce the amount of waste destined for final disposal at the landfill.

Responding to the types of constraints identified and delivering on the objectives of improving the business enabling environment for the recycling sector in Jordan implies the following initial intervention focus:

- I. Strengthen national regulatory policy and enforcement for SWM and recycling
 - Support MOENV in engaging the private sector for implementation of SWM laws and strategies

- Link EPR to recycling market
- Promote Domestic Recycling Sector through Tax and Trade Incentives

2- Improve GAM engagement with private sector recyclers and waste generators

- Reduce license fees and standardize process for registering recycling companies
- Provide legal recognition to certified waste pickers
- Increase and standardize GAM's waste collection fees to commercial sector
- Discount or exempt SWM fees for adopters of private sector recycling

Again, these areas will be further explored and expanded upon in the Workplan which is informed (as shown earlier) by this market assessment and other parallel investigations.

4. ANNEXES

The following reports are annexed to this report as separate documents.

Annex I: Stakeholder Mapping Report

1. INTRODUCTION

This report aims to identify stakeholders and actors of the recycling sector in Amman, categorize them into functional groups and investigate their roles, responsibilities, relationships, and interactions.

Stakeholders' identification and mapping is fundamental step to understand who are the key actors and players in the local recycling market in Jordan? and to know what is the potential of influence and interest for each stakeholder on recycling market?

Understanding of the stakeholders' thinking and positions and their leverage in the recycling market is vital to know who the important stakeholders and actors -in both sides of supply and demand chains- who might be are or not in favor of achieving innovative and impactful recycling businesses to increase profitability and performance.

2. IDENTIFICATION AND ANALYSIS OF STAKEHOLDERS AND ACTORS

The MSW sector in Amman is one of the most complex sectors due to the wide variety of solid waste types and therefore it involves many different stakeholders, with different fields of interest and responsibilities.

Stakeholders of SWM and recycling may include governmental regulators, waste generators, municipalities, professional institutions, formal and informal recycling service providers, the community, informal individuals, and all others who are engaged in some SWM and recycling activities.

Categorization

In the local context, stakeholders of SWM and recycling sector in Amman are categorized into the following key groups:

A. Public stakeholders

1. Governmental Authorities (Central Ministries and Public authorities, institutions, and corporations)
2. Municipalities as civic institutions
3. Chambers and Professional Business Associations

B. Private stakeholders

1. Commercial Enterprises and Businesses (waste generators)
2. Recycling Services Providers (Formal and Informal actors) including the Industries/manufacturers
3. Civil Society organizations and initiatives

Figure 1 below outlines the key stakeholders' groups in recycling sector in Amman. While Table 1 shows alliances, scope of influence roles and responsibilities of the key stakeholders' groups in recycling sector in Amman.

Figure 8: Key stakeholders' groups in recycling sector in Amman



Table 6: Alliances, scope of influence roles and responsibilities of the key stakeholders' groups in recycling sector in Amman.

Stakeholder/Actor group	Alliances (relationships to other actors)	Scope of influence	Role/Interest
Governmental Authorities (Ministries)	Authority power and law enforcement	Government, high influence on all actors and sector	<ul style="list-style-type: none"> ▪ Setting environmental regulations and standards (Regulator role). ▪ Monitoring and enforcement. ▪ Planning and land use. ▪ Setting tariff structure and fees collection mechanisms. ▪ Subsidizing municipal budgets and funding. infrastructure projects ▪ Registering companies and businesses. ▪ Controlling the commercial activities. ▪ Permitting and licensing. environmental projects. ▪ Social security.
Municipalities	Receive their powers and obligations from a central government authority (Municipal Law), with allocation of powers and responsibilities to protect the rights of the citizens, to supply services, and to serve the common good.	Mixed private-public legal entity with close relation to central government. High influence	<ul style="list-style-type: none"> ▪ Service delivery and operation of SWM systems (collection, transportation, treatment, processing, and transfer) ▪ Collection of waste fees and cost recovery ▪ Vocational Licensing of companies and business ▪ Buildings and Zoning Regulations for Cities and

	On the one hand, they implement laws and regulations to fulfil their statutory obligations		Villages <ul style="list-style-type: none"> ▪ Prevention of Health Nuisances within municipal boundaries
Chamber and Professional Business Associations	Close relationship with Government and membered businesses	Lobbyist, med-high influence	act as intermediaries, and advocate interest of industrial and commercial sector
Commercial Enterprises and Businesses (waste generators)	Direct impact-relation to government and municipal organizations. Members of chambers	Med-influence	They are the source of commercial waste
Recycling Services Providers (Formal and informal actors)	Poor relation with other actors	Low influence	Important companies to which collectors and buy-back centers sell their waste materials.
Recycling industries/manufacturers	Lobbying and pushing powers on decision making process	High influence	They are the final processing destination of the recyclable materials (raw material and/or semi-finished products).
Civil Society organizations	Good relationship with their community and informal sector	High influence	Take initiatives to organize themselves into CBOs and CSOs with the direct goal of improving recycling and separation at source practices.
Community's initiatives	Usually have involved multiple actors and/or get support from other actors, often in ad hoc basis	Projects-base. Low-med influence	Responding to market or local community needs. Sometimes it contains innovative and creative product or activity under a pilot scale with a strong local focus.

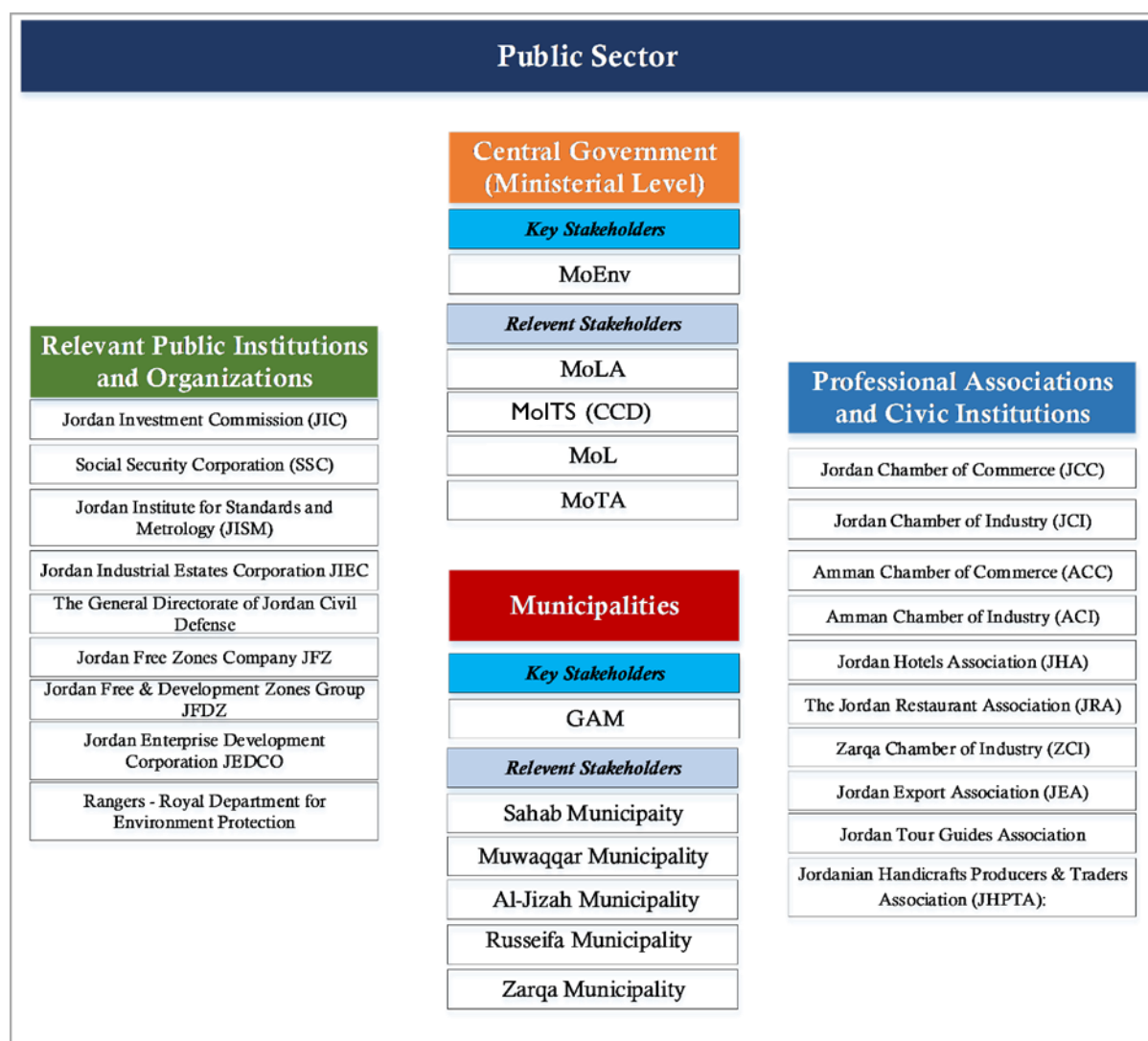
Finding and Analysis

The identified stakeholders in the recycling sector in Jordan are presented according to the category as following:

Public Sector

The public stakeholders of SWM and recycling sector in Amman are as specified in Figure 2 below.

Figure 9: The public stakeholders of SWM and recycling sector in Amman



Central Government (Ministerial Level)

Governmental organizations have a role in the set-up and operation of waste management systems in Jordan. Most urban authorities receive their powers and obligations from a central government authority with allocation of power and responsibilities to protect the rights of the citizens, to provide services and to serve the common good.

Key Stakeholders – Ministries

At national context, the Ministry of Environment (MoEnv) is the official entity in charge of the environment and its components and responsible for policy, planning and legislation. MoEnv sets waste management policy, regulates the waste sector, monitors, and enforces compliance.

MoEnv is the key stakeholder of the project in terms of Central Government in Jordan.

In this context, MoEnv has a monitoring and enforcement role through overseeing the disposal of all wastes types and it handles monitoring environmental emissions and issuing necessary permits to construct and operate various MSW management facilities. It chairs the Committee mandated to select sites for MSW landfills and waste treatment facilities.

MoEnv is also responsible for organizing hygiene campaigns and implementing awareness programs.

Relevant Stakeholders- Ministries

With respect to Municipal Solid Waste (MSW), there are other ministries that are in touch with SWM, discussion of relevancy is below.

Ministry of Local Administration (MoLA) mandated to regulate all MSW management services through supervising and controlling the performance of local municipalities and Joint Service Councils (JSCs). MoLA exerts direct technical, administrative, and financial authority over their operations. MoLA contributes to financing the investments and operations of municipalities and JSCs and help in preparation and ratification of their budgets. The municipalities responsible for the direct waste service delivery within their boundaries, while the JSCs in charge of construction and operations of the disposal sites and managing the final treatment and disposal.

Ministry of Industry, Trade and Supply (MoITS) contributes in promoting a stimulating environment for economic and investment activity in Jordan and maximizing the commercial and industrial performance. MoITS is responsible for regulating the industry and Trade by type, classifying and registering it according to an internal regulation, and preparing the programs and studies that work on developing the industry and Trade and increasing its competitiveness.

MoITS governs the registration of companies and business profiles through either Commercial Register (CR) or the Companies Control Department (CCD). MoITS organizes and regulates the internal and external trade, monitoring and control. It encourages research, development, and innovation.

Ministry of Labor (MoL) contributes to the organization of the Jordanian labor market and employment of Jordanians locally and abroad.

Other important line ministries in solid waste include the Ministry of Health (inspection of landfill and medical waste management), and Ministry of Energy and Mineral Resources (development of waste-to-energy projects and regulation of natural resources and energy tariffs).

All above ministries are – somehow – in a direct contact with both sides of the supply and demand (Service providers and commercial waste generators). However; Ministry of Agriculture (MoA) and Ministry of Tourism and Antiques (MoTA) directly interact with waste generators. MoA deals with agricultural waste, while, MoTA is responsible of licensing and categorizing touristic businesses in Jordan such as hotels, touristic restaurants and other touristic activities and initiatives.

There is no conflict of responsibilities between competent authorities dealing with MSW management in Jordan. However, if the division of responsibilities is quite precise, it does not cover the whole range of MSW management activities, with what relates to treatment (recycling, waste to energy). Table 2 below shows the relevant ministries and their mandate related to SWM in Jordan.

Table 7: The central government ministries and their mandate related to SWM in Jordan

Stakeholder Category: Central Government	Role/Interest
Key Stakeholders – Ministries	National level
Ministry of Environment (MoEnv)	<p><i>Responsible for: Environment</i></p> <ul style="list-style-type: none"> ▪ Setting environmental regulations and standards ▪ Developing waste and recycling policies, laws and regulations. ▪ Environmental licensing and permitting ▪ Environmental inspection and monitoring ▪ Enforcement and compliance ▪ Organizing hygiene campaigns ▪ Implementing awareness programs ▪ Hazardous waste management
Relevant Stakeholders- Ministries	National level
Ministry of Local Administration (MoLA)	<p><i>Responsible for: Municipal waste</i></p> <ul style="list-style-type: none"> ▪ Regulate all MSW management services within municipal boundaries outside Amman including collection, processing and transfer. ▪ Regulate all MSW management services within landfill boundaries outside Amman including disposal and landfilling. ▪ Supervising and controlling the performance of municipalities and JSCs ▪ Contributes to financing the investments and operations of municipalities and JSCs ▪ Contributes to financing the construction of waste landfills and closure of dumpsites. ▪ Regulate prevention of Health Nuisances within municipal boundaries and waste fees collection within Municipal boundaries.
Ministry of Health (MoH)	<p><i>Responsible for: Public health and medical waste</i></p> <ul style="list-style-type: none"> ▪ Regulating health related companies and labs. ▪ Inspection of landfill, medical waste management
Ministry of Industry and Trade (Companies Controlling Department)	<p><i>Responsible for: Trade and Industry</i></p> <ul style="list-style-type: none"> ▪ Trade policy mandate ▪ Licensing the businesses and ensure the official registration and licensing process in accordance with the laws and regulations. ▪ Controlling the companies and establishments' registration directory
Ministry of Labour (MoL)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Organizing labor sector in Jordan. ▪ Overseeing the affairs of employers and workers, occupational health, and safety, ▪ Contribute to the organization of the Jordanian labour market, employ Jordanians locally and abroad, etc.
Ministry of Tourism and Antiquities (MoTA)	<p><i>Responsible for: public cleanliness of historical sites</i></p> <ul style="list-style-type: none"> ▪ Developing the tourism sector in Jordan, including regulating hospitality services

Stakeholder Category: Central Government	Role/Interest
Key Stakeholders – Ministries	National level
Ministry of Agriculture (MoA)	<i>Responsible for: public cleanliness of natural forests</i> <ul style="list-style-type: none"> ▪ Regulating agricultural policies ▪ Promote local production ▪ Regulating the organic fertilizers and food waste-based compost productions
Ministry of Interior (Mol)	<i>Responsible for security permits (exports/imports) and control the movement of goods and commodities at the country's cross borders trade</i>

Relevant Public Institutions and Organizations

The existing legal and institutional frameworks in Jordan indicate that there are public institutions and incorporations that in one way or another have participatory roles in SWM sector and commercial business. Other public sector organizations and entities which have a role in the project but not necessarily involved in the SWM sector include:

Table 8: Relevant public institutions and organizations have a role in the SWM and recycling sector in Jordan

Stakeholder Category	Role/Interest
Relevant Public Institutions and Organizations	National level
Jordan Investment Commission	<i>Responsible for:</i> <ul style="list-style-type: none"> ▪ Promotion of investments for the purpose of achieving comprehensive and sustainable economic development, access to global markets, increased competition, and availability of high value-added job opportunities, and finally, funding of development projects.
Jordan Customs Department	<i>Responsible for:</i> <ul style="list-style-type: none"> ▪ Controlling the movement of goods and services ▪ Examination and inspection of goods, ▪ Performing customs procedures on goods. ▪ Applying and collecting customs tariffs and other due fees and taxes on the goods imported and/or exported to/out Jordan.
Jordan Environment Fund (JEF)	<i>Responsible for:</i> <ul style="list-style-type: none"> ▪ Support activities that contribute to environmental protection and conservation, and development of environmentally friendly practices. ▪ Initiatives that promote resource efficiency, to contribute to sustainable development ▪ Contribute to raising environmental awareness, including use of cleaner production technology ▪ Focus on priority national sectors and provide support to enable fulfillment of environmental requirements ▪ Promote cooperation and knowledge transfer with national, regional and international entities with similar mandates to coordinate activities in support of environmental protection.

Stakeholder Category	Role/Interest
Relevant Public Institutions and Organizations	National level
Social Security Corporation (SSC)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Creating a legislative framework embodying a social security ensuring comfort and reassurance for the worker and good citizen in case of illness disability, and old-age, secure decent live for her/his family member
Jordan Standards and Metrology Organization (JSMO)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Adoption of a national system for standardization and metrology based on accepted international practices. ▪ Keeping pace with scientific and technical developments in the fields of standards, metrology, conformity assessment and laboratory accreditation. ▪ Ensuring the health and safety of the Kingdom's citizenry and protection of the environment by making sure that goods, products, and services follow the technical regulations adopted by the Organization for the purpose. ▪ Ensuring the quality of local goods, products, and services through the adoption of proper Jordanian Standards in order to enhance their competitiveness in the local and international markets and thus support the national economy
The General Directorate of Jordan Civil Defense	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Safety requirements for licensing certificates.
Jordan Industrial Estates Corporation (JIEC)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Building and running industrial estates in Jordan ▪ Attract investments
Jordan Free & Development Zones Group (JFDZ)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Providing an adequate environment to attract and develop local and foreign investments ▪ Attracting local and foreign capitals and employing them in the country in the various investment activities ▪ Encouraging export industries and activating the transit trade ▪ Promoting the unique role of the private sector in setting up private and joint free zones which use local raw materials in production inputs
Jordan Enterprise Development Corporation JEDCO	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Promoting and supporting entrepreneurship and SMEs' development and growth. ▪ Offering technical and financial support.
Rangers - Royal Department for Tourism and Environment Protection	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Enforcing law in partnership with MoTA and MoEnv.
Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> ▪ Providing the necessary funding for the deployment of renewable energy sources and the rationalization of energy consumption, including small renewable energy facilities. It supports any program and the financial mechanisms allowing RE and EE users and investors to access financing from banks, local and international financial institutions ▪ Supporting government in reducing the financial burden on

Stakeholder Category	Role/Interest
Relevant Public Institutions and Organizations	National level
	<p>consumers and the national economy, resulting from energy imports and subsidies to the energy sector</p> <ul style="list-style-type: none"> Promoting the development of a domestic industry as well as to open up new markets
The Higher Council for the Rights of Persons with Disabilities	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> Policies and institutional development related to Persons with disabilities. Inclusive education Monitoring and coordination Accreditation and Quality Control
The Jordanian National Forum for Women (JNFW)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> Advocating for women's rights and Increasing women's participation in decision-making processes Political empowerment of women Monitoring discrimination against women

Municipalities

Local municipalities have a role in the set-up and operation of waste management systems at municipal level. They receive their powers and obligations from a central government authority, with allocation of powers and responsibilities to protect the rights of the citizens, to supply services, and to serve the common good. On the one hand, they implement laws and regulations to fulfil their statutory obligations.

Greater Amman Municipality (GAM) is the key stakeholder in the USAID Recycling in Jordan Activity and has a special position among the other municipalities of Jordan. Unlike other municipalities it does, for instance, not report to MoLA but if falls directly under the Cabinet of Ministers. This special position of GAM embedded in Jordan's legal framework. In the Municipalities Law (No.41/2015) is, for instance, arranged that GAM is a civil institution with administrative and financial independence and governed by the law, but it is also regulated by a set of by-laws and instructions from other laws.

Article 13 of the Municipalities Law states that GAM has specific rules and stipulations within the law itself. The cabinet issue GAM's unique laws. No other municipality is directly under the Council of Ministers, which intended to give GAM more freedom of operation.

The management of solid waste in GAM is therefore mainly governed by local regulations of which By-law 150 of the year 2016, titled Nuisance Prevention and Waste Collection Fees, is the most important.

The regulation declares the role and responsibility of GAM, in obtaining fees for the collection, transportation, disposal, and treatment of SW. In addition, it regulates the activity within the borders of GAM of any nuisance to health and the environment.

GAM is responsible for the municipal service delivery of public cleanliness and waste services within its boundaries. Regulation 150/2016 constitutes the update of the Regulation No. 83/2009, Article 6

of the Municipal Law 41/2015 states that (1) waste collection, (2) transfer, (3) treatment, (4) and disposal will be carried out by GAM staff within the relevant departments.

Nuisance prevention, and the application of penalties and fines, will be carried out by GAM staff – giving the staff the status of Law Enforcement official authorized to impose fines. The by-law states that any individual or entity does not have a right to handle waste without written approval from the mayor.

Given the fact that several recyclers are placed in Amman but not within the geographical boundaries of GAM, and some of them are placed in neighboring cities and municipalities like Zarqa and Russeifa and do their businesses in Amman. Sahab, Muwaqqar, Al-Jizah areas are parts of East and South of Amman but they belong to separate municipalities not to GAM.

The table below presents Municipal stakeholders and their responsibilities relevant to SWM and recycling in Amman.

Table 9: Municipal stakeholders and their responsibilities relevant to SWM and recycling in Amman

Stakeholder Category: Municipalities	Role/Interest
Key Stakeholders – Municipalities (civic institutions)	Municipal level
Greater Amman Municipality (GAM)	<p><i>Responsible for:</i></p> <ul style="list-style-type: none"> • Delivery of municipal services within its boundaries (22 Districts) including public cleanliness and waste management. • Providing day to day waste management including waste (1) collection, (2) transfer, (3) treatment, (4) and disposal operations. • Applying penalties and fines related to health nuisance preventions in waste management. • Adopting and applying specific regulations (by-laws) or instructions in waste management, in accordance with the Municipal Law (Regulatory Role). • Charging and collecting waste collection fees to the different types of waste generators, including households, commercial entities and industries. • Charging and collecting waste tipping fees at Ghabawi landfill from private waste transporters. • Vocational Licensing of companies and businesses in Amman (annual professions licenses) in line with Vocational License Law No. 28/1999
Relevant Municipalities adjacent	Municipal level

to GAM and include recyclers	
Sahab Municipality	<i>Responsible for: waste collection within the waste catchment area of Al-Ghabawi Landfill or hosting waste recycling service providers that divert the recyclables from Al-Ghabawi.</i> <ul style="list-style-type: none"> Supplying day to day waste management including (I) waste collection and transportation to the closest landfill. Vocational Licensing of companies and businesses within its boundaries Charging and collecting waste collection fees to the different types of waste generators, including households, commercial entities, and industries. Applying penalties and fines related to health nuisance preventions in waste management. Applying specific instructions in waste management, following the Municipal Law and The Regulation for Nuisance Prevention & Waste Collection Fees within Municipal Borders No.68 (2016). This by-law allows municipalities to offer annual incentives to waste generators from commercial sector (up to 50% of waste collection fees).
Muwaqqar Municipality	
Um-Al Basateen Municipality	
Al-Jizah Municipality	
Russeifa Municipality	
Zarqa Municipality	
Ain Al-Basha Municipality	

In GAM, Licensing Directorate handles revenues collection, estimation of waste disposal and collection fees charged to the private sector (industries, offices, and professionals). The Directorate is also responsible for building licensing and utility clearance.

The Department of Professions and Advertising Licenses (DePAL) in every GAM District licenses business premises and profession on annual basis and collects non-electricity-based tariffs and fees for MSW services to the commercial and private sector.

The Nuisance Prevention and Waste Collection Fees By-Law (article 6) defines the fees schedule for waste (1) collection, (2) transfer, (3) treatment, (4) and disposal. The fees for households, which are collected by the company providing and charging for electricity, are set as a base fee of 20 JOD/year per household while, households that use more than 200 kW of electricity per month, as determined by the electricity company, must pay an extra 0.005 JOD per excess kW.

The Law of Vocational Licenses and the Law of Vocational Offices Services Fees state that GAM collects for SWM 20% of the fees paid for vocational licenses. The amount collected by GAM (20% of the total fee) will not be less than 20 JOD. Article 6/B of the Nuisance Prevention and Waste Collection Fees By-Law states that vocational fees calculated and collected annually.

Articles 4 and 5 of the By-law set the standards for calculation for vocational license fees and state that fees for businesses (establishments) will be influenced by a set of standard criteria including waste volume, density, and nature.

Article 5 of the Nuisance Prevention and Waste Collection Fees By-Law states that fees for vocational licenses are separated into fifteen categories, according to the criteria of article 4.

The By-law also formulates exceptions to the general fee setting method including for shops that serve liquid coffee and tea without seating. For these shops, an annual fee of 500 JOD is set. Further, the By-law states that for the following vocational licenses no waste transfer and collection fees are collected:

- Billboards (advertising),
- School buses,
- Water tanks,
- Sewage tanks,
- Petroleum tanks,
- Construction machinery (diggers, winches, loaders, etc.), and
- All other vocations that are performed by a truck or transportation vehicle.

Article 7, of the Nuisance Prevention and Waste Collection Fees By-Law concerns vocational licenses for firms that use skip loaders. GAM issues vocational licenses concerning waste transfer and disposal to such firms through coordination with the Department of Vocational License and Advertisements.

Vocational licenses require that skip loaders have at least three tons of waste per trip to the landfill or treatment facilities. The vocational licenses for waste transfer and disposal also determine permission to enter landfills. Skip loader waste fees (“tipping fees”) are determined annually. The determination comes from a waste transfer and treatment cost study. Tipping fees go directly to GAM at the point of entry to the landfill and treatment facilities.

Chambers and Professional Business Associations

The recycling and commercial sectors in Amman embrace a wide range of civic actors who represent professions, interest groups or sections of society, with different roles and mandates. Actors of civil society can for instance include Community Based Organizations (CBOs), nonprofit organizations, professional associations, non-governmental organizations (NGOs), social partners, universities, or media representatives. The table below shows a list of chambers and professional associations along with their responsibilities relevant to recycling market in Jordan.

Table 10: List of chambers and professional associations along with their responsibilities relevant to recycling market in Jordan

Stakeholder Category: Professional Associations and Civic Institutions	Role/Interest/ Mandate
Jordan Chamber of Industry (JIC)	<ul style="list-style-type: none"> • Industrial sector representation towards reflecting the sector’s size and importance • Promoting the industrial sector development • Providing information and statistics • Local and international promotion and marketing • Consolidation and coordination roles
Jordan Chamber of Commerce (JCC)	<ul style="list-style-type: none"> • Facilitating international trade. • Encouraging foreign investment, • Promoting economic development • Providing market information and economic statistics

Stakeholder Category: Professional Associations and Civic Institutions	Role/Interest/ Mandate
	<ul style="list-style-type: none"> • Consolidation and coordination roles
Amman Chamber of Commerce (ACC)	<ul style="list-style-type: none"> • Trade/commercial sector representation towards reflecting the sector's size and importance; • Provide and improve data and information base about market and economy; • Improve the business environment and influence the economic and trade legislative environment, laws and policies; • Support for SMEs and encourage innovative projects and works; • Improve the trade practices in terms of both quality and efficiency; • Attract local and foreign investments; • Communication and awareness.
Amman Chamber of Industry (ACI)	<ul style="list-style-type: none"> • Representing the Jordanian industrial sector in Amman. • Membership of more than 7,000 of Jordanian manufacturing firms of which 90% are SMEs (Industrial Directory). • Provide and improve data and information base about industrial market and economy. • Connectivity between the industrial sector, Jordanian universities, industrial innovation, and technology transfer. • Specialized guidance and counseling service. • Quality, environment and safety, and local and international conformity certificates. • Local and international promotion and marketing. • Awareness creation and training.
Jordan Hotels Association (JHA)	<ul style="list-style-type: none"> • Representing Jordanian hotel and lodging sector over 590 hotels (Classified and Unclassified) throughout Jordan. • Advocacy and training • Events and networking • Official supporters of the Jordan Tourism Board and its programs and activities. • Provide and improve data and information base about hotel industry and hospitality market in Jordan.
The Jordan Restaurant Association (JRA)	<ul style="list-style-type: none"> • Representing over 950 classified members including (restaurants, entertainment cities, coffee shops, fast food, discos, bars and cabaret of 1-5 stars). • Advocacy and training • Events and networking • Official supporters of the Jordan Tourism Board and its programs and activities. • Provide and improve data and information base about restaurants industry in Jordan.
Jordan Export Association (JEA)	<ul style="list-style-type: none"> • Develop international trade and promotion of Jordanian exports • Representing the export sector in Jordan and influencing

Stakeholder Category: Professional Associations and Civic Institutions	Role/Interest/ Mandate
	<p>the economic and trade enabling environment, laws and policies.</p> <ul style="list-style-type: none"> • Export promotion and Market information, • Capacity building and advocacy.
Jordanian Handicrafts Producers & Traders Association (JHPTA):	<ul style="list-style-type: none"> • Conservation of the Jordanian handicrafts • Support the producers of these handicrafts • Awareness and networking • Capacity building and training
Jordan Tourism Board (JTB)	<ul style="list-style-type: none"> • Independent, PPP organization established in 1998. • Marketing and promoting the Jordan tourism products in the international markets.
Zarqa Chamber of Industry (ZCI)	<ul style="list-style-type: none"> • Representing the industrial sector in Zarqa and Mafraq. • Provide and improve data and information base about industrial market in Zarqa including the recycling sector. • Industrial innovation and technology transfer. • Specialized guidance and counseling service • Local and international promotion and marketing. • Awareness and training.
The Jordanian Women's Union	<ul style="list-style-type: none"> • Improving the political, economic, and social status of women and all marginalized groups in the community. • Support the mainstreaming of a gender-equality perspective in all policies and laws • Women advocacy • Social protection and economic empowerment • Information and communication
East Amman Industrial Investors Association	<ul style="list-style-type: none"> • Networking and outreach to industrial sector in Amman • Advocacy
EJABI – Euro-Jordanian Advanced Business Institute	<ul style="list-style-type: none"> • Training and capacity building for industrial sector • EJABI is part of Amman Chamber of Industry.
BPWA - Business and Professional Women Association	<ul style="list-style-type: none"> • Encourages women in economic development and provides assistance for them

Private sector

The private sector is the primary actor in the recycling market in Amman and has many roles to play throughout the waste value chains either through formal and informal business activities, in absence of a dedicated system for public recycling in Amman so far. Three primary stakeholder groups are identified in the recycling sector which are as follows: service providers, waste generators and civil society organizations.

The formal private stakeholders consist of private sector corporations, institutions, firms and individuals operating registered and/or incorporated businesses with official business licenses, an organized labor force governed by labor laws, some degree of capital investment, and generally

modern technology. In general, the defining characteristic of the formal private sector is that its main aim is to generate a profit on investments.

Formal private companies are involved in wide-ranging activities in waste management systems, varying from waste collection, hauling, sorting, aggregating, processing, manufacturing and recycled products production.

Whereas the informal private sector refers to unregistered, unregulated, or casual activities carried out by individuals and/or family or community enterprises, which engage in value-adding activities on a small-scale with minimal capital input using local materials and labor-intensive techniques. Informal activities, in contrast with the formal sector in waste collecting and recycling, are often driven by poverty, and are initiated personally and spontaneously (and sometimes haphazardly) in the struggle for survival (although some enterprises, especially the ones engaged in recycling activities, manage to make considerable profits).

Consequently, the choice of materials to collect is in the first place determined by the value of the waste materials, and in the second place, by their ease of extraction, handling, and transport. Paper and cardboards, metals, and plastics, usually collected from wealthier residential or industrial areas, tend to attract more attention than organic or biodegradable materials, even though these materials are present in much smaller percentages than organic food waste or manures.

In general, the informal sector consists of two types of activities, individuals and families, performing activities which provide them with subsistence, and small businesses, operating in much the same way as their larger, registered counterparts, but without the benefit of official registration. This is true not only for waste pickers and itinerant waste buyers, but also for other groups such as small enterprises recycling metals or plastics (recyclers), and marginalized groups who are looking for a way to generate subsistence income in an urban context.

While informal-sector activities vary according to sociocultural, religious, and economic circumstances, some generalizations about gender roles are possible. The least sophisticated forms of labor, including collection of waste from the streets and dumpsites and primary sorting of the material fall to the women and children, most of whom work from home and do any handling or sorting in their homes or yards. Men are more likely to be involved in the processing or manufacturing of items, together with the selling of recovered items and materials.

Communities sometimes take the initiative to organize themselves into CBOs with the direct goal of self-help and improving their living conditions. Such CBOs may receive external aid in the form of technical and/or financial aid from different agencies/donors.

Sometimes, these activities may also take the form of direct participation in waste management, such as feeding organic material directly to their livestock. Usable materials, like bottles, often reused by the members of the low-income community themselves. Community-based awareness campaigns are provided by the CBOs combined with recycling activities they piloted.

Commercial Enterprises and Businesses (waste generators-WGs)

The commercial waste generators refers to all non-residential entities, including private businesses, industrial/manufacturing plants, construction and demolition institutions and projects, public institutions (government building, public schools/universities, foreign embassies, public hospitals), hospitality institutions (hotels, restaurants, café, catering, and events venue), commercial and retail

(Malls, and shops), food processing institutions (Food markets, grocery stores, butchers, bakeries, food preparation and packaging), civil society and religious institutions (community centers, mosques, churches), urban/peri-urban farms, and home-based businesses.

According to GAM estimates, Al-Ghabawi landfill receives 3,200 tons of waste every day from GAM districts, of which 40% are generated from commercial sources. Those commercial generators are the main supply of the waste recyclable materials in the project.

According to GAM data records (2020), nearly 98,995 commercial entities are registered in Amman, of which 4,723 entities generate 100 kg waste per day and more and so classified as small to large commercial waste generators. There are only 19 large commercial entities which produce 1000 tons per year and more.

The below table shows the classification and number of commercial entities in Amman per volume of waste generated and using the private waste collection and hauling services.

Table 11: The classification and number of commercial entities in Amman per volume of waste generated and using the private waste collection and hauling services

Volume of Waste generated	Number of commercial entities in Amman (2019/2020)	The number of commercial generators currently using private waste haulers (2019/2020) (Agreements)
Large: ≥ 2740 kg/day (1000 ton/yr)	19	10
Medium-Large: ≥ 600 -2739 kg/day	237	74
Medium: 300-599 kg/day (100 ton/yr = 274 kg/day)	475	57
Medium-small: 100-299 kg/day	3,992	228
Small: 30-99 kg/day	22,359	536
Micro: ≤ 30 kg/day	71,913	617
Total	98,995	1522

The below table disaggregates the main waste generators per commercial sector according to data received by GAM.

Table 12: Distribution of Key waste generators per commercial sector in Amman (2019/2020)

# of business/commercial sector	Large	Medium-Large	Medium	Medium-small	Sub-total
Construction and demolition			1	4	5
Educational institutions (private and public)		14	54	253	321
Event venues		4	6	6	16
Food markets, grocery stores, butchers, bakeries	2	64	72	436	574

Hospitals and pharmacies (private and public)	6	24	10	1	41
Hotels and hospitality	4	28	42	67	141
Industrial and manufacturing		17	24	47	88
Malls and retail		7	27	192	226
Professional services	1	12	41	548	602
Restaurants, cafes, catering, and food preparation	5	57	175	955	1192
Workshops and garages			2	14	16
Unknown/other	1	10	21	1469	1501
Grand Total	19	237	475	3992	4723

The table below shows the amounts of MSW delivered to the Al Ghabawi Landfill (metric tons/year) by the private waste haulers/ transporters during the period (2014 - 2019).

Table 13: The amounts of MSW delivered to the Al Ghabawi Landfill (metric tons/year) by the private waste haulers/ transporters during the period (2014 - 2019)

Year	Total MSW tonnage per year landfilled in Ghabawi which diverted by the private haulers/transporters	40% of the GAM direct haul (commercial sources) tons per year
2014	15,319	344,049
2015	26,709	377,720
2016	37,493	408,237
2017	30,687	417,507
2018	30,378	443,558
2019	25,529	430,687

Moreover, USAID Recycling in Jordan Activity named three distinct types of commercial waste generators based on the **source of waste**:

- **Specialized waste generators:** Typically, these are factories/manufactures using virgin materials where waste and off-cuts are of a high and consistent quality.
- **Large commercial:** These represent large demolition and clearance projects, both public and private, that tender and/or contract the collection and disposal of waste. While some of this waste enters the recycling market value chains, the majority is diverted to the landfill.
- **Medium and smaller commercial:** there is a wide range of types of waste generators in this category, and few are currently using any kind of recycling services.

USAID Recycling in Jordan Activity will target all businesses that generate 100 kg/day and above throughout the life of the project.

Recycling Services Providers – SPs (Formal and Informal actors)

Recycling Service Providers (SPs) are defined as individuals, businesses, and/or civil society organizations in the formal or informal sector who perform value-adding services with the objective of introducing solid waste management practices including separate collection, reusing, repurposing,

or selling such products of a marketing value and/or supplying relevant supporting services across the recycling value chains.

Recycling services refer to any recovery or handling operation by which waste materials are reprocessed into products, materials, or substances whether for the original or other purposes of reusing, repurposing, or selling such products, typically after some degree of sorting and/or processing. These services include – but not limited to - separation at source, collection, sorting, hauling, aggregating, processing, etc. of the recyclable waste materials.

Solid waste products are a byproduct of the waste generator's normal operations and no longer have utility or value to the waste generator's normal business operations. Recyclable waste may be either pre-consumer waste (scrap from manufacturing of products) or post-consumer waste (waste arising after the use of products at the consumer market). Moreover, Recyclable material may be left over from product manufacturing and consumption, renovation, maintenance, and new construction projects.

Due to the high quality of the pre-consumer waste, it is often economically feasible to recycle these waste streams and this is often already done either internally in the production facility or through external channels.

In Amman, recycling sector is still fairly embryonic whereas less than 5-10% of the recyclables are currently recovered, while the vast majority of the post-consumer waste usually end up in the landfill. Value chains are established in the local market for different types of plastic, ferrous metals, segregated paper, mixed paper/cardboard, e-waste, cooking oil, tires, etc.... which are recovered either in the country or through export.

The sector includes formal and informal activities in all waste value chains and comprises numerous self-employed waste pickers, vulnerable refugees, foreign workforce, and informal micro-enterprises at the bottom of the value chain, building up through a series of intermediaries on both sides of the formal–informal economy boundary.

Registered companies dominate the end of the value chain; these are large dimension specialized waste brokers, sometimes directly owned by the local or foreign recycling companies, who provide raw materials for the domestic manufacturers or on the global end markets.

The value chain starts at the source: households, commercial and industrial entities where several valorization activities taking place, depending on the type of generator and waste produced. Formal and informal collectors are involved in collecting waste including private waste hauler companies, informal street waste pickers, as well as, itinerant buyers.

According to CCD, there are about (100-200) registered businesses with their database as waste haulers/transporters; while only (29) companies are active as waste haulers (dealing with mixed solid waste from commercial generators) which are listed in [Annex 1](#).

Annex 2 lists other (15) companies are engaged with various waste generators in Amman as recycling service providers (dealing with collecting and hauling of segregated recyclable waste materials from the source).

Informal collectors in Amman range from individual waste pickers in the streets to itinerant buyers with trolleys or trucks where formal waste picking activities are banned in Ghabawi landfill site since few years ago. The informal actors at the upstream side of the value chain typically carry out primary sorting, segregation and collecting before selling the materials into the value chains.

There are no official estimates figure for the informal waste picking activities in Amman. However, the national strategy of the Municipal Solid waste Management stated that there are up to 5000 people involved in the informal sector as street waste pickers in Amman and Zarqa governorates, where most of them live in middle-low income areas outside Amman such as: Zarqa, Russeifa, Marka, Ain-Al-Basha, Qwismeh, Sahab, etc....

The estimates show around 600-700 itinerant buyers work in Amman and use kinds of collection trucks or pick-ups to collect recyclables that have a marketing value in the chain.

The existing waste value chains in the downstream sides include scrap yards dealers, aggregators, middlemen, sorters, processor, specialized waste brokers, exporters, and recyclers. The actors usually perform such value-adding activities where several of them are also operating in the informal sector. Indeed, there are large and long-established recycling plants and industries exist at higher functional levels in the value chains.

The table below presents the types of recycling services offered by the current market actors to the large commercial waste generators in Amman.

Table 14: Types of recycling services offered by the current market actors to the large commercial waste generators in Amman

Type of recycling services offered to the large commercial generators	Description
Mixed collection and hauling to landfill	This service includes provision of containers, uploading of mixed MSW according to specific frequency, hauling of waste to official landfill, provide disposal receipts records.
Separate collection of segregated recyclable materials (post-consumer waste) and hauling to recycling market	This service includes provision of containers/equipment dedicated for waste segregation/processing at the source or provide worker/ waste picker to sort and pick out the recyclable material from the waste stream.
Full recycling service (collection and hauling of mixed waste plus collection and hauling of all types of segregated recyclable materials)	The service provider has the capacity to provide the waste generator with the collection and handling of the mixed waste stream as well as the separate collection of all types of segregated recyclable materials.
Specialized recycling service (collection and hauling of specific type(s) of recyclable materials)	This service includes provision of separate collection of specific types of segregated recycling materials. This service may include provision of containers/equipment and/or collection workers.
Training, audit studies, reporting, and document expediting	This service includes provision of waste audit exercises, on-job training, reporting and documentation, awareness campaigns/sessions, and expediting services with municipalities.
Cleaning and hygiene Services	Pest control services

	Disinfection and sterilization services Public and urban cleanliness
Destruction of expired materials and products (ITLAF)	Provide the waste generator with equipment/tools required for destructing the expired food waste or other products (according to official procedures) in addition to hauling to the final destination (landfill, sorting facility, etc.....)
Suppling of waste appliance, cleaning materials, equipment, and leasing services	Providing the waste generator with different appliance, equipment, and materials relevant to waste management and recycling (procurement and tenders). The service provider offers leasing of waste management equipment and tools to the waste generators
Purchasing the pre-consumer recyclable and stock waste of a marketing value from large factories and manufacturers	The service providers offer the large factories and manufacturers which have a large volume and consistent supply of pre-consumer recyclable material higher prices against long-term agreements. Or offer them a full service with very competitive prices to collect and haul the mixed waste stream with a condition to collect the pre-consumer recyclables as well.
Purchase ferrous and non-ferrous scrap materials from large formal commercial through tenders and contracts	In this service, specialized scrap dealers or brokers purchase and collect scrap materials from large formal commercial and construction and demolition projects through tenders and contracts.
Aggregation of recyclable materials	The service providers have access to storage space and transport facilities for the recyclable material to control price fluctuations and offers cash payments for the suppliers.
Processing of recyclable materials	The service includes physical and chemical processing such as but not limited to secondary sorting, shredding, crushing, washing/drying, pelletizing, compaction, dismantling, smelting, etc....
Manufacturing and production of recycled products	The service includes use of recyclable materials as a raw material to produce a new product.
Exporting of recyclable materials to global markets	The service provider has access to global end markets and export domestic materials after processing to these markets.

The stakeholders are identified along the value chain based on the waste sector/stream prioritization in Amman as following:

- Six value chains for Plastic waste:
 - PET – This is a type of plastic commonly used in water bottles, blister packs, and clear food packaging.
 - HDPE – This is a type of higher-melting plastic used in milk jugs, cleaning solution bottles, trigger bottles, etc.
 - PVC – This is a type of plastic used in the white pipes/tubes that most modern plumbing made with.
 - LDPE – This is a type of lower-melting plastic that makes up your shopping bag and some stretch wrap.

- PP – This is a type of higher-melting plastic used for dairy tubs, the caps on most bottles, and things like storage containers.
- PS – This is a type of plastic used to make Styrofoam food containers, disposable dining utensils, and yogurt containers.
- Overall plastic value chain shows the dynamics of all plastic types in the market.
- Two Value chains for paper and cardboard: These plant-derived materials are commonly recycled but have different grades. Paper cannot be recycled if it is wet, has food contamination, or has been recycled multiple times already. There are three grades of paper used for making recycled products:
 - Cardboard (OCC1) from pre-consumer material
 - Cardboard (OCC2) from post-consumer material
 - Office paper, super mix and newsprint / magazines
- Two value chains for metals (ferrous and non-ferrous) as follows:
 - Ferrous – Steel: This is a common metal for durable goods and load-bearing objects. Examples of product applications that use steel include metal appliances, cars, and load-bearing beams.
 - Non-ferrous - Aluminum: Aluminum is one of the most common metals on the planet, and its properties make it important for many products and their packaging. This is one of the most important materials to recycle.
 - Non-ferrous – Copper: Copper used in electrical applications and electronic products due to its excellent thermal and electrical conductivity.
- One value chain for organic food waste handling in Amman
- One value chain for the used cooking vegetable oil waste from hotels and restaurants,
- One value chain for Electrical and Electronic Equipment (WEEE): these materials include some type of electrical and/or electronic part and most often disassembled to be recycled.
- One value chain for textile waste from the commercial producers: These are fabrics and typically make up clothing, accessories, or furniture.
- One value chain for tires waste generated from commercial sources.
- One value chain for glass waste generated from commercial sector.

The current business service providers in the recycling sector can be classified according to function and position over the upstream and downstream sides of the value chains as following:

Plastic sector

Plastics fairly has a developed value chain in the local market in Jordan because there is a strong plastic industry in Jordan providing an end use to the recycled material. The proliferation of single-use plastics in packaging and the reduced investment requirements for treatment and recycling help handling plastic waste of varying quality and value.

The plastic industry is a leading economic sector and growing over the last two decades due to the low cost/easy access to virgin plastic sources mainly from Saudi Arabia and other Gulf countries.

The current production volume of the plastic industry sector is more than \$1.5 billion, which constitutes approximately 5 percent of the total industrial production in Jordan, from the 614 active factories across the country. The packaging, agricultural, construction, furniture and medical supplies are the main sub-sectors of the Jordanian plastic industry while the plastic textile industry is very limited so far. Plastic products account for 3.6% of the total Jordanian exports to 65 markets across the world.

The chain includes the following service providers:

- 20- 40 local, small crushing plants (recyclers)
- 50-60 specialized waste brokers
- 250-350 small and medium scrap dealers
- Informal collectors: about 1500–2000 street waste pickers over Amman and 600-700 itinerant buyers

There is no strong competition in the local market in terms of the virgin plastic supply. Even, Jordan market is open to the import of the international plastic products mainly from the Gulf countries that compete with the local products. Therefore, a strong competition between the local and imported plastic products is notable, and this resulted in reduced price profit margins and expansion of low-quality grades.

Paper and cardboard

The paper industry sector in Jordan consists of paper pulping and manufacturing of paper and cardboard, printing and publishing, and stationery and supplies of packaging products. There are about 930 firms working in this sector, where 28% of these entities are industrial establishments, while the remaining 72% are small craft establishments.

Like other sectors in Jordan, the paper and packaging sector is an upstream sector whose growth potential is inextricably linked to the performance of downstream sectors such as food processing and other consumer product industries. Printing and paper converting technologies will become increasingly important, as brands demand more colorful packaging.

The local paper and cardboards recycling have an approximate capacity of 9000-12000 tons per month, while the amounts declined over the past five years to range between 6000 and 8000 tons per month.

The chain includes the following service providers:

- 10-20 specialized waste brokers
- 50-80 small and medium scrap dealers
- Informal collectors: about 800 -1000 street waste pickers over Amman and 100 -200 itinerant buyers

Metals

Metals is the oldest and most established value chain in the presence of steel and iron mills and aluminum smelters, along with a developed metallurgy manufacturing sector in Amman and Zarqa.

The chain includes the following actors:

- Around 200 - 300 medium to small scrap dealers, processors, intermediaries, and brokers are dealing with metals scrap wastes and buy it from informal collectors and formal contracts and tenders (industrial).
- Informal collectors: Up to 3000 individual waste pickers and 1000 itinerant buyers are involved in collecting different types of ferrous and non-ferrous metals from residential and commercial sources.

Given the duty export taxes are inapplicable, the collected steel scrap waste is recovered in domestic industries, while aluminum and copper wastes often processed for export purposes. It is estimated that about 200 thousand tons of metal scraps are yearly generated and about 70 thousand tons of steel scraps are imported while the annual demand estimated not to exceed 300-400 thousand tons.

The import of steel scraps is subjected to a security permit to be issued by the Ministry of Interior.

Most of the local materials are collected through the formal contracts and tender sources. Of which, 9,000 - 12,000 tons of aluminum and 14,000 – 20,000 tones/year of steel scrap waste are delivered to industries by the informal collectors.

Organic waste including cooking oil

The predominant fraction in Amman MSW is organic matter which makes up as much as 50 percent of the solid waste stream³³ and the major source of leachate and landfill gas in Al-Ghabawi.

Moreover, it is the least valorized waste stream and no private sector led organic waste value chains exist in the market so far.

GAM takes the responsibility to collect the municipal waste including the organic fractions from the household and commercial sectors and diverted to Ghabawi landfill for disposal without further processing or recycling. However, such social initiatives were recently established to sort and separate the food waste leftovers in certain hotels and restaurants in Amman. The source separated putrescible waste like dried bread, fruits and vegetables are collected by some waste pickers and then sold to the livestock owners as animal feedstock. There are no real estimates regarding these quantities and nonetheless the scale of these practices is so small to divert significant amounts.

There are only one company namely “AL RIADIAH CO. FOR RECYCLING ORGANIC MATERIALS” registered and licensed in Amman where its business is to handle the organic waste and convert it into animal feedstock. Due to inconsistency in source separated food waste supply, the operations interrupted after few months of operation. The company is now discussing with GAM facilitating the destruction of expired food stuff from commercial sources in their facility instead of Al-Ghabawi landfill (ITLAF Service).

In terms of cooking oil recycling, there is a very least value chain in Jordan where only (2) private collection companies are registered and licensed for collecting the used vegetable oils for export markets outside the country. Several individual collectors (informal) are involved in collecting the cooking oil from restaurants and hotels as well.

WEEE

The Waste Electrical and Electronic Equipment (WEEE) is approximately 8500-9000 pieces/ year are generated as a waste in Jordan which recycled and exported. The e-waste includes PCs, white goods, batteries, mobiles, and flat screens. Only few companies in Amman (~2-7 companies) that perform kinds of WEEE dismantling and recycling, and then exported to global markets.

Textile³⁴

Textile waste originates mostly from garment industries operating in the Free Trade Areas (FTAs), formerly Qualified Industrial Zones – (QIZs), and its destination depends on the scraps' size and composition. The Biggest Cloths cuttings (10x10 cm minimum) are sorted by manufacturers and then directly re-exported to Asia for reuse and recycling. Cotton scraps are sold to specialized brokers and exported mainly to Egypt for reprocessing.

³³ The waste characterization studies conducted in 2010 and 2011 by the Royal Scientific Society (RSS)

³⁴ Your guide to waste management in Jordan – Waste sorting Informative Booklet, Jordan Green Building Council, ISBN: 978-9957-8751-0-7, Jordan

The smaller textile scraps discarded by factories and post-consumer usually end up in the waste streams, especially that the local market in Jordan has a very least valorized stream for this kind of waste with a high seasonality. Synthetic scrap, oppositely, is sometimes sold to local companies for furniture fill; however, lacking a buyer for it, it's often the case it ends up in landfills.

Tires

The volume of tire trade in Jordan is estimated at more than 50 million JOD annually where significant environmental problems could be caused by the growth in the volume of used tires each year. Approximately 3.5 million pieces/year of the waste tires are recycled and utilized in products fabrication and energy recovery in Jordan. (11) Retread tires companies, (3) energy recovery factories, (3) rubber recycling companies, and (5) industrial fuel companies are registered and licensed. They buy and collect used tires from the local market for their industry (22-25 JD/ton).

Collected used tires are used as fuel in cement factories and shredded to produce soft playground surfaces. Sometimes, waste pickers burn discarded tires in open fires to retrieve the metal wires, causing environmental and health problems. While there are regulations related to waste tire disposal and reuse, Jordan currently has no clear target for treatment or reuse. Additional institutional and capacity building efforts are needed to improve existing business models in the value chain in order to enable their replicability and scale-up³⁵.

Glass

Before the Syrian crisis, glass was exported via Syria to Lebanon for recycling into local furnaces. This practice ended with the start of the Syrian civil war and consequent closure of the border with Syria.

Nowadays, glass reported to offer too little value for being considered for recycling, and therefore there is no glass recycling taking place in Jordan.

Weak internal demand led to the absence of glass factories in Jordan, with most manufacturing capacity concentrated in treating and processing imported glass, rather than producing the material. High transport costs in relation to the very low profit margins is another major constraint to glass recycling, a factor accentuated by the absence of regional alternative destinations to Lebanon.

End-Market industries/manufacturers

Recycling industries/manufacturers are defined by their outputs, which are finished commercial products that are used by other sectors. Their products no longer considered recyclable materials or waste. Manufacturers may use exclusively recycled materials, a combination of recycled and virgin materials, or exclusively virgin materials in their manufacturing process.

The following industries are identified among the below waste value chains streams in Amman:

Value chain stream	No. of industries	Notes
Plastic	614	<ul style="list-style-type: none"> • 454 Local end market plastic industries (mainly packaging) • 160 Small to medium plastic manufacturers located in east and south Amman, as well as, Zarqa and Russeifa that use recycled

³⁵ MoEnv. "Waste Sector Green Growth National Action Plan 2021-2025," 2020. Amman, The Hashemite Kingdom of Jordan.

Value chain stream	No. of industries	Notes
		granules/pellets from local sources to manufacture off-grade consumer products in fields of agriculture, packaging, construction and home furnishings. The local plastic value chain has an approximate capacity of 4000-6000 tons of recycled plastic per month, which recovered in domestic industries. Up to 2000 tons per year are being collected from industrial sources and exported as PET waste for recycling in Turkey, India, and southeast Asia.
Paper and cardboard	9	(1) paper and cardboard industry in Zarqa (8) small to medium paper/cardboard manufacturers, of which only (3) are working at the present time.
Metal	20	<ul style="list-style-type: none"> (12) ferrous steel factories (large industries), of which (8) factories are currently in operation of which (3) use the local steel scrap as a primary input to produce steel plates and rebar. The rest five have a strategy to depend on use of imported steel/iron scrap waste inputs to produce rebar or import ready-made steel plates from competitive global markets. (8) Non-ferrous metals smelters (mainly export aluminum alloys and copper waste) and produce finished iron cast-based products for the heavy equipment and machineries.
Organic food including cooking oil	3	<ul style="list-style-type: none"> (1) treatment company and production of animal feedstock inputs. (2) cooking vegetable oil companies
WEEE	7	(2 – 7) companies specialized in collecting, dismantling and exporting
Textile	4	(4) textile recycling firms, one of them in Karak.
Used Tires	22	(11) Retread tires companies, (3) energy recovery factories, (3) rubber recycling companies, and (5) industrial fuel companies are registered and licensed.
Glass	n/a	n/a

Civil Society organizations (CBOs, CSOs, NGOs, Cooperatives) and initiatives

The community and its representatives have a direct interest in waste management. Communities in low-income areas receive marginal or no services in terms of public transport, electricity, drinking water, sanitation, drainage, and waste removal. These communities will sometimes take the initiative to organize themselves into CBOs with the direct goal of self-help and improving their living conditions. Such CBOs may receive external aid in the form of technical and/or financial aid from different agencies. Sometimes these activities may also take the form of direct participation in waste management, such as feeding organic material directly to their livestock. Usable materials, like bottles, are often reused by the members of the low-income community themselves.

CBOs may also take a role in the actual provision of services, including operations and maintenance, and even in the construction of facilities. Thus CBOs, speaking for the individuals or members

involved, play an important role in waste management system development processes. Organized communities have a stronger voice than individuals and bring about improvements more easily.

According to the legal context in Jordan, the environmental CSOs and cooperatives are registered by the Ministry of Social Development and their professions licensed by the MoEnv.

In Amman, there are more than (20) CBOs, CSOs, NGOs and Cooperative organizations being engaged with different pilot projects, initiatives, and campaigns targeting solid waste recycling and sorting. Most of them are engaged with GAM to ease their pilot initiatives and/or projects, particularly in the fields of paper and cardboard recycling and reuse. GAM considered these engagements as a kind of contribution to improving the overall public awareness among the citizens in Amman. For instance, in 2009, GAM has an agreement with Jordan Environment Society (JES); one of the first and pioneer local community organizations working on introducing recycling practices and sorting activities to the local community, for implementing a waste recycling project targeting various waste generators at the city level (Ministries, Schools, offices, households, companies, etc.)

Most of the NGOs and CBOs in Jordan are working on environment and SWM by undertaking a variety of initiatives including clean-ups and awareness campaigns, small recycling activities, environmental training, and small-scale composting activities. The table below presents identified NGOs and their responsibilities.

Stakeholder Category: NGOs	Role/Interest/ Mandate
Jordan Environment Society (JES)	<ul style="list-style-type: none"> • Provide recycling services mainly paper and cardboards targeting the commercial businesses and public sectors • Introducing recycling practices and sorting activities to the local community • Awareness campaigns towards environment and waste recycling activities and targeted mainly the schools and youth sector in the local community • Provide public cleanliness campaigns targeting the Forests and touristic areas. • Awareness and training related to environment and recycling • Certified from MoEnv to provide environmental courses (EIA, environmental monitoring, etc....) • Long-term partnership with GAM and have a sorting facility to recycle paper and cardboard.
The Jordanian Association for Recycling the consumer packaging materials	<ul style="list-style-type: none"> • Supporting sustainable handling of packaging materials through prompting Extended Producer Responsibility (EPR) principles for packaging in Jordan. The members of the association from the industry and trade sectors are working towards setting up a system for EPR system in Jordan and ensure infrastructure for the nationwide collection and recycling of packaging. This association has currently worked with MoEnv to draft a kind of instructions to facilitate an EPR system for packaging in Jordan
Jordan Environmental Union (JEU)	<ul style="list-style-type: none"> • Advocating for environmental issues with Jordanian Parliament and MoEnv. • Promoting environmental stewardship and conservation, as well as economic and social development.
Arab Group of the Protection of Nature (APN)	<ul style="list-style-type: none"> • Contribute to the rehabilitation and resilience of environmental, agricultural and food systems in Arab regions affected by war and conflict, particularly in Jordan and Palestine. • Influence the formulation and implementation of global environmental, agricultural and food policies within effective institutional partnerships.

Stakeholder Category: NGOs	Role/Interest/ Mandate
	<ul style="list-style-type: none"> • Mobilize individual and collective civil society efforts to advance environmental protection and food sovereignty. • Build the capacity of the Arab Group for the Protection of Nature in order to achieve its mission with professionalism, efficacy, and institutional sustainability.
The Royal Society for the Conservation of Nature (RSCN)	<ul style="list-style-type: none"> • Raise awareness on environmental issues, with a focus on school students through setting up nature conservation clubs, supplying educational programs in the reserves, and integrating biodiversity concepts in school curricula. • Develop large-scale conservation projects that aim to integrate environmental protection with the socio-economic development of local people living in and around the nature reserves. RSCNs socio-economic projects include a wide variety of eco-tourism programs, as well as the production of unique handicrafts and organic food items. These nature-based businesses provide jobs tied to the protection of natural areas and create improved livelihoods for poor rural communities. All of RSCN products and eco-tourism ventures are marketed under the trade name "Wild Jordan" and the full range of handicrafts are available at the Wild Jordan Center in Amman. • Provide training and capacity building to environmental practitioners and institutions throughout Jordan and the Middle East in an attempt to share our expertise and empower others to join in the protection of nature. • Promote public action for environmental protection through campaigns and activities run by an advocacy committee made up of volunteers from different sectors.
Jordan Green Building Council (JGBC)	<ul style="list-style-type: none"> • Civil society engagement through communal waste management schemes • Development of 'Your Guide to Solid Waste Management in Jordan' • Awareness raising campaigns and campaigns for the promotion of community mobilization and active citizenship • In association with the International Solid Waste Association (ISWA), they provide training opportunities and certification of 'waste experts' in 2015
Future pioneers	<p>Executing projects in the following domains</p> <ul style="list-style-type: none"> • Solid waste management • Socio-economic empowerment • Environmental and climate change • WASH • Community dialogue • Civic engagement • Human rights or marginalized groups
Recycling for Education	<ul style="list-style-type: none"> • Executing recycling projects and initiatives • Capacity building
EDAMA - Energy, Water and Environment	<ul style="list-style-type: none"> • Raising awareness and advocating for legislative change towards a green economy in Jordan • Works with private sector through providing services in return for membership such as conferences and support towards more 'green' practices and businesses • Training academy that provides local and international certified courses that meet market needs.

Stakeholder Category: NGOs	Role/Interest/ Mandate
Green Leaves Society جمعية الاوراق الخضراء البيئية	<ul style="list-style-type: none"> • Conducting awareness activities • Promoting environmentally safe behaviors • Educating individuals and institutions with the best environmental behaviors.
Towards Zero Waste جمعية صفر نفايات	<ul style="list-style-type: none"> • Executing awareness activities • Executing environmentally friendly initiatives and activities.
Dibeen for Environmental Development	<ul style="list-style-type: none"> • Executing awareness activities • Executing environmentally friendly initiatives and activities.
AlAzm Environmental Society	<ul style="list-style-type: none"> • Conducting awareness activities • Capacity Building • Executing SWM projects
The National Association of environmental culture and the media	<ul style="list-style-type: none"> • Environmental Awareness
The Jordan Society for Sustainable Development	<ul style="list-style-type: none"> • Cooperating with all national, regional and international entities to protect and manage natural resources as well as economic and social resources and using them in a sustainable manner, • Implementing and promoting mechanisms to realize sustainable development that is based on integration and comprehensiveness to fulfill the needs of the present and future in a balanced manner, • Raising awareness among the segments of the society on the importance of natural, heritage, economic and social resources, and the need to preserve them through sustainable development Programs, • Creating a database that helps all sectors determine best methods for realizing sustainable development and defending the principles of sustainable development in an objective manner.
The General Federation of Jordanian Women (GFJW).	<ul style="list-style-type: none"> • Improving the status of women in national development • Strengthening women's legal status • Women advocacy

In the absence of national and formal recycling structures over the county, several past and current pilot projects, initiatives, and campaigns targeting solid waste recycling and/or sorting are reported in Amman in cooperation with GAM. Most of these initiatives aimed to increase the public awareness and introduction of modern waste recycling and separation at source practices. Main initiatives are listed as follows:

- Paper recycling program implemented by the Jordan Environment Society since 1995 in coordination with GAM and Ministry of Environment.
- Recycling project with COZMO marketing stores in Amman implemented by BE Environmental Services.

- Separation at source project that GAM implements in Household and Commercial areas (Al-Radwan and Al-Medina neighborhoods, the initiative is funded by GIZ (Circle project).
- Glass recycling initiative implemented by Green Leaves Environmental Society.

3. DONORS MAPPING RELATED TO SWM PROJECTS

Over the past couple of years, and with the support of the international partners, Jordan's solid waste management has been advanced and adopted more sustainable approaches for service delivery. This section presents all international donors' efforts in supporting the solid waste management in Jordan. To conduct the donor mapping, a document review and extensive web-search was performed to identify all project and donors working on the SWM and recycling.

The following table presents all international donors' efforts in the SWM sector in Jordan.

Overview of Projects Implemented in the SWM Sector in Jordan				
Duration	Donor C/P	Name of Project	Governmental counterpart	Description
July 2017 - June 2021	BMZ through GIZ	CIRCLE - Climate and Resource Conservation through Recycling	GAM	Establishment of conditions for a climate friendly circular economy in Greater Amman Municipality. In pilot projects, various models for the separate collection and recycling of waste are being developed and tested in cooperation with the population in three selected neighborhoods. The models follow the nation Solid Waste Management Strategy and Amman Strategic Waste Plan and are adapted to different local and cultural conditions. The collected recyclables are treated and recycled in appropriate facilities.
07.2014-12.2018	BMZ through GIZ	ADHOC 1 - Supporting Solid Waste Management in Refugee Hosting Communities	MoLA	Improve solid waste management services in the governorates of Irbid, Ramtha, Karak and Mafraq through the provision of a more efficient environmentally and socially sound waste management system (collection, transfer and disposal).
08.2017-06.2020 (extended)	BMZ through GIZ	ADHOC 2 - Supporting Solid Waste Management in Refugee Hosting Communities	MoLA	The ADHOC 2 project a specialist personnel are being trained in operational and financial management. Municipal workshops are receiving spare parts and equipment; mechanics are being trained. A quality management system with maintenance plans is being set up. Municipal waste management plans are being drawn up to enable forward-looking, sustainable planning for the waste sector. The general objective of the project is to:

				<ol style="list-style-type: none"> 1) Improved implementation of municipal tasks in solid waste management in selected municipalities 2) Improved capacities in solid waste management in MoMA.
06.2014-06.2020	BMZ through KfW	Solid Waste Management for Greater Amman Municipality (GAM)	GAM	<p>The project aims to towards reducing the number and size of landfills in Jordan while promoting recycling. Through the project GAM implemented a plan to recycle reusable material and to improve their overall waste management system. The overall objectives of the project are:</p> <ol style="list-style-type: none"> 1) Establishing an environmentally friendly concept of recycling solid waste addressing the entire waste chain. 2) Job creation in the solid waste sector through labor-intensive activities.
09.2015-01.2019	BMZ through GIZ	Support for UNRWA Solid Waste Management Strategy	Department of Palestinian Affairs (DPA)	<ol style="list-style-type: none"> 1) An agency wide SWM Framework is developed and agreed upon within & by UNRWA 2) Based on the SWM framework, the methodology to prepare field related operational SWM strategies is available and applied to the Jordan field as pilot case 3) A methodology for selecting appropriate (effective, cost saving, accepted) SWM Solutions for individual camps is available and forms the basis of camp SWM Plans 4) The above set of instruments are tested in the Jordan field and UNRWA staff from all fields is trained using the Jordan fields and camps as showcase 5) The new proposed system is implemented in Irbid & Talbieh camps.
09.2015-10.2023	BMZ through GIZ	Waste to Positive Energy (WtpE)	MoLA	<p>The objective of the project is to create employment for disadvantaged members of the population (refugee and hosting communities) through waste collection and recycling of materials. The project targeted different areas such as Irbid, Ramtha, Mafraq and Wassatiyah. The project has different components:</p> <ul style="list-style-type: none"> • Create employment opportunities for most affected population through CfW activities within the solid waste management field, • Enhance social cohesion between Syrian refugees and local hosting

				<p>communities by creating dialogue forums,</p> <ul style="list-style-type: none"> • Support different municipalities in enhancing solid waste management planning by developing local solid waste management plan, • Enhance sludge management in refugee camps by implementing a co-digesting pilot plant,
01.2015-12.2018	EU through GIZ	Support to Solid Waste Management in Jordanian Communities Hosting Syrian Refugees	MoLA	To improve solid waste management services in the governorates of Irbid, and Mafraq through the provision of more efficient, environmentally and socially sound waste management systems (collection and disposal).
02.2016-01.2019	EU through World Vision	<p>Sustainable Food</p> <p>Security for Refugees through Environmentally</p> <p>Responsible SWM</p>	-	Refugees attain enhanced food security/resilience through sustainable cash for work (CfW) income from recycling and SWM.
01.2018-12.2023	EU	<p>EU Support to the</p> <p>Implementation of the National Solid Waste Management Strategy</p>	MoPIC, MoLA & MoEnv	<p>The purpose of this action is to ensure in the coming five to seven years, the safe and sanitary disposal of municipal solid waste. The specific objectives are to:</p> <ol style="list-style-type: none"> 1) Consolidate the existing regulatory framework to bring it in line with the objectives set in the national strategy; 2) Improve the transfer and disposal management system in the Central and Northern Region; 3) Improve the socio-economic well-being and health status of informal waste pickers working in dumpsites; 4) Raise general awareness, understanding and knowledge about key MSW management issues amongst concerned segments of the society.
11.2017-12.2019	EU	<p>National Monitoring</p> <p>Information System for Municipal Solid Waste (NMIS-</p>	MoPIC, & MoEnv	<p>The overall objective of the action is to design, develop and implement a comprehensive computerized and web-enabled "National Monitoring Information System for municipal solid waste (NMIS-MSW).</p> <p>Result I: strengthen the capacities of the</p>

		MSW)		<p>MoEnv/DoS to establish a NMIS-MSW that will support MoEnv to fulfill its monitoring role, also in relation to EU budget support.</p> <p>Result 2: strengthen the capacities of the MoEnv to perform environmental controls on existing and new landfills.</p> <p>Result 3: strengthen the capacities of MoEnv/DoS to enhance regulatory framework in line with NSWMS strategy.</p>
07.2018-07.2023	EU	Support Ministry of Municipal Local Administration in Upgrading Solid Waste Management Facilities in the Joint Services Councils most affected by the Refugee Crisis	MoPIC	<p>The project aims to:</p> <ol style="list-style-type: none"> 1) Improve municipal solid waste services and hygiene conditions in the Northern and Central regions, directly affected by the influx of Syrian refugees 2) Rehabilitate and develop Al-Ekaider and Husseinyat sanitary landfills 3) Create job opportunities during the construction and operation phases 4) Increase the institutional and technical capacities of Ministry of Municipal Affairs, Ministry of Environment and Joint Services Councils.
08.2016-12.2018	French Development Agency (AFD)	<p>Technical Assistance to Ministry of Municipal Affairs (MoMA)</p> <p>-</p> <p>Implementation of the Solid Waste Strategy</p>	MoPIC	Support the MoMA and the inter-ministerial technical committee in implementing the solid waste management strategy.
02.2016-01.2019	EU	Enhancing Employment Opportunities in Jordan Energy and Environment Sectors E4	Greater Irbid Municipality	Improved job and market opportunities in Irbid, Mafraq and Amman governorates in recycling, green technology, renewable energy (RE), water and energy efficiency (WE/EE) sectors.

05.2015-12.2020	EBRD	EBRD Greater Amman Municipality Solid Waste (LFG) Project	GAM, MoPIC	The project is designed to finance the landfill gas system (the LFG) for cells 1 & 3 at Al Ghabawi landfill, associated leachate management, generators and connection to the grid
11.2016-12.2022	EBRD	EBRD Greater Amman Municipalities Crisis Response Solid Waste Programme	GAM, MOPIC	<p>1) Improve solid waste infrastructure & associated services, components include the refinancing of GAM's debt; construction of Cells 5 & 6 at Al Ghabawi; capping of Cell 4 at Al Ghabawi; upgrade of the Al-Shaer Transfer station; construction of a new transfer station (potentially at Ain Ghazal); purchase of compactors, other equipment & other investments.</p> <p>2) Additional TA compliments the above investments, including ESIA's, technical studies, financial management training, stakeholder participation programmes, corporate governance improvement and contract management.</p>
12.2016-03.2019	UK Department for International Development (DIFD)	Greater Amman Municipality Solid Waste Crisis Response	GAM	To provide emergency support to Greater Amman Municipality to cope with the pressures placed on waste infrastructure following the influx of refugees by funding specialist equipment, compactors and the construction of an additional cell.
05.2018-05.2022	Global Environment Facility	<p>Reduction & Elimination of POPs and Other Chemical Releases Through Implementation of</p> <p>Environmentally Sound Management of E-Waste, Healthcare Waste & Priority</p> <p>U-POPs Release Sources Associated with</p>	MoEnv	<p>Protection of human health & the environment through reduction & elimination of POPs, & other chemicals through implementation of environmentally sound management (ESM) for e-waste, healthcare waste & priority U-POPs release sources associated with general waste management activities.</p> <p>The project, through the implementation of a highly sustainable & replicable approach for the integrated & sound management of electronic, hazardous, healthcare & municipal solid waste categories, will achieve the avoidance of releases of U-POPs, PBDEs & CO2, contributing at the same time to the development of the waste circular economy elements based on the 3R (Reduce, Re-use, Recycle) approach principles.</p>

		General Waste Management Activities		
03.2015-04.2019	Global Affairs Canada (GAC)	Improving Solid Waste Management and Income Creation in Host Communities	MoLA	<ol style="list-style-type: none"> 1) To improve the solid waste management cycle by complimenting the efforts undertaken by the government, to ensure efficient & effective delivery of basic services 2) To address the increasing problem of solid waste disposal & treatment at the Al Ekaider landfill while integrating labor-intensive schemes using innovative solutions that will engage more people in recycling, composting & other waste treatment-related activities 3) 3) Strengthen the capabilities of MoMA, the Joint Services Council in Irbid, Mafrq & in Northern Shouneh in the solid waste management sector for enhanced capacity of service delivery, emergency response, women empowerment & local economic development
06.2017-05.2022	Global Affairs Canada (GAC)	Jordan Municipal Support Project (JMSP)	MoLA	<p>Jordan Municipal Support Project (JMSP) implemented by FCM aims to strengthen the resilience of Jordanian municipalities in Central and Southern Jordan. The project has three main components: Governance, SWM, Knowledge Sharing and Public Engagement.</p> <p>The main objective of the SWM component is improving SWM focusing on the 3Rs. And through the engagement of women & youth and other key stakeholder.</p>
01.2014-12.2018	UNICEF	Solid Waste Management in Zaatari and Azraq Refugee Camps	-	Provide solid waste management services for the communities of Zaatari and Azraq Refugee Camps.
05.2018-12.2022	Japan International Cooperation Agency (JICA)	The Project for Improvement of Waste Management Equipment in Northern Region Hosting	-	The objective of the project is to enhance waste management in Northern region hosting Syrian refugees by/through preparation for necessary equipment for the operation of transfer stations and final disposal sites and transportation, thereby contributing to improve sanitation and

		Syrian Refugees		hygiene of both Jordanian citizen and Syrian refugees.
09.2016-09.2021	USAID	Jordan Cities Implementing Transparent, Innovative, and Effective Solutions (USAID - CITIES)	MoLA & MOI	<p>The USAID Jordan Cities Implementing Transparent, Innovative, and Effective Solutions (CITIES) project is supporting the development of more inclusive government operations. Citizens are recognizing their right to articulate their needs, and municipalities are gaining the organizational and management capacity to address those needs effectively. Consequently, communities are becoming more cohesive and receiving the services they need. The goals are to:</p> <ol style="list-style-type: none"> 1) Improve how the government delivers core services, such as solid waste management, street naming, and building numbering 2) Increase the sustainability of municipal governance operations 3) Strengthen the government's capacity to respond to the identified needs of citizens 4) Support municipalities and the people who live in them to create communities that are more cohesive and resilient
06.2017-06.2019	Italian Government through World Bank Trust Fund	Global Facility for Disaster Risk Reduction Facility Technical Assistance Activity	Municipalities	Under the overall objective of this technical assistance activity of "Improving Urban Resilience in Cities Impacted by the Syrian Refugee Crisis in Jordan", one of the implementation pillars/activities aims at developing solid waste management plans for the improvement of collection, cleaning, recycling and other solid waste services for Jordanian municipalities.
12.2017-12.2020	Multi-donor Trust Fund administered by the World Bank	Municipal Service and Social Resilience Project (MSSRP)	Municipalities	The project aims to promote broader crisis resilience through support to participating municipalities to provide additional services based on local needs, the strengthening of community resilience through local economic development and community engagement, and the strengthening of institutional resilience to crises through development of emergency preparedness systems. More specifically, the project aimed to support Jordanian municipalities affected by the influx of the refugees in

				delivering services and employment opportunities for Jordanians and Syrians.
01.2020-09.2022	GIZ	Waste to (positive) energy in Jordan 2019-2022	MoLA	The project aims to provide better living conditions by developing improved solid waste management and waste water treatment in both refugee camps and local communities in Jordan, while providing job opportunities in Mafraq and Zarqa governorates through recycling activities, cash for work activities, conflict management and sludge treatment.

ANNEX I: LIST OF MAIN WASTE HAULER COMPANIES IN AMMAN (DEALING WITH COLLECTION AND HAULING OF MIXED SOLID WASTE FROM COMMERCIAL GENERATORS)

#	Waste collection and hauling Service Providers -Formal	Service Area	Type of service
1	Zawati Brothers Company شركة زواتي إخوان	Amman	MSW
2	BE Environmental Services شركة بيئي لخدمة البيئة	Amman/Dead sea	MSW
3	Model for Maintenance and cleaning services شركة النموذجية للصيانة وخدمات النظافة	Amman	MSW
4	Optimum Person Establishment for waste transport مؤسسة الشخص الامثل لنقل النفايات	Amman	MSW
5	Faster Step Establishment for Recycling مؤسسة اسرع خطوه لاعاده التدوير	Amman	MSW
6	Specialized Engineering workshops Company شركة المشاغل الهندسية المتخصصة	Amman	MSW
7	Mecca Mall company شركة مكة مول	Amman	MSW
8	Alzwadh for waste transport establishment مؤسسة الزوادة لخدمات نقل النفايات	Zarqa/Amman	MSW
9	Masafat For Specialized Transport شركة مسافات للنقل المتخصص	Amman/Zarqa/Mafraq Refugees camp	MSW
10	Sultan Ali Mslam Company مؤسسة سلطان علي مسلم لخدمات نقل النفايات	Amman	MSW
11	Green Future Sustainable Solutions Company المستقبل الأخضر للحلول المستدامة	Amman	MSW
12	Al-Saha for transport services شركة الساحة لخدمات نقل النفايات	Amman	MSW
13	Hassan & Hossam Aboulafilat Company شركة حسان وحسام ابو الفيلات (المحيط)	Amman	MSW
14	Zarqa Gate For cleaning & waste transport مؤسسة بوابة الزرقاء لخدمات النظافة ونقل النفايات	Zarqa/Amman	MSW
15	Abdul Nasser Shawahneh Establishment for waste transport مؤسسة عبدالناصر الشواهنة لتأجير القلابات ونقل النفايات	Zarqa	MSW
16	Pioneers Co. for Recycling الشركة الريادية لاعادة التدوير	Amman	MSW
17	Al Qamat for cleaning service	Amman	MSW

	مؤسسة القامات لخدمات النظافة		
18	Ahmad Al-Mahseri Establishment for cleaning مؤسسة أحمد المحسيري لخدمات النظافة	Amman	MSW
19	The National Resources Investment and Development Corporation مؤسسة استثمار الموارد الوطنية وتنميتها (موارد)	Amman/Zarqa	MSW
20	Future Environmental Services Co شركة المستقبل للخدمات البيئية	Amman	MSW
21	Ahmed Abdullah & Alnafoura Establishment مؤسسة احمد عبدالله /النافوره لخدمات التنظيف	Madaba/Amman	MSW
22	Bravo for Nuts شركة برافو للمكسرات - محمص الشعب	Amman	MSW
23	Ahmad Jalajel & partner Establishment مؤسسة أحمد جلال وشريكه	Amman	MSW
24	Ali Al-Mozawada Establishment مؤسسة علي المزودة	Madaba	MSW
25	Hiba & Yamama Establishment مؤسسة هيبه و اليمامه لخدمات التنظيف	Zarqa	MSW
26	Fastline Co. for waste transport شركة الخط السريع لنقل النفايات	Amman	MSW
27	Sama Amman شركة سما عمان للخدمات البيئية	Amman	MSW
28	Clean City For Waste Management شركة كلين سيتي لإدارة النفايات شركة البيئة الخضراء لتجارة مستلزمات البيئة	Amman	MSW
29	Odeh Naber & Sons Transport Co. (Nabresco) شركة عودة النبر وأولاده للنقلات	Amman	MSW

ANNEX 2: LIST OF MAIN RECYCLING SERVICE COMPANIES IN AMMAN (DEALING WITH COLLECTION AND HAULING OF SEGREGATED RECYCLABLE WASTE FROM COMMERCIAL GENERATORS)

#	Waste collection Service Providers -Formal	Service Area	Type of service
1	BE Environmental Services شركة بيئي لخدمة البيئة	Amman/Dead sea	Paper, Plastics, Cardboard, Metals
2	Green Future for Sustainable Solutions المستقبل الأخضر للحلول المستدامة	Amman	Paper, Plastics, Cardboard, Metals
3	Green Spot Smart Recycling النقطة الخضراء الأردنية لإدارة المشاريع	Amman	Paper, Plastics, Cardboard, Metals
4	Future Environmental Services Co شركة المستقبل للخدمات البيئية	Amman	Paper, Plastics, Cardboard, Metals
5	Jordan Environment Society جمعية البيئة الأردنية	Amman	Paper & Cardboards
6	Al-Dakheel For Recycling Company شركه الدخيل لاعاده تدوير النفايات	Amman	Paper, Plastics, Cardboard, Metals
7	Iqbal for Recycle Paper Company مؤسسة إقبال لإعادة تدوير الورق	Amman	Paper & Cardboards
8	The Fastest Step to Recycling Paper and Cardboard شركة أسرع خطوة لتدوير الورق والكرتون	Amman	Paper & Cardboards
9	شركة الأفضل لتدوير الورق والحفاظ على البيئة (شركة غير ربحية)	Amman	Paper & Cardboards
10	"First For Paper & Cardboards Recycling "الشركة الأولى لإعادة تدوير الورق والكرتون"	Amman	Paper and Cardboards
11	"Jordan Company for Cartons Industry (JCCI) الشركة الأردنية لصناعة الكرتون"	Amman	Paper and Cardboards
12	شركة الطاقة لأنظمة الحماية	Amman	Paper, Plastics, Cardboard, Metals, Khorda, Scrap

13	Green Jo "mobile app"	Zarqa/Amman	Paper, Plastics, Cardboard, Metals
14	Jocycle الشركة الأردنية لإعادة تدوير الأجهزة الأليكترونية و أجهزة الحاسوب	Ain Al-Basha	E-waste
15	E-tafkeek Establishment For Recycling مؤسسة تفكيك لاعادة تدوير النفايات الالكترونية	Amman	E-waste
16	Ziadat4recycling زيادات لاعادة التدوير	Amman	Furniture

KEY TERMS AND DEFINITIONS

Allyship: Supportive association with another person or group; specifically, with the members of a marginalized or mistreated group to which one does not belong.³⁶

Gender balance: Gender balance is generally agreed to be a male-female ratio of between 40 and 60 percent. McKinsey, a global consulting firm, analyzed data from 50,000 managers across 90 entities around the world and found that teams with a male-female ratio between 40 and 60 percent produce performance indicators that are more sustained and predictable than unbalanced teams in terms of employee engagement, brand awareness, client retention and financial metrics.³⁷

Gender-based violence (GBV): Denotes violence that is directed at an individual based on his or her biological sex, gender identity or perceived adherence to socially defined norms of masculinity and femininity. It includes physical, sexual and psychological abuse; threats; coercion; arbitrary deprivation of liberty; and economic deprivation, whether occurring in public or private life. GBV takes on many forms and can occur throughout the life cycle. Types of gender-based violence can include female infanticide; child sexual abuse; sex trafficking and forced labor; sexual coercion and abuse; neglect; domestic violence; elder abuse; and harmful traditional practices such as early and forced marriage, “honor” killings and female genital mutilation/cutting.³⁸

Intersectionality: Refers to the complex and cumulative way that the effects of different forms of discrimination (such as racism, sexism and classism) combine, overlap and intersect—especially in the experiences of marginalized people or groups.³⁹

³⁶ Merriam Webster Dictionary online: <https://www.merriam-webster.com/dictionary/allyship>

³⁷ Landel, M. (2015) <https://www.mckinsey.com/featured-insights/leadership/gender-balance-and-the-link-to-performance>

³⁸ This is the U.S. government’s definition of GBV. Source: USAID GBV Toolkit (2014) p. 10
<https://www.usaid.gov/sites/default/files/documents/1865/USAID%20Toolkit%20GBV%20EG%20Final%20Section%202.pdf>

³⁹ Merriam Webster Dictionary online: <https://www.merriam-webster.com/words-at-play/intersectionality-meaning>

Municipal waste management and recycling: Local government bodies manage the collection and disposal of solid waste generated from households and commercial establishments, including the recovery of recyclable materials from postconsumer waste streams.

Positive masculinities: A term used to characterize the values, norms and practices that gender-based work with men and boys seeks to promote in order to end violence against women and girls.⁴⁰

Sanad: Gender values and norms of masculinity and femininity operate alongside other societal values, such as sanad (meaning “support” in Arabic), a belief system that establishes one of the most important social values for women and men, but differently for each. A man’s sanad is his tribe, money, and profession, whereas a woman’s sanad is her man—a husband, father, or brother. A woman without a sanad is at increased risk of GBV and vulnerable to other discriminatory practices. However, a woman with a powerful male sanad, in terms of tribal affiliation, connections, and wealth, can access more resources and rights than those affiliated with a weak/poor sanad. Many informants stated that the male support system deters women from reporting GBV, asking for their share of an inheritance, or making decisions against their families’ will. This is because the loss of sanad can mean the loss of social protection.⁴¹

Solid waste management: The control, collection, transport, storage, processing, treatment and disposal of solid waste.

Value chain: An economic system comprised of a set of enterprises or sequence of businesses that perform the full range of functions relating to a product – from the provision of inputs, to the production, transformation, transportation, trade and final sale of the product to end-users.

Waste management and recycling: The management, collection and disposal of solid waste generated from households and commercial establishments, including the recovery and reuse of recyclable materials (e.g., plastics, metals, paper and cardboard, electronics, glass, etc.).

⁴⁰ USAID (2015).

⁴¹ Morris, P., Almala, A. Garlick, M., Heyari, N., Carchidi, B., and Farrah, R.. (2020). “USAID Jordan Gender Analysis and Assessment.” (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

Waste sector worker: Individuals who work across the entire waste value chain in both the private and informal sectors including: informal and formal waste collectors and street sweepers, municipal street waste pickers, landfill recycling pickers, itinerant waste brokers and scrap dealers, intermediaries, preprocessor employees, and recycling factory employees, and municipal SWM staff.

Women's economic empowerment and equality: Women's economic empowerment exists when women can equitably participate in, contribute to and benefit from economic opportunities as workers, consumers, entrepreneurs and investors. This requires access to and control over assets and resources, as well as the capability and agency to manage the terms of their own labor and the benefits accrued. Women's economic equality exists when all women and girls have the same opportunities as men and boys for education, economic participation, decision-making and freedom from violence. This requires collectively addressing barriers to commercial activity and labor market participation, such as restrictive laws, policies and cultural norms; infrastructure and technology challenges; unpaid care work; limits on collective action; and poorly enforced protections.

Street waste picker or collector: An individual who works informally collecting waste in the street either from waste bins, commercial enterprises and/or households working on foot or using a pick-up truck. This includes formally employed street sweepers who are informally involved in waste picking.

Street Sweeper: An individual formally employed by the Greater Amman municipality to sweep and clean the streets.

EXECUTIVE SUMMARY

Introduction and Purpose

The Recycling in Jordan Activity is working with private recycling firms, the commercial sector, the Ministry of Environment (MoENV), and Greater Amman Municipality (GAM) to increase commercial sector recycling services in Amman. As part of the Recycling in Jordan start-up and planning efforts, the Activity team is conducting a comprehensive market systems analysis including a mapping of the recycling value chain. A gender analysis was carried out to ensure the integration of gender equality and social inclusion considerations in activity planning, implementation, and monitoring, evaluation, and learning.

The gender analysis identifies and assesses inequalities, constraints, and opportunities across the recycling value chain, with a focus on the informal sector, and offers conclusions and recommendations to inform the Recycling in Jordan Activity. The analysis examines Gender Equality and Social Inclusion (GESI) considerations in the context of the three main components of the Activity, namely to: i) Expand and improve private sector-led recycling services; ii) Generate greater demand for and utilization of recycling services within the Amman commercial sector; and iii) Increase local and national government support for solid waste management. The analysis will be used to develop a GESI Strategy and Action Plan.

Method and Limitations

Based on an in-depth literature review of more than 50 sources and 33 Key Informant Interviews (KIIs), this analysis provides an overview of the roles and status of women and men in the recycling sector in Amman, Jordan, and identifies gender disparities therein. Guided by USAID's [Automated Directives Systems \(ADS\) 205](#), the research questions were designed to identify, prioritize and analyze relevant issues related to women's economic empowerment along the five gender analysis domains of: laws, policies and regulations; cultural norms and beliefs; gender roles, responsibilities, and time use; access to and control over assets and resources; and patterns of power and decision-making.

The gender analysis team faced two noteworthy constraints in conducting research: (1) fieldwork and the completion of KIIs was impeded by the pandemic and resulting lockdown in Jordan; and (2) little to no data or descriptive statistics exist about women working in the recycling sector in Jordan, in general, and in the informal sector and in Amman, in particular.

Highlights of Key Findings

KEY THEMES ACROSS THE RECYCLING SECTOR

Data Deficiency. The extremely limited availability of sector-specific data and statistics impedes planning and consensus within the recycling sector, especially the integration of gender and social inclusion considerations. This is a key problem cited by Solid Waste Management (SWM) experts in Jordan and in developing countries worldwide. This absence of data is especially pronounced at the intersection of gender and the informal sector.

Cultural norms and gender roles. The social stigma around waste and recycling inhibits entry and activity for women and men in both the formal and informal recycling sectors. People working in this sector are associated with or are considered “dirty” and are often shunned upon by the public and not valued by society. Rigid cultural norms inhibit women from interacting with men outside of their families— an intractable obstacle for women in the male-dominated SWM sector. Additionally, a gendered division of labor is pervasive throughout the recycling value chain (in both the informal and private sectors) and inhibits women’s advancement as both entrepreneurs and employees. Another constraint faced by women and People With Disabilities (PWD) in both the private and informal sectors is the real and perceived threat of Gender-based Violence (GBV) and sexual harassment, which deters both women’s entry and advancement in the sector and reinforces gendered roles and divisions of labor at work.

Leadership, representation, and organization. Neither private sector nor informal sector workers are involved in collective organizing or bargaining in the SWM and recycling sector, constrained by labor laws that do not favor workers. At the national and municipal levels, there are no cooperatives, organizations, unions, or business associations representing the interests of informal workers or professionals (men or women) working in the recycling sector. In addition, women lack leadership and representation throughout the value chain. Research revealed only two women-owned private recycling businesses operating in GAM out of the total 220 firms registered and the 29 firms currently in business.

INFORMAL SECTOR RECYCLING

Waste pickers, street sweepers, itinerant waste brokers and scrap dealers. The SWM experts interviewed⁴² estimate a minimum of 3,000 and a maximum of 5,000 men work as informal Street Waste Pickers (SWP) in GAM. With only 100 to 200 female SWPs in total, women are almost entirely absent from this level of the value chain. Street waste pickers can be divided into two groups: those employed as municipal streets sweepers and those who operate independently as itinerant waste collectors.

Informal waste picking is a well-organized network-driven activity based on extensive informal arrangements controlling access to the most in-demand waste. These networks are entirely male-dominated and pose a key barrier to entry and advancement for women throughout the informal levels of the value chain. In the absence of social and legal protections, this network of relationships is critical to SWPs’ ability to maximize profits and minimize risks. The system offers an informal type of job security, guaranteeing access to high value waste streams and ensuring that individuals from “outside”

⁴² Refer to Annex III, Key Informant Interviews, for a complete list of experts consulted.

the system cannot pick in areas designated to other SWPs. Women are absent from this network entirely, inhibiting their ability to advance through the informal recycling value chain.

Due to existing gendered roles and power relations, women street waste pickers lack access to higher quality and quantity of recyclables compared with men, impeding their ability to compete at this level of the value chain and inhibiting their upward mobility. Though women SWPs also have access to smartphones, they reportedly do not have the same knowledge regarding pricing and are not incentivized to pursue such information since they are not involved directly in sales and rarely receive direct remuneration.

Sorters. Due to rigid cultural norms regarding gendered labor roles, compounded by the constraints and risks women face picking in the streets, most women in the informal recycling sector work almost exclusively as sorters. They take on the most high-risk, under-paid and menial work in the recycling chain. SWM sector experts estimate that approximately 300 to 600 women work as sorters in GAM, the majority of whom are the wives of GAM street sweepers. They work in conjunction with their husbands and/or other male family members, with the men collecting waste and transporting it to their homes where their wives (sometimes with the help of their children) sort. Despite difficult working conditions, informality offers female sorters (and SWPs) flexible work hours and the freedom to work from home where they can simultaneously fulfill their domestic responsibilities and care for their children while avoiding the threat of harassment and public scrutiny associated with working in the streets.

The intersectional identities of women and other marginalized value chain actors.

- **Marginalized communities.** Among the few women waste pickers in Amman, some are members of the “Dom” community. A gendered division of labor is prevalent among this group, with women and children responsible for waste picking and pre-sorting, while men pick, haul, sell, and tend to control income. The “Sabaawiya” is another marginalized group active in the informal recycling sector, namely in Nozhet Sahab and eastern areas of Amman, where they tend to reside in informal settlements and work in and around their homes.
- **Divorced and widowed women.** Among all women SWPs in GAM, the most vulnerable are female-headed households, mostly divorced or widowed women who turn to waste picking as a source of secondary income to supplement social security benefits.
- **People with disabilities.** Though few in numbers in the recycling sector, rising unemployment rates in Jordan are leading more disabled people to seek work in the informal sector due to limited alternative livelihood options.
- **Youth.** Anecdotal evidence suggests that youth are not working in the recycling sector in large numbers, but those that do face similar obstacles and constraints as their adult counterparts in accordance with their gender and other intersectional identities.

Legal constraints and a lack of social and legal protections amplify the exclusion of men and women informal waste workers. Men and women face additional and differing legal vulnerabilities based on the laws and their legal status. Most waste pickers are formerly incarcerated men. The legal risks SWPs face are even more pronounced for women, including the threat of hostility, fines, and/or arrest by the police if accompanied by their children. In the absence of legal and social protections or decent labor standards, neither men nor women working in the informal recycling sector are incentivized to formalize.

PRIVATE SECTOR

Jordanians and Egyptians comprise most formal workers in the private sector recycling value chain in Amman, with relatively lower representation of migrant workers and refugees including from Syria, Bangladesh, and Yemen. Women working in private sector recycling face many disincentives to their participation, including rigid cultural norms that deter women from working in high-risk, male-dominated sectors and contribute to high barriers to entry and limited opportunities for professional advancement; and the risk of sexual harassment in the workplace with lack of legal recourse. Two other constraints women face in the private sector, and which evidence suggests are consistent with women's experience in the recycling sector, are the gender pay gap and access to finance. These counterincentives to women's involvement are painfully evident in the fact that women are relatively absent at all levels of the formal recycling value chain – as employees, managers, technical experts, business owners, and board members. The team estimates that women comprise less than three percent of employees working in private sector recycling enterprises in GAM.⁴³

With regard to persons with disabilities, evidence suggests that they face limited opportunities for formal employment. Private sector business owners and managers explained that they prefer not to hire workers with disabilities due to the physically demanding nature of the work. This lack of opportunity may be related to social stigmas around working with the disabled.

Summary of Conclusions

Globally, gender integration in the waste management and recycling sector has been negligible. Jordan is no different. Not only are women invisible they are also absent in numbers – representing less than 5 percent of workers in both the private and the informal segments of the value chain. When women do participate in the sector, it is almost always based on a gendered division of labor, which limits women's roles in the informal sector to sorting and some waste picking, and in the formal sector to non-technical and administrative positions. A great impediment to understanding the impact of gender dynamics within the recycling sector is the complete lack of sex disaggregated data. This chronic problem plagues the SVM sector worldwide and especially at the intersection of recycling, gender, and the informal sector. Solutions facilitated by the project will require a carefully phased approach over the short, medium, and long-term that are derived from consultative processes with men, women, and marginalized waste sector workers (WSWs) and based on trust building and consensus among key stakeholders. These solutions must include official recognition of the informal sector and reforms that benefit (not punish) them for their work. Efforts to formalize must be comprehensive, multi-faceted, and address the particular needs and status of men and women. Unilateral attempts to simply register waste pickers with the Municipality to monitor and dictate their operations without offering them protections and incentives will not succeed. It is also imperative that the Activity cooperate strategically with a range of public and non-governmental organizations as well as other USAID-funded programs to support progress on these issues, and to design approaches that go beyond individual capacity building to strategically integrate institutional and individual transformation initiatives.

⁴³ KIs have been conducted with representatives from 23 companies across the value chain, representing a total of 1,208 employees of which only 31 are women (or 2.5 percent).

Highlights of Recommendations

To make progress on gender equality and social inclusion within the recycling sector, the Recycling in Jordan Activity should promote economic alternatives; policy improvements related to the informal recycling sector; support the creation of organizations for waste sector workers with women in leadership positions that also provide training, technical assistance, and organizational strengthening; improve conditions and opportunities for women, PWDs and all employees within recycling companies; and provide incentives for women to work in the sector. Interventions must address GBV, women's workload, and promote positive masculinity. The summary recommendations listed below are presented in the following order: sector-wide recommendations, informal sector, and private sector recommendations.

Sector-wide recommendations

Data Deficiency

1. Address the GESI data deficiency in SWM. The need for data-driven investments is imperative for the recycling sector as a whole, and for the advancement of women and informal WSWs therein.

Cultural Norms and Gender Roles

2. Address the recycling sector as an environmental issue and a valuable service to society. Such efforts will be an important early step for the Recycling in Jordan Activity.
3. Incorporate activities that strengthen GBV and sexual harassment awareness, prevention and reporting throughout the value chain engaging men, women, youth, and PWDs.
4. Demystify waste and recycling as masculine work, at all levels of the value chain. As more and more women seek private sector work in the face of growing unemployment in Jordan, the growth of the commercial recycling sector offers new opportunities for women.

Informal Sector Recommendations

Waste Pickers, Street Sweepers, Itinerant Waste Buyers and Scrap Dealers

5. Enhance leadership, organization, and representation among the informal recycling sector.
6. Efforts to integrate informal waste sector workers – including women, youth and PWDs – into the formal sector must engage them directly in planning and decision-making and should be done with a view toward their recognition and protection. Key steps are outlined in the full analysis.

Women and Other Marginalized Groups

7. A concerted effort must be made to engage informal women waste workers directly in project planning and decision-making to formulate solutions that are inclusive and gender sensitive.
8. Interventions involving women in the informal sector must be market-driven and require wide-ranging assistance to increase access and agency.

Private Sector Recommendations

Waste Sector Workers

9. Promote the expansion of labor standards and improvement working conditions for private sector workers, including decent wages and basic physical, social and legal protections.

Women in the Workplace

10. Create programs and partnerships that incentivize private sector firms and GAM to hire and invest in women and PWDs, and that promote gender equality, inclusion and equal opportunity in the workplace.

Women entrepreneurs

11. Identify key value chain entry-points for women, youth, and PWD entrepreneurs.
12. To help incentivize these commercial waste generators to contract with women-and youth-owned businesses.
13. Unlock access to finance for women and youth entrepreneurs by supporting enterprises in the development of business plans and loan applications and explore strategic partnerships with financial institutions.
14. Increase access to professional training opportunities for women and youth entrepreneurs.
15. Introduce gender-sensitive procurement policies and procedures.

Leadership, Representation and Organization

16. Strengthen leadership among women and youth and increase access to mentoring and networking opportunities for women and youth professionals and entrepreneurs.
17. Identify and promote women and youth role models and male allies.
18. The Activity should provide extensive gender sensitization and positive masculinities training⁴⁴ among all stakeholders and at all levels of the value chain to help women penetrate the male-dominated recycling sector network.
19. Finally, as the recycling sector matures, it is important to ensure that women are represented in leadership and decision-making positions within new sector-specific organizations that are established.

⁴⁴ Training resources related to positive masculinities can be found in Annex VI.

BACKGROUND

○ Introduction

The Recycling in Jordan Activity will work with private recycling firms, the commercial sector, the MoENV, and Greater Amman Municipality (GAM) to increase commercial sector recycling services in Amman. As part of the Activity start-up and planning efforts, the Activity team is conducting a comprehensive market systems analysis including a mapping of the recycling value chain. A gender analysis was carried out to ensure the integration of gender equality and social inclusion considerations in activity planning, implementation, and monitoring, evaluation, and learning.

The gender analysis examines the opportunities and constraints faced by women and marginalized groups at different levels of the recycling value chain, with special attention to their presence in the informal sector. The resulting recommendations will be used to inform the integration of gender equality and social inclusion consideration across the Activity's core components, in particular, efforts to expand and improve private sector-led recycling services, and to increase government support for solid waste management. Across all three Performance Objectives, the gender equality and social inclusion (GESI) component will ensure that activity design and implementation is inclusive and addresses challenges faced by vulnerable populations such as informal workers, women, youth, and people with disabilities. To this end, the Recycling in Jordan Activity will directly and indirectly contribute to advancing USAID Jordan's Development Objectives (DOs) and Intermediate Results (IRs) in accordance with the Mission's Country Development Cooperation Strategy and Results Framework (CDCS),⁴⁵ in particular:

DO 1. "Inclusive Private Sector-Led Growth":

IR 1.2 "Private Sector Capacity to Compete Advanced"

IR 1.3 "Increased women's participation in the Economy"

DO 3. "Equitable, Democratic Governance Strengthened":

IR 3.1 "Accountability and Effectiveness of Public Institutions Increased"

IR 3.3 "Rights of women and Marginalized Groups Advanced"

⁴⁵ <https://www.usaid.gov/sites/default/files/documents/CDCS-Jordan-2020-2025.pdf>

DO 5, “Agency and Leadership of Women and Youth Enhanced”

IR 5.1 “Adoption of Inclusive Social Norms Increased”

IR 5.2 “Barriers to women’s and youth participation and leadership mitigated”

IR 5.3 “Inclusive participation in Public Life Enhanced”

○ Overview of Gender equality and Women’s Economic Empowerment in Jordan

There is a confluence of factors which contribute to disparities in women’s participation in the economy and the overall wellbeing of women and girls in Jordan. These gaps hinge on structural and socio-cultural factors which limit or restrict women’s ability to aspire to and work in both formal and informal sectors. Applying the ADS 205 Gender Domains helps to illuminate the diverse factors which limit, restrict, or create opportunities for women in Jordan, from different social backgrounds, to contribute to and directly access equitable benefits from their participation in the economy.

Jordan has one of the largest gender gaps and one of the lowest rates of female labor force participation in the world. *In* the 2020 Global Gender Gap Report, the World Economic Forum ranks Jordan 138 out of 153 countries in terms of gender gaps, driven by the country’s near-bottom ranking of 145 for “economic participation and opportunity.”⁴⁶ ***Despite the gender-balanced and high rate of literacy and education among Jordanian women, the*** rate of women’s labor force participation hovers at a mere 14.04%.⁴⁷ This gap results in an estimated 21 percent loss in GDP annually or around \$8 billion USD.⁴⁸

More than 50 percent of employed women in Jordan work in the informal sector. Jordan, like many of its neighboring countries in the region, experienced a **significant expansion of the informal labor base in the last few decades.** This is largely because of the adoption of structural reform programs that deemphasize the State’s social role and aim to open up the free market. The most important mechanisms consisted of freezing and/or reducing governmental employment. This has led to key shifts in the labor force with significant direct impact on women and marginalized groups’ employment, namely: (1) an increase of informal labor to fill the gaps left by the public sector; and, (2) an increasing number of women seeking employment in the private sector, whereas the public sector has historically been the primary source of employment for women, especially in urban centers.⁴⁹ According to the latest figures from the national Department of Statistics (DOS), **only 49 percent of employed women**

⁴⁶ World Economic Forum (WEF). (2020). “[Global Gender Gap Report 2020](#).”

⁴⁷ Source: <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=JO>

⁴⁸ Morris, P., Almala, A. Garlick, M., Heyari, N., Carchidi, B., and Farrah, R.. (2020). “USAID Jordan Gender Analysis and Assessment.” (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

⁴⁹ Arab NGO Network. (2016). “[The Arab Watch Report on Economic and Social Rights – Informal Employment](#).”

work in the private sector,⁵⁰ constituting 13.6 percent of the national workforce, compared with 86 percent for men.⁵¹

Rigid cultural norms and beliefs about women’s and men’s role in society contribute to gaps in women’s economic participation and general autonomy. The concept of *sanad*, which means support, strongly influences the roles that women and men are encouraged to aspire to and play in their households and communities. Men’s *sanad* is related to their role as a breadwinner, protector, and their tribal affiliations. Women’s *sanad* are men in her family, such as a husband, brother, or father. These beliefs and perceptions about men’s and women’s appropriate roles and how men and women should relate to one another in the home, community, and workplace are mediated by other social markers including age, education, marital status, and ability.⁵²

This belief system influences power dynamics between men and women in the home and within society. At the household level, women’s **access to and control over resources**, including income, and rights tend to be mediated by men in their family. Men playing the role of ‘protector’ permit or restrict **women’s mobility and ability to interact with men outside of the family** for social or economic matters. Younger and unmarried women often face more constraints on their mobility. These restrictions on women’s mobility are based on concerns about women’s safety. While men are expected to play this role of ‘protector’ of women to prevent abuse outside the household, gender-based violence (GBV) perpetrated by male family members against women is not uncommon⁵³. Furthermore, a study on persons with disabilities in Jordan found that women with disabilities are more vulnerable and stigmatized than their male counterparts, and that refugee women with disabilities are more likely than others to suffer GBV in their displaced communities.⁵⁴

Protections and justice for women under civil law and religious and customary practices remain weak. For example, the Protection from Domestic Violence Law⁵⁵, focuses more on family reconciliation than justice for survivors of GBV.⁵⁶ Women are also treated as legal minors under the **Personal Status Law**,

⁵⁰ Department of Statistics (DOS). (2018a). “[Jobs Creation Survey for 2017](#).”

⁵¹ Business Reform Environment Facility (BRF). (2017). “[Assessment of Business Environment Reform in Jordan](#).”

⁵² Morris, P., Almala, A. Garlick, M., Heyari, N., Carchidi, B., and Farrah, R.. (2020). “USAID Jordan Gender Analysis and Assessment.” (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

⁵³ Though there are limited sources of data available on GBV in Jordan, ample statistics and information can be found in Jordan’s most recent Population and Health Survey. Refer to: Department of Statistics (DOS) and ICF. (2019). “Jordan Population and Family Health Survey 2017-18,” available at: <https://dhsprogram.com/pubs/pdf/FR346/FR346.pdf>.

⁵⁴ S. Jalal and S. Gabel. (2014). “Physical Disability, Gender, and Marriage in Jordanian Society,” *Review of Disability Studies* 10, nos. 1 & 2. <http://www.rdsjournal.org/index.php/journal/article/view/33/126>

⁵⁵ The Protection from Domestic Violence Law No. 15 of 2017 is available via the Ministry of Social Development: <http://www.mosd.gov.jo/UI/Arabic/ShowContent.aspx?ContentId=80>

⁵⁶ Morris, P., Almala, A. Garlick, M., Heyari, N., Carchidi, B., and Farrah, R.. (2020). “USAID Jordan Gender Analysis and Assessment.” (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

further reinforcing women's reliance on men, including decisions on marriage, divorce, alimony, and the guardianship of children. While concerns about women's safety outside the home are common, this concern is **not matched with civil laws criminalizing GBV in public spaces**. Within the workplace, apart from sexual violence provisions in the labor laws, laws do not provide adequate protection for women in cases of sexual abuse by coworkers, customers or in transit to work. In fact, lack of recourse for sexual harassment on public transport is a key reason cited by women to leave the workforce.⁵⁷

Cultural norms and beliefs about women's and men's roles also affect their professional aspirations and access to resources to gain employment or grow businesses. While there is relative parity between women's and men's educational attainment, men are more likely to use their credentials to seek and obtain formal employment. This difference in women's and men's employment seeking behavior is reinforced by perceptions that men should be the breadwinner and women should focus on unpaid domestic responsibilities. Even if women do enter into the workforce, there is an expectation they will maintain their roles and responsibilities in the household (e.g., cooking, cleaning, and caring for children or elderly).

Additionally, very few women compared to men own land or property, which can be leveraged to start a business or use as collateral to obtain loans. (According to DOS 2018 data, for example, only 16.6 percent of women own land, compared with 48.8 percent of men.) Perceptions that women 'have no need' to own these assets or at least should not own more than their husband or male relatives contributes to this inequality. As a result, it is more common for assets to be jointly owned by husbands and wives.

Women are constrained from accessing bank loans due to restrictive laws, policies, and institutional practices. This hampers women's ability to make autonomous decisions about their lives and in pursuit of entrepreneurial goals. Less than 20 percent of all bank loans in Jordan are drawn by women, amounting to a mere 16 percent of total loans from commercial banks; whereas men account for 80.4 percent of all borrowers, accounting for 83 percent of total commercial loans.⁵⁸ This disparity is in part linked to strict and discriminatory bank practices. Banks require not only proof of monthly salary or fixed income to access loans; property ownership, full sponsorship, and a statement of accounts are often required to guarantee a loan –which few women have access to. Even if women can meet these requirements, they often face discrimination from banks demanding that loans be taken out jointly with their husband or a male relative.⁵⁹ This is yet another institutional practice which reinforces women's dependence on men to pursue economic goals. (Refer to Box 4 in Section 4.1.3 for a firsthand account of such experiences as conveyed by a female entrepreneur.)

⁵⁷ Alaloul, S. et al., (2018). "Gender in Public Transportation: A Perspective of Women Users of Public Transportation," SADAQA.

⁵⁸ DOS [Jordan], (2018a). "Gender Statistics: Economic Empowerment." http://www.dos.gov.jo/dos_home_a/main/population/gender/eco/2017/10.pdf

⁵⁹ Morris, P., Almala, A. Garlick, M., Heyari, N., Carchidi, B., and Farrah, R.. (2020). "USAID Jordan Gender Analysis and Assessment." (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

Legal restrictions and institutional practices limit women's employment options and access to benefits. Labor laws do not take into account the differential needs of women and men and tend to be “protectionist” in nature, reflecting cultural norms and beliefs noted above. For example, labor laws limit the type of work or times of day that women are authorized to work. There is also a lack of accountability mechanisms to monitor discriminatory behavior. Informal workers, including men and women, do not benefit from social protection and social security.⁶⁰

1.3 Recycling and Social Inclusion in Greater Amman

There are many competing forces impacting the recycling sector in Jordan. Rapid population growth coupled with ongoing economic decline and rising unemployment is leading more people to seek informal work. Urban centers are generating more waste than out-resourced municipal systems can handle. Meanwhile, global forces – notably dropping oil prices, the pandemic, and China's waste ban – have diminished the demand for virgin plastics and other recyclable materials, constraining growth of the recycling sector. In GAM, these impacts have been felt most profoundly by the informal sector, who experienced the additional closure of al-Ghabawi landfill to waste picking, thereby cutting off thousands of waste pickers and their families from their immediate livelihood. Some of those picking at the landfill now pick on the street, while others began picking outside of GAM, in the nearby city of Irbid where the population is quickly growing thus generating increasing amounts of waste.

In GAM and across Jordan, the most marginalized men and women work in the informal recycling sector, though women participate in significantly fewer numbers. They often work with family members, picking, collecting, and sorting waste – from hazardous construction waste to medical waste and organic waste. In doing so, they fill a critical function both in the recycling value chain and in municipal SWM service delivery. Since there is no separation at source in GAM, almost all waste ends up in the landfill. (Across Jordan, only six to 10 percent of waste is recycled.) Despite their critical role, informal waste sector workers (WSWs) remain unrecognized by the government and by GAM, both in the overarching legal code and in the legal framework for municipal solid waste management (MSWM). This reinforces their marginalization and vulnerability, placing them at odds with local authorities whose mandate it is to enforce laws that require cleanliness in the streets and forbid informal waste picking. Indeed, prior efforts by GAM to organize the informal waste pickers have failed, revealing a disconnect between SWM policy and the reality of the waste sector that is commonplace globally.

PURPOSE AND QUESTIONS

a. Purpose

The purpose of this activity-level gender analysis is to identify and assess inequalities, constraints and opportunities within the recycling sector in GAM and to offer conclusions and recommendations to inform the Recycling in Jordan Activity. The analysis examines GESI considerations in the context of three key drivers of the Recycling in Jordan Activity, namely to:

⁶⁰ *Ibid.*

- Expand and improve private sector-led recycling services
- Generate greater demand for and utilization of recycling services within the Amman commercial sector
- Increase local and national government support for solid waste management

The analysis findings and recommendations will be used to inform the development of an Activity-level GESI Strategy and Action Plan. This plan will guide the integration of GESI considerations in activities across all levels of the recycling value chain in Amman, with a focus on the informal sector. To further reinforce the strategy, the GESI team will design and deliver a GESI Training for activity and implementing partner staff. (Refer to Gender Analysis Scope in Annex I.)

b. Questions

This gender analysis will examine the gender equality and social inclusion issues impacting the recycling sector in the GAM, and how they differ for women and men (including disabled persons and/or other vulnerable groups) working in different roles throughout the recycling value chain, with a focus on the informal sector. To better understand and address the GESI-based constraints and opportunities that will affect the achievement of the Recycling in Jordan Activity objectives, the analysis will focus specifically on three key questions:

1. What are the requirements and barriers to entry and access for men's and women's participation at different levels of the recycling value chain? Are these barriers implicit or explicit? How are these different for women vs. men working in different roles within the value chain?
2. What are the differences in men's and women's ability to access and control the benefits derived from participation in the sector?
3. What are the barriers and differences in men's and women's ability to meaningfully contribute to decisions affecting participation, benefits, and the stability or growth of the recycling sector?

DESIGN, METHOD AND LIMITATIONS

c. Design

The analysis assesses gender dimensions across the recycling value chain, with a focus on the informal sector. Based on an in-depth literature review and key informant interviews (KII), this analysis provides an overview of the roles and status of women and men in the recycling sector in Amman, Jordan, and identifies gender disparities therein. Guided by USAID's [Automated Directives Systems \(ADS\) 205](#), the research questions were designed to identify, prioritize, and analyze relevant issues related to women's economic empowerment along the five gender analysis domains of:

- laws, policies and regulations
- cultural norms and beliefs
- gender roles, responsibilities, and time use
- access to and control over assets and resources
- patterns of power and decision-making

The team tracked literature review findings to identify gaps in data and information to inform the development of interview guides for the KIIs. Due to constraints detailed in **3.2 Limitations** below, this analysis is based on a limited number of KIIs with men and women working in the informal recycling sector. To proceed within the original timeframe or completion of this report, the team identified and interviewed key individuals that have worked with this target group directly or indirectly through the communities in which they live. These informants included local solid waste management (SWM) and recycling experts and a wide range of actors across the recycling value chain: service providers, owners of small, medium- and large-scale enterprises; male and female waste pickers; scrap dealers; women professionals and women business owners; as well as government officials. By drawing on the experience and insights of this mix of individuals, the team was able to gain a more robust understanding of the context and constraints from a gender perspective, while defining gaps in knowledge and research.

d. Method

The gender analysis draws on a comprehensive literature review and KIIs with recycling sector actors operating within GAM. The literature review and KIIs were conducted during November and December 2020, though impeded by notable limitations in data and fieldwork (as detailed in 2.2 and 2.3 below). The literature review includes country-specific reports and data resources from local and international non-governmental organizations (NGO), donor agencies, as well as national government agencies, focusing on gender, the informal sector, and the SWM and recycling sector in Jordan, as well as global and regional studies focusing on gender in SWM and recycling.

The gender analysis team conducted structured and semi-structured interviews in-person and remotely. A total of 33 KIIs were conducted with male and female actors across the value chain including informal waste pickers and the owners and employees of micro-, small-, medium-, and large-size enterprises (brokers, scrap dealers, SWM service providers, plastics companies and large-scale processors). In addition, the team interviewed two Jordanian SWM and recycling sector experts as well as the former head of the gender statistics division at the national DOS. (For additional details regarding the KIIs refer to Table 1. For a complete list of KIIs conducted, refer to Annex III.) The sample size was determined in consultation with project leadership and adjusted per the limitations detailed below. The team analyzed the data by source, gender dimension, and area of inquiry.

Table 1: Scope of Field Research and Data Collection

Information and Data Collection Method	Scope
Key Informant Interviews	

Information and Data Collection Method	Scope
	<p>33 informants were interviewed including:</p> <ul style="list-style-type: none"> • Three female and 21 male private sector actors (employees and business owners) • Six waste pickers (two females; four males) • Three subject-matter experts (two SWM; one gender)
Literature Review	52 documents, articles, reports and online data resources were reviewed. (Refer to Annex II, Literature Review)

e. Limitations

i. Fieldwork

Originally, the gender analysis team had planned to conduct 50 interviews (a combination of focus group and KIIs) with informal sector actors during the month of November 2020, in addition to interviews with various actors along the value chain. Regarding the informal sector interviews, this plan was modified to accommodate two key constraints that arose during the course of fieldwork, namely: (1) the lockdown that took place in Jordan during November 10 through 15, 2020 due to the pandemic inhibited movement outside the home; and (2) the research team's in-country gender equality and social inclusion specialist contracted COVID-19. These factors specifically constrained the team's ability to conduct fieldwork and collect primary data from informal recycling sector actors, since those interviews must be conducted in-person.

ii. Data

Little to no data or descriptive statistics exist about women working in the recycling sector in Jordan, in general, and in the informal sector and in Amman, in particular. Studies and experts worldwide repeatedly cite the absence of data as a critical impediment to the sector; and particularly the absence of sex-disaggregated data. Jordan is no exception.

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

f. Findings

A number of findings are common across both the formal and informal sectors that comparatively provide important context for understanding the constraints and opportunities that women and men

face across the value chain. These cross-cutting findings will be presented first, followed by detailed findings for the informal sector and the private sector.

i. The Recycling Sector in Amman: Cross-cutting Themes

DATA DEFICIENCY

The extremely limited availability of sector-specific data and statistics impedes planning and consensus within the recycling sector, especially the integration of gender and social inclusion considerations. A key problem cited by SWM sector experts in Jordan – and in developing countries worldwide – is the chronic lack of available sector-specific data and information.⁶¹ This contributes to a lack of consensus on appropriate policies, interventions and solutions to challenges and a lack of prioritization of SWM and recycling among the municipal activities. To date, the single source of data⁶² on the informal recycling sector in Amman is derived from a socio-economic survey of waste-picking activities conducted in 2015 during the development of Jordan’s national municipal solid waste management (MSWM) Strategy.⁶³ Noticeably absent from this report is any mention of women (Refer to Box1).

The absence of data is especially pronounced at the intersection of gender and informal sector. Most national reports do not provide sufficient information on the gender dimensions of informal labor.⁶⁴ It is important to highlight that the research team found that **not a single report has been written focusing on gender within the informal recycling sector in Amman.** A handful of donor reports exist regarding programs outside of GAM, however, they lack gender-specific data and tend to focus on donor interventions in refugee camps and around landfills and sorting centers – a demographic and a context that is not applicable to women recyclers in GAM.

⁶¹ Aidis, R. and D. Khaled. (2019). “Women’s Economic Empowerment and Equality Gender Analysis of the Waste Management and Recycling Sector,” USAID. https://pdf.usaid.gov/pdf_docs/PA00TQSH.pdf

⁶² This data is available in the following report: Kreditanstalt für Wiederaufbau (KfW). (2017). “Evaluation of the Recycling Markets and Market Options for Secondary Raw Materials and Products Derived from Waste.”

⁶³ The gender analysis team has interviewed the lead local consultants involved in the survey to vet the current validity of these numbers and to corroborate findings.

⁶⁴ Arab NGO Network for Development (ed.). (2016). “The Arab Watch Report on Economic and Social Rights – Informal Employment.” <https://www.fordfoundation.org/media/4555/arab-watch-on-economic-and-social-rights-2016-informal-labor.pdf>

Box 1: The Gender Data Deficiency:

A Chronic Challenge for Gender Equality and Social Inclusion in Jordan

“Despite making progress on the collection of sex-disaggregated economic data at the national level, significant gaps in gender statistics remain” notes Manal Sweidan, the previous head of the Gender Statistics Division at the national Department of Statistics. “The lack of gender-related statistics is especially apparent in the informal sector.” This is due to the absence of a unified definition and clear legal framework for the informal sector at the national level, “which makes it very hard to design a survey tool to collect the required data,” explains Ms. Sweidan.

Ms. Sweidan also underscored the significant gap in GBV data at the national level, pointing to “a persistent need for statistics about violence against women victims and survivors.” She also highlighted important intersections between gender and entrepreneurship, and gender and the environment, again stating the significant data gaps in these areas, which Ms. Sweidan stressed are “essential for effective national planning

CULTURAL NORMS AND GENDER ROLES

The social stigma around waste and recycling inhibits entry and activity for women and men in both the formal and informal recycling sectors. As is common worldwide, there is a significant social stigma around waste in Jordan, wherein the work and the people associated with it are considered “dirty” and are often shunned upon by the public and not valued by society. Within the informal sector this stigma manifests in the form of verbal and sometimes physical harassment and public shaming of waste pickers, especially women, by the local community and authorities. Some of the street sweepers noted their heightened awareness of this phenomena and said that they do not want members of their family – especially their female children – to work in the sector. The street sweepers see their work as a “sacrifice” for the betterment of their families. This situation is different, however, among the Dom community, for whom waste picking is their primary livelihood. There is a general acceptance that the entire family – including women and children – will work in waste picking. It is not uncommon to see Dom children playing in and around waste mounds near their homes. (For further details regarding the Dom, refer to section 4.1.3 below.)

Another obstacle impeding women’s entry and advancement in the sector is rigid cultural norms that inhibit women from engaging men they don’t know (namely outside of their family) – an intractable obstacle in the male-dominated SWM sector. All GAM field supervisors and street sweepers, scrap dealers and itinerant buyers are men; together they control all access to waste, in effect keeping the key avenues to business closed for women. Likewise, in the private sector, businesses are owned almost exclusively by men and women’s representation is minimal. Indeed, almost all men interviewed at all

levels of the value chain indicated that they had never worked directly with women waste pickers, sorters or scrap dealers, and that women have little to no presence in the sector.⁶⁵

A gendered division of labor is pervasive throughout the recycling value chain in both the informal and private sectors and inhibits women’s advancement as both entrepreneurs and employees. While men work in all positions in the sector, women’s participation is constrained by cultural norms and gender roles, which deter women from working in male-dominated sectors and specifically, in sectors perceived to be unsafe⁶⁶ such as waste management. Within private sector companies, the few positions that women do occupy tend to focus on human resources (HR), administration, accounting, and quality assurance. While one informant noted the limited presence of women engineers in some large businesses, she explained that their responsibilities are typically restricted to office-related work because it is perceived to be unsafe and inappropriate for women to work in the field and to interact directly with men waste sector workers (WSWs). These gendered roles and perceptions limit opportunities for women’s professional advancement, especially in technical positions, and thus the opportunity to earn greater income.

Women are constrained from working in jobs which require them to travel far from the home for long periods of time. Women do the bulk of household related work, including childcare requiring them to be close to home. Men who tend to have fewer responsibilities in the home are more likely to work in the streets and in commercial areas taking on various roles across the informal value chain – from collecting and brokering to buying and pre-processing. These gendered divisions of labor have been observed in the informal recycling sector value chain across Latin America, Africa, the Middle East and Asia.

Box 2: Perceptions on women’s work in the sector

“Families won’t approve of women working in this sector, and because of the locations. It is not safe. It’s dangerous around the landfill.”

The gendered division of labor evident in Jordan’s informal recycling sector is consistent with what the team and studies⁶⁷ have observed regionally and globally: **Women are represented disproportionately in the lower segment of the value chain primarily sorting recyclables**, because women are perceived, by men and women, as having the skills required to do this work. These include, being more patient, focused and detail-oriented than men, and thus better at the tedious work

of separating and sorting different types and categories of waste. Because of the constant and direct

⁶⁵ Only two managers – one from a paper and cardboard recycling company and the other a service provider – mentioned that they had worked with a woman (Umm Yusuf) who used to be an informal supplier for them during 2004 to 2010. She has since retired and passed the business on to her two sons. Otherwise, the only other instances of men working with women is among family members in the informal sector, namely husbands and wives.

⁶⁶ Women in Jordan are still overly concentrated in sectors perceived as safe and “fitting women’s needs,” such as education, care, and health sectors. Source: Morris, P., et al. (2020). “USAID/Jordan Gender Analysis and Assessment.” (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

⁶⁷ Aidis, R. and D. Khaled. (2019). “Women’s Economic Empowerment and Equality Gender Analysis of the Waste Management and Recycling Sector,” USAID. https://pdf.usaid.gov/pdf_docs/PA00TQSH.pdf

contact with waste (including, medical and construction waste), women's work is the most hazardous, yet it is the least valued and least remunerated. Men, on the other hand, do the "heavy lifting" (collecting, hauling, transporting, and weighing) and handle the business (buying, selling, negotiating, and networking). This work presents physical risks for men as well, though it generates more income.

Another constraint faced by women in both the private and informal sectors is **the real and perceived threat of GBV and sexual harassment, which deters both women's entry and advancement in the sector and reinforces gendered roles and divisions of labor at work.** Key informants said this is a common concern at all levels of the sector.⁶⁸ Multiple men and women said that "women must be kept safe," and these security concerns are a common reason why women do not pursue work in the sector. The Chairwoman of Tadweer, GAM's sole materials recovery facility (MRF), stated that the facility's location across from the al-Ghabawi landfill was the company's primary obstacle to recruiting women professionals because it is deemed unsafe. (Refer to Box 2) Despite being a woman-run enterprise (and despite the owner's success recruiting women into other sectors), to date, Tadweer employs only two women: one in accounting and the other leading human resources.⁶⁹

Furthermore, anecdotal evidence together with several studies of gender in Jordan, suggest that women working in the private sector have little protections or recourse against sexual harassment in the workplace. A recent USAID global gender analysis of the recycling sector found that most private sector enterprises (regardless of size) do not have policies in place to protect against or provide recourse for on-the-job sexual harassment of female workers.⁷⁰ **This inhibits women's ability to engage in other functions in the value chain, including higher levels of management and technical responsibility.** Within the informal sector, complacency toward violence against women, especially poor and marginalized women, and the disabled, coupled with a lack of protections, results in their increased vulnerability and inhibits their ability to take on new roles in the value chain and advance their economic status.

In Jordan, **apart from sexual violence provisions in the labor laws, which have been criticized for not providing adequate protection for women in cases of sexual abuse by coworkers or customers, no other laws criminalize GBV in public spaces.** Moreover, harmful discriminatory practices against women who report GBV or try to escape violence continue. Also, the **law does not provide protection for vulnerable groups**, including refugees, migrants, and persons with disabilities (PWDs).⁷¹ The compound risks faced by women's intersecting identities with these vulnerable groups is of grave concern. Recent

⁶⁸ It is important to note that due to the current limitations of field study (detailed in section 2.2) the research time was not able to obtain primary data on this issue, and no secondary data is available.

⁶⁹ While Tadweer offers free transportation to its workers and other benefits such as meals, this does not appear to have served as sufficient incentive to attract more women to work at the facility.

⁷⁰ Aidis, R. and D. Khaled. (2019). "Women's Economic Empowerment and Equality Gender Analysis of the Waste Management and Recycling Sector," USAID. https://pdf.usaid.gov/pdf_docs/PA00TQSH.pdf

⁷¹ Morris, P., et al. (2020). "USAID/Jordan Gender Analysis and Assessment." (USAID). https://pdf.usaid.gov/pdf_docs/PA00WDSP.pdf

studies of PWDs in Jordan affirm that women with disabilities are more vulnerable and stigmatized than their male counterparts; and that refugee women with disabilities are more likely than others to experience GBV in their displaced communities.⁷² Furthermore, the wives of men with disabilities were reported as particularly affected by domestic violence. Men and boys with intellectual disabilities are also at elevated risk of sexual violence.”⁷³

Additional GBV-related risks include the lack of access to sanitation facilities, which exposes women to increased risk of sexual assault and abuse in the informal sector and requires further study. The high prevalence of sexual harassment in public transportation⁷⁴ in Jordan presents another constraint for working women, since they do not have access to personal vehicles for mobility throughout the city. In addition, women’s poor economic status and the social stigma around waste have a compound effect, subjecting women street waste pickers (SWPs) to harassment and verbal abuse in the streets at the hand of the public and local authorities. To mitigate such instances, women often work early in the morning and sometimes late at night to avoid being in the street during the busy workday to keep away from public scrutiny and to minimize contact with male SWPs.

This important topic requires additional research to understand the prevalence and context of harassment and GBV across the value chain in GAM, and how this may vary among different groups and their intersecting identities (e.g., women, youth, disabled persons, Dom, Sabaawiya, women-headed households, etc.).

LEADERSHIP, REPRESENTATION AND ORGANIZATION

Neither private sector nor informal sector workers are involved in any kind of collective organizing or bargaining in the SWM and recycling sector. At the national and municipal levels, there are no cooperatives, organizations, unions, or business associations representing the interests of informal workers or professionals (men and women) working in the recycling sector. In fact, only five percent of all workers in Jordan are organized. This is due to policies which prohibit trade union organization and the right to collective bargaining, contributing to a significant decline in working conditions and low wages across the private and informal sectors in Jordan.⁷⁵

In addition, **women lack leadership and representation throughout the value chain.** Research revealed only two women-owned private sector businesses exist in GAM: Tadweer (a medium-size MRF) and

⁷² S. Jalal and S. Gabel. (2014). “Physical Disability, Gender, and Marriage in Jordanian Society.” Review of Disability Studies 10, nos. 1 & 2. <http://www.rdsjournal.org/index.php/journal/article/view/33/126>

⁷³ Institute of Development Studies, (2018). “The Current Situation of Persons with Disabilities in Jordan.” <https://assets.publishing.service/>

⁷⁴ Alaloul, S., et al. (2018). “Gender in Public Transportation: A Perspective of Women Users of Public Transportation,” SADAQA.

⁷⁵ Arab NGO Network for Development (ed.). (2016). “The Arab Watch Report on Economic and Social Rights – Informal Employment.” <https://www.fordfoundation.org/media/4555/arab-watch-on-economic-and-social-rights-2016-informal-labor.pdf>

Green Future for Sustainable Solutions (a small-scale recycling company). (For additional details regarding these companies, please refer to the private sector findings below.) In addition, two women hold leadership and senior management positions in one of the medium-size SWM service provider companies (Zawati Brothers Co.), one of whom is a Deputy General Manager and the other serves as Contracts and Customers Manager. No women were found to hold technical positions related to SWM and recycling, though anecdotal evidence suggests they exist. (Refer to additional details in private sector findings below.) With the single notable exception of Ms. Dina Haddad, owner and chairwoman of Tadweer, **women do not hold positions of influence or power in the recycling sector throughout the private, public and informal sectors.**

ii. Informal Sector Recycling

WASTE PICKERS, STREET SWEEPERS, ITINERANT WASTE BROKERS AND SCRAP DEALERS

The national Municipal Solid Waste Management Strategy divides waste picking activities into three categories, only the first of which is possible in GAM since the closing of al-Ghabawi landfill:

- Informal waste picking activities at the city level
- Informal waste picking activities at the dumpsite level
- Formal waste picking activities at the dumpsite level

At the base of the recycling value chain in GAM, street waste pickers (SWP) and itinerant waste brokers fulfill the first step in resource recovery once the recyclables enter the city's waste cycle. They recover plastics, cardboard, metals, aluminum, copper, and even bread.⁷⁶ These pickers sell the collected recyclables to scrap dealers, usually as (pre-sorted) mixed waste. (Details regarding income are presented below.)

SWM experts interviewed estimate a **minimum of 3,000 and a maximum of 5,000 men work as informal SWPs in GAM.**⁷⁷ **With only 100 to 200 female SWPs in total, women are almost entirely absent from this level of the value chain.** The exact number of SWPs fluctuates throughout the year depending on both seasonal variations in the demand for various recyclable materials as well as the prevailing socio-economic conditions within Jordan. During the summer, the number of SWPs increases due to the heightened demand for waste by scrap dealers and certain industries, such as agriculture and construction. For example, construction projects increase during the summer during which pickers anticipate the increased generation of higher value construction waste, which in turn contributes to an increase in the price of this recycled waste (e.g., metals, steel, and certain types of plastic). Much of the

⁷⁶ Some informal waste pickers, namely women and children from among the Dom community, collect leftover bread from large households and restaurants to dry and use as feed for their own livestock or to sell in small quantities to small-scale farmers. The bread is sold for approximately 1.5 JOD per bag, sometimes by the women selling nearby their homes, and sometimes by their husbands or male counterparts who transport and sell the bread to local farmers or livestock owners.

⁷⁷ For comparison, 2015, the number of the waste pickers working informally in Amman and Zarqa combined was estimated to be between 2000 to 3000. Source: KfW. (2017)."

waste picking in GAM occurs either in the east and south of Amman where large construction projects are underway; or downtown where greater quantities of high value commercial mixed waste are regularly available.

In GAM, the vast majority of waste pickers are Jordanians with smaller numbers of Palestinians and Egyptians. Relatively few Syrian refugees have been engaged in waste picking activities in GAM. This is in part due to the well-established and territorial nature of the informal waste-picking network in GAM from which they are excluded.

Street waste pickers can be divided into two groups: those employed as municipal streets sweepers and those who operate independently as itinerant waste collectors. Street sweepers have greater access to resources – both in terms of quality and quantity – on account of their formal status and their relationships with shop owners. The street sweepers – *none of whom are women* – are formally employed by GAM and given a salary, basic equipment and protective gear, and basic social protections (including healthcare, health insurance and social security). They collect and sell recyclables informally as a source of secondary income. Ongoing **tension between the two groups** has emerged due to two reasons: (1) competition over access to recyclables, and (2) those not employed as street sweepers by GAM tend to sort waste in the street (immediately around waste bins) and leave undesirable waste on the ground afterward, creating more work for the street sweepers. At times, these waste pickers damage the waste containers, setting them on fire to remove their metal lids.

Men SWPs collect recyclables in the street using pushcarts and pickup trucks, working on main roads and in commercial areas where they have access to greater quantities of the highest value waste. They collect recyclables from bins, dumpsters, open dumpsites and directly from shops and businesses, rarely using protective gear. Men SWPs work during the afternoon toward the end of the business day and at the end of the work week, i.e., Thursdays. This is strategic. During these times of the day and week they can access the greatest amount and highest value waste materials.

Women, on the other hand, avoid the busy main streets and commercial areas, preferring to work in neighborhoods and secondary streets, where they have access to lower-quality waste streams than men. Typically, women SWPs collect mixed plastics, aluminum, and bread from street-side bins and sometimes directly from households. They often work early in the morning or late at night to avoid public scrutiny and to minimize chances of interaction and/or harassment from residents, other male waste pickers, police, and GAM supervisors. Women SWPs do not own vehicles or trucks. Typically, they work on foot limited to collecting the amount of waste that they can carry on their backs or in some cases



A couple works together to collect waste at a client site for woman-owned social enterprise, Green Future for Sustainable Development.

Photo credit: Green Future for Sustainable Development

a pushcart. Most women waste pickers are involved in waste picking via their husbands, assisting with sorting and small-scale waste picking around their homes. Some of them have their own small networks – working with other women who collect and sell small quantities of recyclables to them at their homes.

As a result of these gendered roles and power relations, **women street waste pickers lack access to higher quality and quantity of recyclables compared with men, impeding their ability to compete at this level of the value chain and inhibiting their upward mobility.** Since scrap dealers are interested in large amounts of high-quality waste in order to maximize their already small profit margins (estimated to be 5 Jordanian Dinar (JOD) per ton), this is a persistent obstacle for women (especially those working independently of a husband or male relative).



Scrap dealers buy electronic waste and scrap metal from informal waste pickers and dismantle devices to extract and sell recyclable parts.

Informal waste picking is a well-organized network-driven activity based on extensive informal arrangements controlling access to the most in-demand waste. These networks are entirely male dominated thus posing a key barrier to entry and advancement for women – and newcomers, in general - throughout the informal levels of the value chain. The waste picking ecosystem consists of extensive informal arrangements driven by personal and familial relationships that dictate access to waste in different parts of the municipality. SWM experts described a kind of informal “zoning” of waste picking activities typically led by a small group of lead SWPs. These leaders each oversee a group of 20 to 30 SWPs, controlling who can pick, where, and when – knowing which areas of the city generate the various streams of waste (in terms of both quantity and quality) and when to find it. This is an important dimension of supply-demand within the recycling value chain because it allows SWPs to better respond to requests

from scrap dealers and itinerant waste brokers for specific types of waste at different times of the year based on market demand.⁷⁸ In some cases, scrap dealers will give cash advance payments to SWPs based on informal agreements to procure a certain amount of a specific type of waste for a fixed price. The SWPs work in tandem with other waste pickers and/or itinerant waste brokers who own pickup trucks to transport the waste – in effect developing informal collection routes. Itinerant waste brokers

⁷⁸ According to the latest data available, approximately 400 – 800 itinerant waste brokers operate in Amman and Zarqa, in addition to 250-350 big scrap dealers and waste brokers who operate in Amman, Zarqa, and Sahab. Source: KfW. (2017).

were found to be exclusively male; their purchasing power constrained mainly by their cash-on-hand and the loading capacity of their vehicles.

In the absence of social and legal protections, this network of relationships is critical to SWPs' ability to maximize profits and minimize risks. However, such networks will not provide women with engagement opportunities due to the male-dominated nature of these networks as well as the prevailing attitudes/gender norms among other key stakeholders (the authorities, shop owners, etc.). **The system offers an informal type of job security, guaranteeing access to high value waste streams and ensuring that newcomers from "outside" the system (or the city) cannot pick in areas designated to other SWPs.** The system also affords a semblance of recognition of the SWPs by the local authorities, shop owners, and businesses who know the individuals in charge and rely on their services to keep the streets and the areas around their businesses clean and their waste bins empty.⁷⁹ **This tacit approval consequently helps to mitigate the threat of harassment or arrest** faced by these SWPs. In essence, this network of relationships between the SWPs and the business owners, GAM authorities (namely, GAM field supervisors and the police), and municipal waste workers (i.e., the street sweepers, truck drivers and loaders) is essential for operating successfully as a SWP in GAM. **Women are absent from this network entirely, inhibiting their ability to advance through the informal value chain.**

The average income for waste pickers is estimated to range between 10 to 15 JOD per day (or 350 to 500 JOD per month), depending on whether or not they have access to a pickup truck to haul and sell larger volumes of waste.⁸⁰ Families who can afford not to sell daily and have the space, in or around their homes, for storage, may collect and store recyclables to sell at the end of week when prices are higher. **In terms of pricing, men SWPs are quite knowledgeable of the market value of the different types of waste** – information gained through a combination of networking and accessing global commodity prices via their smart phones.

Though women SWPs also have access to smartphones, they reportedly do not have the same knowledge regarding pricing and are not incentivized to pursue such information since they are not involved in sales and rarely receive direct remuneration. With almost no exception, women are unable to engage in sales or any activities higher up the informal value chain, because of cultural norms which dissuade women from engaging directly with men outside of their family. Almost all women working informally do so through their husbands or other familial male counterparts, who handle all hauling, negotiation, and sales. As a result, women do not receive direct compensation for their work. Notable exceptions exist, namely among women-headed households. (Refer to 4.1.2 for further details regarding female-headed households.) These women may sell their recyclables directly to scrap dealers, but even

⁷⁹ SWPs fulfill an important service delivery gap for shop owners who generate a lot waste toward the end of the business day, after GAM SWM services are no longer in operation. In order to comply with municipal requirements that their waste is collected and garbage bins emptied at least once per day, these businesses often have verbal agreements with specific SWPs to collect their waste at the end of the business day.

⁸⁰ These average earnings were confirmed by SWM sector experts and complement findings from the most recent (2015) socio-economic survey of the informal recycling sector in Jordan, the findings of which are presented in the 2017 KfW report, which remains the only source of data on the informal recycling sector in Jordan.

in this instance, the woman does not deal with the scrap dealer directly; instead, she hires a male waste picker with a pickup truck (someone she typically has an informal arrangement with) to transport the recyclables and sell on her behalf. Anecdotal data suggests that these women are not being paid equally to their male counterparts, consistent with the gender pay gap in Jordan.

SORTERS

Due to the constraints and risks women face picking in the streets, **most women in the informal recycling sector work almost exclusively as sorters, taking on the most high-risk, under-paid and menial work in the recycling chain.** Sector experts estimate that approximately **300-600 women** work as sorters in GAM, the majority of whom are the **wives of GAM street sweepers**. They work in conjunction with their husbands and/or other male family members, with the men collecting waste and transporting it to their homes where their wives (sometimes with the help of their children) sort. Without any form of protective gear or equipment, the women and children sift through all types of hazardous waste (including medical waste) to extract recyclables for their husbands and fathers to sell, often discarding leftover waste near their homes, contributing to poor sanitary conditions within their community and exposing children to additional health hazards.

Consistent with the experience of women globally, **women sorters and waste pickers in GAM tend to be overburdened and time-poor, limiting their ability to leverage equal economic opportunity and possibly inhibiting their desire to formalize.** Despite difficult working conditions, women sorters in Amman may prefer to remain informal for the following key reasons: **flexibility of work hours and the freedom to work from home – sorting recyclables – where they can simultaneously care for their children and remove themselves from the threat of harassment and public scrutiny associated with working in the streets.** These constraints and risks are notably pronounced for divorced and widowed women, who are at greater risk of harassment, more economically vulnerable, and shoulder a greater burden to earn an income while simultaneously caring for children and/or other family members. (Refer to the following section for additional details regarding female-headed households.) Globally, many recycling-related interventions focus on the formalization of informal waste pickers and collectors as an advancement toward securing worker's rights and better working conditions. These efforts, however, can be undesirable by women for the reasons stated above and because formalization efforts tend to disregard their specific needs and circumstances.

THE INTERSECTIONAL IDENTITIES OF WOMEN AND OTHER MARGINALIZED VALUE CHAIN ACTORS

As noted previously, no data exists regarding gender and the informal recycling sector in GAM. SWM experts with longstanding experience in the sector reported that a small number (approximately 10 to 15 percent) of women informal waste workers are Jordanian. They reside and work mostly in Ein El Basha, Sahab, Quwismeh, and Ras El Ain in GAM, and in nearby Rusaifeh. The women of the Dom (or Nawar) community (refer below) are estimated to comprise the majority (30 to 40 percent) of women working informally, followed by the *Sabaawiya* (20 to 30%) who work mostly in Southern and Eastern Amman. Few Syrians and refugees work in the sector because they are not part of the existing networks

that informally organize almost all waste-picking and recycling activities GAM. They do not seek entry into these roles to avoid potential conflict with the existing WSWs.

Among the few women waste pickers in Amman, some are members of the “Dom” community. More research is required to understand the approximate level of representation of Dom people among women waste pickers. The Dom are a quasi-nomadic group and typically live in informal settlements on state-owned lands where they face conflict and the threat of eviction from local authorities. They have no access to public services, including water or sanitation, education, healthcare or social protections. **Waste picking is the primary source of income for the Dom community.**

A gendered division of labor is prevalent among the Dom, with women and children responsible for waste picking and pre-sorting, while men take on the role of picking, hauling, and selling. Evidence suggests that since men oversee sales, **the income generated through recycling is typically under the control of the households headed by men.** Whereas Dom men work in the city streets using push carts and pickup trucks; Dom women tend to work in **and around their homes** in small groups with other family members. Studies of waste pickers in other countries suggest that men and women work together for different reasons. Men prefer to work together to increase productivity, while women tend to work together for security and mutual support.⁸¹ The women work on foot and do not have access to vehicles to collect and transport larger volumes and/or heavier amounts of waste. In addition to sorting, cultural norms dictate that they are expected to simultaneously fulfill childcare and household duties.

Another marginalized group working in the informal recycling sector in GAM are the “Sabaawiya.” This is a group of Palestinians – originally refugees – who have resided in Jordan for many decades and enjoy basic citizenship rights. They tend to live in the southern and eastern regions of Amman, in sub-standard conditions within informal settlements. While preliminary evidence suggests that the Sabaawiya do participate in the informal recycling chain, very little information and no data is available about the group in general, or their role in the recycling sector, requiring further investigation.

Among all women SWPs, the most vulnerable are female-headed households, mostly divorced or widowed women who turn to waste picking as a source of secondary income to supplement social security benefits.⁸² Unlike their other female counterparts, these SWPs work far from their homes in communities where they are not known in order to avoid social scrutiny, lacking the additional protections (or sanad) provided by a male counterpart SWP (e.g., a husband, brother or father). They also work early in the morning to minimize chances of harassment and engagement with authorities and the public. The women sell their collected recyclables to male waste pickers who, in turn, sell the material to itinerant waste brokers or informal scrap dealers, all of whom are male. Like their female SWP counterparts, rarely do such women SWPs sell directly to the waste brokers or scrap dealers. Experts estimate that such women generate a mere one to two JOD per day collecting approximately 5 kilos of mixed plastic waste, working on foot using a sack and no protective gear. In the absence of

⁸¹ Riofrío, G. and T. Cabrera. (2012). “Trabajadoras por la ciudad,” Centro de Estudios y Promoción del Desarrollo (DESCO). <http://www.desco.org.pe/trabajadoras-por-la-ciudad>

⁸² The social security benefit for widows is relatively small and can be attributed to increasing vulnerability for poor widows and pushing them into informal employment.

childcare, some of these women are accompanied by their children, which subject themselves to significant legal risk – including possible arrest – due to laws prohibiting child labor and public begging. (Refer to the following section for additional details regarding legal constraints.) These women are the most marginalized in a value chain that already marginalizes women to the lowest paid, most dangerous, and least recognized role, with little opportunity to advance in the male-run informal recycling ecosystem.

Finally, people with disabilities represent yet another marginalized group within the informal recycling value chain. With high and increasing unemployment rates in Jordan, more disabled people are seeking work in the informal sector because of the limited alternative livelihood options. Research suggests that people with disabilities appear to be relatively absent from the informal recycling sector in Amman due to the physically demanding nature of the work at this end of the value chain; however, evidence from the private sector (refer to section 4.1.3) indicates that disabled persons who are deaf mute have worked successfully in sorting. Anecdotal evidence also suggests possible higher rates of disability among poorer and disenfranchised populations (such as the Dom), which requires further study to understand the intersectionality of disability with other identities in the informal recycling chain, and how this affects roles, access, and opportunity.

LEGAL CONSTRAINTS IMPACTING GENDER EQUALITY AND SOCIAL INCLUSION AMONG INFORMAL RECYCLERS

Legal constraints and a lack of social and legal protections amplify the exclusion of men and women informal waste workers. As informal laborers, waste pickers are not officially recognized by the government and subsequently the municipality. Though waste picking as an activity is addressed in the MSWM Strategy, albeit nominally, waste pickers themselves are not recognized and thus garner no workers' rights or protections and operate at the risk of being fined, harassed, or even arrested (see below). They have no health benefits, insurance, social security, paid leave, etc. It should be noted that those SWPs that are GAM street sweepers – since they are government employees – enjoy a salary, paid leave, health care (including for their dependents) and social security. As noted earlier, evidence shows that all GAM street sweepers are men.

Without formal status, SWPs can be stopped by GAM authorities from waste picking in the streets at any time, in accordance with municipal public health and noise prevention ordinances. That said, the authorities are aware of the contribution of SWPs in maintaining public cleanliness and allow them to operate with a degree of freedom, providing they do not diminish public cleanliness or disturb commercial activities.

Men and women face additional and differing legal vulnerabilities based on the laws and their legal status. As mentioned above, **most waste pickers are formerly incarcerated men.** As such, they cannot work for the government and have difficulty gaining employment in the private sector⁸³, especially in

⁸³ Private sector job applications in Jordan typically require disclosure of the applicant's criminal record.

light of Jordan's high unemployment rate.⁸⁴ With almost all other doors of employment closed, informal waste picking offers low obstacles to entry – requiring no permits and no prior experience – for these individuals to earn a livelihood and even establish micro-enterprises. In effect, these individuals have been pushed to the fringes of society and the economy, with their legal status excluding them from other forms of employment and possibly the opportunity (or desire) to formalize their activities within the recycling sector. This is a critical factor to consider in the context of efforts to commercialize and formalize GAM's recycling sector.

The legal risks SWPs face are even more pronounced for women, who face the constant threat of hostility, fines, and/or arrest by the police if accompanied by their children. Women SWPs are among the most vulnerable members of society. Given rigid cultural norms that deter women from working in public, these women turn to waste picking as a last livelihood resort. In the absence of social support, many women are forced to bring their children with them into the streets, sometimes begging in conjunction with waste picking. These women are particularly susceptible to verbal abuse and possible arrest from the authorities for violating either child labor or public begging laws.⁸⁵ Once arrested, these women become entangled in a weak legal system that does not see them as equal citizens (refer to section 1.2 for details), and which can prescribe institutional care for up to three years.⁸⁶ Furthermore, if these women are prosecuted, their subsequent criminal records will impede opportunities of formal employment, trapping them in a cycle of poverty and desperation.

In the absence of legal and social protections or decent labor standards, **neither men nor women working in the informal recycling sector are incentivized to formalize**. The fact that policies in Jordan deprive most workers from trade union organizing and the rights to collective bargaining (reportedly leading to a significant decline in working conditions across the private and informal sectors) is another intractable disincentive toward formalization. Further compounding the problem is the high financial and tax obligations associated with registering a business (including small and medium-size enterprises (SMEs)). This presents a significant barrier to entry for start-ups and micro-entrepreneurs – especially for the working poor – and has resulted in many business owners (private and informal) failing to register their companies.⁸⁷

⁸⁴ Per the latest national unemployment report for the second quarter of 2020 issued by the DOS, the unemployment rate in Jordan reached 23 percent during the second quarter of 2020 – an increase of 3.8 percentage points over the second quarter of 2019. (Source: DOS, (2019))

⁸⁵ Jordanian Penal Code No. 16 of 1960 and its amendments criminalize begging and consider it an act punishable by law with imprisonment (for up to three months) and/or a fine, or both.

⁸⁶ Once arrested, women can be transferred to a Ministry of Social Development rehabilitation program, prison, or a mental hospital.

⁸⁷ Arab NGO Network for Development (ed.). (2016). "The Arab Watch Report on Economic and Social Rights – Informal Employment." <https://www.fordfoundation.org/media/4555/arab-watch-on-economic-and-social-rights-2016-informal-labor.pdf>

iii. Private sector

Jordanians and Egyptians comprise the majority of formal sector workers in the private sector recycling value chain in Amman, with relatively lower representation of migrant workers and refugees including from Syria, Bangladesh, and Yemen. As noted previously, labor conditions and low wages are a widespread problem in the private sector linked to a legal framework that is not conducive toward advancing workers' rights and cost-prohibitive legal requirements that serve as a counter incentive for businesses to register. Though employees in the private sector are entitled to medical leave and social security in accordance with labor laws, health insurance is not obligatory and as a result, at least 90 percent of companies forgo paying this benefit to their staff, while foreign workers are not subject to any kind of health insurance⁸⁸ – a significant burden for the large proportion of minimum-wage workers in the recycling sector and others low-wage sectors.

In addition to these challenges, **women working in the private recycling sector face additional barriers to their participation and advancement** including rigid cultural norms and gender biases that deter them from working in high-risk, male-dominated sectors⁸⁹ as well as in technical positions; and the risk of sexual harassment in the workplace with lack of legal recourse. (Refer to sections 1.2 and 4.1.2 for details.) Like their informal sector counterparts, **women professionals in the recycling sector face time-poverty risks** in response to the same rigid cultural norms that demand they take responsibility for childcare and household duties in addition to their full-time jobs. Such constraints impede women's professional advancement and inhibit women entrepreneurs' productivity and business growth.

Two other constraints women face in the private sector, and which evidence suggests are consistent with women's experience in the recycling sector, are **the gender pay gap and access to finance**. (Refer to Box 3.) According to the Department of Statistics, men working in the private sector earn approximately 15 percent more on average than women.⁹⁰ This wage gap persists because men are considered by Jordanian society to be the breadwinners and women as dependents. This cultural norm is reinforced by a constitution that does not treat men and women as equals and is carried through to labor laws and other discriminatory laws (such as those that limit women's independent mobility, dictate male guardianship, and limit asset ownership), thereby impeding women's substantial economic participation.⁹¹ (Refer to section 1.2 for further details). With regard to financing, SMEs in Jordan – and particularly women-owned SMEs – experience great difficulty accessing the finance they need for start-

Box 3: Equal Pay for Equal Work

"There is a traditional view among many employers that there is nothing wrong with giving a woman lower wages, because she is not the primary breadwinner of the family, unlike the man, who, in their view, is responsible for supporting a wife and children. In reality, this is not true, because working women, even if exempt by law and by Sharia (religious law) from spending on their families, contribute to supporting the family exactly as men do. Generally, regardless of any other considerations, it is the right of a woman, who performs work, to be paid equally to a man who performs the same work."

up and growth, despite the crucial role these businesses play in Jordan's economy.⁹² Women face additional hurdles driven by gender bias, namely, needing a male guarantor or simply not being deemed credit worthy.

These many counterincentives to women's involvement in the private sector are painfully evident in the fact that **women are relatively absent at all levels of the formal recycling value chain – as employees, managers, technical experts, business owners, and board members.** The research team estimates that **women comprise less than three percent of employees working in private sector recycling enterprises in GAM.**⁹³ Furthermore, **only two women-led recycling businesses** exist within the municipality: Tadweer, a family-owned MRF and led by a woman chief executive officer (CEO); and Green Future for Sustainable Solutions, the sole woman-owned service provider in GAM (Refer to Box 4). Despite the daunting challenges they faced – from bullying and exclusion to lower wages and not being able to access loans – all women interviewed in the private sector were optimistic about the future opportunities for more women's increased involvement as the sector grows.

With regard to persons with disabilities, evidence suggests that they face limited opportunities for formal employment. Private sector business owners and managers explained that they prefer not to hire workers with disabilities due to the physically demanding nature of the work. This lack of opportunity may be related to social stigmas around working with the disabled. The team found one notable exception – Jamil Sahori and Brothers Company for Plastic – a plastics recycling business which currently employs 12 deaf mute people, comprising approximately eight percent of the company's staff. The owner noted that he hires people who are deaf mute because he is confident that they have the

Box 1: The Challenges of a Pioneering Woman Entrepreneur in Jordan's Recycling Sector

Green Future for Sustainable Solutions (GFSS) is a social enterprise that was founded in 2010. In addition to its primary services aimed at reducing waste and increasing recycling, GFSS helps to enhance social cohesion and resilience by generating income for marginalized individuals who face access barriers, employing them in the SWM services (collecting, sorting and the transfer of waste) and in the sale of recyclable commodities. GFSS also partners with hotels and other businesses creating opportunities for disadvantaged communities to engage in income-generating activities such as the production of animal fodder from food waste, and upcycling hotel shampoo bottles and other toiletries.

Hanan Murad is the proud owner GFSS. She started out as an assistant to the founder and purchased the business three years ago after his passing, leveraging all of her savings in the not-so-easy process. Today she employs seven people, two of whom are women. Despite the constant challenges and gender-based discrimination she faces, Hanan wants to grow her business; but she has not been able to secure a loan due to stringent bank requirements and the requirements of male guarantor.

"In addition to financial challenges, I face other obstacles due to my gender. I have been bullied and harassed at work because I am a woman."

Hanan is also the proud mother of twins. She described the challenges of prioritizing her work and home life while running a business full-time, noting the challenges working mothers face caring not only for children, but for other family members as well. Despite these challenges, Hanan persists:

necessary skills to sort and to perform well at their jobs.

g. Conclusions

This analysis of gender equality and social inclusion in Greater Amman's recycling sector examined the cultural norms and practices that impact equitable participation in the labor force and particularly the recycling value chain; relevant laws and the awareness and enforcement of legal codes; institutional policies and practices; as well as leadership, organization, and representation within both the informal and private sectors. The analysis was conducted with a women's economic empowerment lens, assessing key aspects of the economy that impede women's economic empowerment and equality.

Globally, gender integration in the waste management and recycling sector has been negligible. Jordan is no different. Not only are women invisible (working in offices, out of their homes or on less-trafficked side streets) they are also absent in numbers – representing less than 5 percent of workers in both the private and informal segments of the value chain. When women do participate in the sector, it is almost always based on a gendered division of labor, which limits women's roles in the informal sector to sorting and some waste picking, and in the formal sector to non-technical and administrative positions. This in turn inhibits women's ability to receive equal and direct remuneration for their work. The greatest impediment to understanding the gender dynamics within the recycling sector was the complete lack of sex disaggregated data. This lack of data is a chronic problem which plagues the SWM sector worldwide, but is especially pronounced at the intersection of recycling, gender, and the informal sector.

The overarching characteristics of the informal recycling sector in GAM are not dissimilar to other urban centers, though the sector is relatively smaller in size. In addition to the pervasive gendered division of labor, these characteristics include: a stigmatized view of SWM; poor working conditions and low wages; and a lack of physical, social, and legal protections (e.g., no protective equipment, health insurance, paid leave, social security or childcare). While these issues affect all waste sector workers, they have compound impacts on women and marginalized groups who face additional risks associated with time-poverty, GBV, weaker legal status, and intersectional identity, and who experience more limited access to resources and networks. That said, all informal waste workers face significant vulnerabilities under a legal framework for SWM that doesn't recognize them and in fact stipulates significant fines (up to 5,000 JOD) and the possibility of jail time of up to one year for non-sanctioned waste picking and disposal. For formerly incarcerated men, who represent the majority of SWPs, this creates a perpetual threat of insecurity. Likewise, single women and mothers who are accompanied by their children while waste picking face the constant threat of harassment, fines and arrest, the latter of which can entangle them for months in a legal system that does not consider women equal to men.

Altogether, these conditions (and those described further above) serve as a significant counterincentive to formalization for women and men informal waste workers and pose a formidable challenge for the Recycling in Jordan Activity. Moreover, for SMEs throughout Jordan, company registration is a legally complex, time consuming, and cost-prohibitive undertaking for which they receive no benefits. For formerly incarcerated men and single women, the prospect of formalization is even more daunting. Solutions and efforts to formalize must therefore be comprehensive, multi-faceted, and address the particular needs and status of men and women. Unilateral attempts to simply register waste pickers with the Municipality to monitor and dictate their operations will not succeed.

Solutions will require a carefully phased approach over the short, medium and long-term that are derived from consultative processes with men, women and marginalized WSWs and based on trust building and consensus among key stakeholders (namely, informal and private sector WSWs, GAM, commercial clients, and the private sector recycling companies). These solutions must include official recognition of the informal sector and reforms that benefit (not punish them) for their work. This, in turn, requires significant effort to transform the knowledge, attitudes and practices of key government actors, to view the informal sector as performing a valuable service to the municipality and its residents, the local economy, and the environment. To succeed, these solutions should also build on the knowledge and networks that exist in the informal sector, while making the business case for women.

Given the low level of women's participation in the male-dominated sector at present, and in light of prevalent cultural norms that deem SWM unsafe and inappropriate for women, promoting gender equality and increased female participation in recycling will be a tremendous challenge at all levels of the value chain. That said, given Jordan's economic decline and steadily increasing unemployment, the country cannot afford not to invest in women. A robust body of literature asserts that reducing gender gaps boosts economic growth and productivity; leads to greater equality in the overall income distribution; supports higher corporate profits; increases economic resilience; supports bank stability; and contributes to other development outcomes (e.g., improved health outcomes for women and girls). Moreover, recent studies have shown that women have significant positive impact in legacy male-dominated industries (including waste), driving higher profits, improved performance, and innovation – the latter of which is notably important in both stagnant and nascent industries.

Incentivizing more women to pursue work in GAM's recycling sector will require significant effort above and beyond addressing the aforementioned constraints. Women also need access to professional training, equipment, vehicles, and finance. They require workplace protections, equal wages, access to childcare, opportunities for advancement, and institutional policies that provide these guarantees. Such efforts must be accompanied by awareness-raising campaigns that challenge gender stereotypes, while encouraging positive masculinities. If these gendered barriers are not addressed, the recycling sector in GAM will not be able to attract and retain the diverse skills and talents it needs to become a thriving and sustainable sector.

Ultimately, the realization of gender equality and social inclusion in Amman's recycling sector requires the same comprehensive and interdependent changes needed for gender equality in Jordan, in general, namely: legislative and institutional reforms; transforming social perceptions and attitudes that devalue

women's roles; eliminating violence and discriminatory practices; and addressing GBV, control mechanisms, addressing unequal power relations and access to resources. Effective empowerment policies and strategies are required in justice, education, health, decision-making, family, mobility, and economy. Without a holistic approach that effectively works to abolish all types of discrimination and GBV, progress in only one of these domains will not overcome stagnation in other domains and is unlikely to contribute to women's overall empowerment and gender equality. Though central to success, this massive effort to advance GESI is beyond the scope of the Recycling in Jordan Activity. It is therefore imperative that the Activity cooperate strategically with a range of public and non-governmental organizations as well as other USAID-funded programs to support progress on these issues, and to design approaches that go beyond individual capacity building to strategically integrate institutional and individual transformation initiatives.

h. Recommendations

Box 2: The 'Do No Harm' Principle

As an ethical principle, 'do no harm' applies to gender by way of recognizing that the actions we take in each context are not neutral. Our actions will affect the relationships within that context, either for better or for worse. In a context where women's rights and social inclusion are threatened, we have a minimum obligation to pay attention to these dynamics so that we do not unintentionally exacerbate them.

Advancing women's economic empowerment and social inclusion within Jordan's relatively nascent recycling sector poses a great challenge and a great opportunity for the Recycling in Jordan Activity. Recognizing the intersectional challenges of advancing GESI and the cross-sectoral solutions required over the short-, medium- and long-term, the following recommendations offer a full range of activities for improving the sector, some of which come under the immediate parameters of the Activity, while others will require cooperation with other stakeholders (including GoJ, NGOs, and the private sector), as noted.

To make progress on gender equality and social inclusion within the recycling sector, the Recycling in Jordan Activity should promote economic alternatives as well as policy improvements related to the informal recycling sector; support the creation of organizations for waste sector workers with women in leadership positions that also provide training, technical assistance, and organizational strengthening; improve conditions and opportunities for women, PWDs and all employees within recycling companies; and provide incentives for women to work in the sector. Interventions must address GBV and women's workload, while promoting positive masculinity and the 'do no harm principle' (Refer to Box 5). Recommendations follow, beginning with sector-wide recommendations, followed by specific recommendations for the informal sector and then the private sector.

i. Sector-wide Recommendations

DATA DEFICIENCY

1. **Address the GESI data deficiency in SWM. The need for data-driven investments is imperative for the recycling sector as a whole, and for the advancement of women and informal WSWs therein.** Measuring the economic contributions of the informal sector, women, and youth is essential to better understand their position, and to enable smart data-driven investments that bolster development outcomes. The absence of data was a problem cited by multiple sector experts as impeding consensus among government actors. Not only is it a major obstacle to accurately measure the impact of interventions in terms of reducing the flow of recyclable waste to the landfill, it also diminishes the contributions of the informal sector, and women in particular, further marginalizing their role in the value chain. The critical importance of data collection for the Recycling in Jordan Activity is three-fold: (1) to make the business case for recycling, for the informal sector, and for women; (2) to adequately plan sector activities, measure performance, and allocate resources; and (3) to inform policy reforms. The Activity should support implementing partners at all levels with data collection and monitoring, including support to GAM, MoENV and other relevant GoJ entities such as the DOS, to improve data collection protocols and tools.

CULTURAL NORMS AND GENDER ROLES

2. **Address the recycling sector as an environmental issue and a valuable service to society. Such efforts will be an important early step for the Recycling in Jordan Activity.** In order to garner more public support for the sector, encourage greater prioritization of SWM by GAM, and de-stigmatize the work of all waste sector workers, concerted effort is required. This includes sensitization and awareness campaigns, media messaging and social dialogue to build support among all stakeholders (the private sector, GAM, local communities and commercial areas). This sensitization will bolster other efforts to build trust between GAM officials and informal WSWs during integration and formalization of the sector. A central focus of these efforts should be to cultivate GAM's knowledge and understanding of the economic value of waste, the environmental importance of recycling and how it ties into legal mandates, and recognition of informal waste picking as a high-risk livelihood that fills a critical gap in municipal SMW service delivery.
3. **Incorporate activities that strengthen GBV and sexual harassment awareness, prevention and reporting throughout the value chain.** Women's participation in the recycling sector will remain low especially in non-traditional roles, if protection against workplace GBV is not ensured. Given Jordan's weak legal framework for gender equality and GBV, the prevalence of violence against women, poor labor standards, and the male-dominance of the recycling sector, this will require concerted effort. The Activity should collaborate with other organizations working in this area as part of a holistic approach that works to address all types of discrimination because progress in only one area, as noted earlier, will unlikely yield long-term impact in advancing GESI in the recycling sector, or elsewhere.

Activities should draw on best practices and gendered approaches developed by USAID and other donors for different sectors such as energy and construction, as well as those outlined in the 2014 USAID toolkit for Integrating GBV Prevention and Response into Economic Growth Projects⁹⁴ (focusing on the sections presenting Value Chains, Enterprise Development and Access to Finance). Within the formal sector, efforts should be made to develop and enforce gender-sensitive personnel

⁹⁴ Available here: <https://www.usaid.gov/documents/1865/toolkit-integrating-gbv-prevention-and-response-economic-growth-projects>

policies that protect against workplace sexual harassment and allow for safe reporting and recourse, including supporting sensitization and training of staff. In the informal sector, special attention should be paid to mitigate factors that increase the risk of GBV for women SWPs and sorters, such as time and location of work, access to sanitation facilities, access to safe transportation, etc. The Activity can bolster these efforts through media messaging and social dialogue to build support among communities, GAM and the private sector, including messaging from key figures (e.g., religious, local or community leaders).

4. **Demystify waste and recycling as masculine work, at all levels of the value chain. As more and more women seek private sector work in the face of growing unemployment in Jordan, the growth of the commercial recycling sector offers new opportunities for women.** However, normalizing the acceptance of women working in the sector must be addressed both internally and externally. To attract more women, especially at higher levels of the value chain, the Activity should:
 - i. Engage and support awareness-raising and capacity-building interventions for key stakeholders across the recycling value-chain including private sector SWM and recycling companies, GAM SWM officials, commercial waste generators, and key actors across the informal sector recycling network.
 - ii. Work with relevant programs at academic and technical institutes in conjunction with private sector companies and GAM, to attract, promote and retain women in waste management and recycling employment. Initial efforts could focus on academic institutions that promote women in Science, Technology, Engineering and Math (STEM).
 - iii. Improve and/or incorporate gender-sensitive human resources (HR) practices in recycling companies and municipal governments and assist with adoption and enforcement.

The Activity can assist stakeholders to adapt existing USAID strategies for improving gender-sensitive HR practices that have been developed for other male-dominated sectors such as utilities and public works.⁹⁵ Incorporating social and behavioral change communications may be a useful approach for the male-dominated waste and recycling value chain, including media messaging and social dialogue to build support among communities, local government and the private sector, including messaging from key figures (e.g., women business leaders, such as Dina Haddad and male champions).

ii. Informal sector Recommendations

WASTE PICKERS, STREET SWEEPERS, ITINERANT WASTE BUYERS AND SCRAP DEALERS

5. **Enhance leadership, organization, and representation among the informal recycling sector.** The informal sector suffers from a lack of representation and leadership, exacerbated by a legal framework that impedes workers from collective bargaining and organizing. To overcome these obstacles requires sensitive and intentional interventions and cooperation with other organizations

⁹⁵ USAID's Engendering Utilities report highlights gender-sensitive HR best practices and provides useful strategies that could be applied for increasing GESI in the recycling sector. Refer to: Maday, B. and C. Novak. (2018). "Engendering Utilities: Increasing Women's Participation in the Power Sector through Human Resources Interventions: A Best Practices Framework," USAID. <https://www.usaid.gov/sites/default/files/documents/1865/gender-equity-energy-sector-best-practices.pdf>

that represent the intersecting interests of different informal WSWs (such as organizations focusing on women, persons with disabilities, and other traditionally marginalized populations within GAM).

As the Activity progresses and the sector evolves, explore the possibility of establishing a recyclers' association for informal WSWs, including women and other marginalized groups in leadership roles. The Activity should **draw on lessons learned from Jordan's agricultural sector**⁹⁶ – one of the few sectors with a working labor union in which women are active – and from recycler movements around the world. The Activity should undertake these interventions in tandem with efforts toward informal-formal sector integration (discussed below), during which informal sector participation in planning and decision-making processes will require leadership representation from among the different groups of informal WSWs.

6. **Efforts to integrate informal waste sector workers into the formal sector must engage them directly in planning and decision-making and should be done with a view toward their recognition and protection.** Rather than keeping this sector marginalized, its significance should be recognized, and efforts should be made to integrate the informal and formal sectors to introduce synergy and maximize profitability. The informal waste management sector is proficiently involved in waste recovery activities and its integration within the formal sector can work optimally at both ends.

It is important to note that achieving formal-informal sector integration is a sensitive and complex process dependent upon the success of multiple, mutually reinforcing activities at the center of which is the need to **identify and align mutual stakeholder interests** (clients/the public, waste sector workers, and GAM). In short, all stakeholders must benefit from the integration process. When carried out without a conscientious effort to protect workers' interests, formalization can often lead to further disenfranchisement and a loss of livelihoods for informal recyclers. Carried out under weak legal frameworks that fail to recognize the informal sector, formalization efforts often fail to consider the impact on informal waste workers' who not only experience a loss in access to recyclables (as in the case of the al-Ghabawi landfill closure) and thus a loss of livelihood, but also receive no benefits (e.g., social or legal protections) in return. On the contrary, these most vulnerable members of the working poor are subsequently subject to legal requirements and associated taxes, registration fees and fines that make formalization cost prohibitive. Therefore, as a first step in the integration process the Activity should invest significant effort to **overcome animosity and build trust between informal WSWs and the authorities by facilitating open dialogue and decision-making processes, paying special attention to the inclusion of women and marginalized groups**. Other key steps in the process of integration and formalization include:

- i. **Support legal reforms that recognize informal WSWs.** A municipal decree recognizing WSWs and allocating sufficient budget and personnel to oversee the integration and support the professionalization process would provide the transformational reform needed

⁹⁶ Jordan's union of male and female agricultural workers was established in 2015, and the majority of its members are women. The union has been working since its establishment to pressure the government to issue a special regulation guaranteeing its inclusion in the Labor Law.

to create a solid foundation for formalization of the sector and the securing of better working conditions and protections for informal WSWs.

ii. **Develop transparent and efficient collection and communications systems that reinforce stakeholder interests and increase equity among WSWs.**

(1) Communications: At the center of a successful and sustainable collection system is a transparent, efficient, and inclusive communication system. The Activity should help establish a regular “feedback loop” to enable the system’s key stakeholder groups (i.e., SWPs, GAM, and commercial clients/community) to recognize performance, address grievances and build trust. Information and communication technology (ICT) and global positioning systems (GPS) tools can be used to ensure monitor collections and maximize efficiency and transparency in monitoring and reporting. Such technology can also be an important tool to ensure equitable access to recyclables per agreed upon arrangements.

(2) Collection: Establish an official collection system through a consultative process (including men and women WSWs) to determine zones, routes, and transfer points, building on the existing knowledge and networks of SWPs and their counterparts. A key outcome of this intervention should be **improved equitable access to recyclables for informal women and men waste pickers**. To do so, the system must account for the specific considerations of women, youth, the disabled and other groups involved (see below for related recommendations), by actively creating space for them to safely participate in planning and decision-making processes. Navigating this complex terrain of informal waste management requires considering the power dynamics and existing network of actors that direct activities across the informal segment of the VC; how these dynamics intersect with gender, other identities, legal constraints, seasonal market dynamics, and other issues; and what must be done to mitigate these factors both structurally and socially. In developing these systems, the Activity should consider undertaking the following:

- **The introduction of collection contracts that guarantee worker protections.** Other approaches could enable independent women street waste pickers (e.g., widows and other vulnerable single women waste pickers) to work together in groups and give them safe access to recyclables at specific times and locations, organized in tandem with GAM field supervisors and brokered with relevant male SWP leaders, for example, to ensure safety.
- This is also an entry point for **introducing independent women SWPs and sorters to the concept of collective bargaining – helping them to group their recyclables to sell in bulk and thus secure higher prices for their collective efforts**. These types of activities will help to build trust among women that could spur entrepreneurial activity and lay the foundation for future business arrangements.
- To improve equitable access to waste and **enable women waste pickers to collect larger volumes of higher value waste**, the Activity should help increase their access to collection equipment that is affordable and appropriate to women’s needs.⁹⁷

⁹⁷ Efforts to provide equipment to informal women waste pickers often overlook their gender requirements.

Women are given the same equipment used by their male counterparts, for example, metal push carts that are too

- All of these efforts will require **significant sensitization of both women and men actors** to recognize the economic contributions and potential of women, specifically, and the informal sector, in general. Additionally, the Activity could facilitate study tours and/or virtual exchanges between Activity stakeholders and other cities abroad to observe and learn from the successful application of these informal sector integration approaches elsewhere.
- iii. **Professionalize the activities of informal WSWs and help to facilitate service agreements with GAM and commercial sector clients.** The Activity should provide direct support to WSWs to professionalize waste collection services and improve customer service satisfaction. Support should offer the appropriate mix of technical, management, administrative, legal and financial support using a variety of tools appropriate to the audience and literacy levels. Technical support should also be provided to appropriate GAM staff around contract development, informed by the consultative processes described earlier. The Activity can help develop template agreements to facilitate this process. All agreements should include the provision of personal protective equipment and professional uniforms or cover the costs thereof.
 - iv. **Improve working conditions and protections for informal WSWs.** Waste sector work is a high-risk activity with grave occupational safety and health hazards. Gastro-intestinal infections, respiratory and skin diseases as well as muscular-skeletal problems and cutting injuries are commonly found among waste workers around the globe. This reality is especially serious for informal WSWs who tend to operate without protective gear and who lack any type of insurance or healthcare. The Activity must work with GAM, MoENV and the private sector to ensure that worker protections and safety are a central aspect of the integration and formalization process, recognized and reinforced through legal reform and as noted above, integrated into agreements. Such efforts must take into considerations the varying responsibilities and risks faced by men, women, youth, and PWDs.
 - v. **Provide incentives for MSMEs to formalize that address the cost-prohibitive and time-consuming hurdles of business registration,** while taking into consideration the ‘do no harm principle. Work with MSMEs, GAM and the chambers of industry and commerce (e.g., Jordan Chamber of Industry, Amman Chamber of Industry, and Amman Chamber of Commerce) to develop incentive schemes. Incentives could include special procurement provisions for start-ups, MSMEs and women-owned businesses; waiving registration fees and discounting annual renewal fees if certain GESI targets are achieved, or for a set period of time with a gradual phase-in of payments; as well as tax waivers. As part of this effort, work with informal WSWs to explore the possibility of cooperative business arrangements (possibly at the family or community level) to leverage subcontracting opportunities.

WOMEN AND OTHER MARGINALIZED GROUPS

heavy or bicycle-driven carts that women do not know how to ride or are not willing to do so because of cultural norms that would deem it inappropriate.

7. **A concerted effort must be made to engage informal women, youth and PWDs in activity planning and decision-making to formulate solutions that are inclusive and gender sensitive.** It is not enough to engage these groups at the point of project implementation. To formulate effective and sustainable solutions that address gender-specific constraints as well as those faced by youth and PWDs, the Recycling in Jordan Activity must directly engage all groups (men, women, youth, PWDs and minorities) and ensure they have a voice in planning and decision-making.

Women waste pickers tend to already be overburdened and time-poor and their specific requirements in terms of schedules, safety and childcare must be considered while giving them the option of a pathway to safe and secure employment.⁹⁸ These considerations are particularly important for the Recycling in Jordan Activity in terms of planning for informal sector integration and mitigating the negative impacts that formalization may have on women. Formalization can be undesirable by women precisely because such efforts often fail to address their concerns, namely: flexibility of working hours, the need for childcare, location and proximity to home, safe transportation, and protection against harassment and GBV.⁹⁹ Finally, appropriate interventions should not impose solutions on women who have other methods for ensuring their priorities are met.

8. **Interventions involving women in the informal sector must be market-driven and require wide-ranging assistance to increase their access and agency.** The need for market-based approaches for integrating women waste workers is an important lesson learned from prior donor interventions among the informal recycling sector elsewhere in Jordan, as discussed previously. Solutions such as upcycling, for example, must take into consideration existing value chain gaps, consumer demand, quality assurance measures, and entrepreneurial drive. To help expand their role and integration into sector activities, the Recycling in Jordan Activity should help to **identify targeted opportunities for women and for PWDs** that address their respective talents and constraints while filling existing and emerging value chain gaps. (Refer to example in Box 6) In addition, technical assistance (TA) and capacity building is needed to inspire and enhance women's entrepreneurial capacity. This TA should include:
 - i. **Provide entrepreneurship training, mentoring and peer-to-peer support.** Women entrepreneurs in the recycling sector lack access to the professional training, networks and

Box 3: Targeted Opportunity for Women at Tadweer

Dina Haddad, CEO and Chairwoman of Tadweer, is a pioneering woman entrepreneur in Jordan. Her vision for Tadweer includes attracting more women employees to work at the MRF and providing them with a safe and friendly working environment. Ms. Haddad is planning to increase the number recycling lines and to expand the scope of the facility to include composting and refuse derived fuel (RDF). She sees these developments as having great potential

⁹⁸ Source: KILs plus "Women in Waste Management: An Opportunity" webinar: <https://urban-links.org/webinar-women-in-waste-management-an-opportunity/>.

⁹⁹ Aidis, R. and D. Khaled. (2019). "Women's Economic Empowerment and Equality Gender Analysis of the Waste Management and Recycling Sector." https://pdf.usaid.gov/pdf_docs/PA00TQSH.pdf

mentoring they need to enhance their entrepreneurial skills and grow their businesses. The Activity can provide training, mentoring, participatory workshops and networking opportunities to enhance basic business acuity. These forums offer an opportunity to build trust and explore the creation of micro- and small-size enterprises, including social enterprises, especially among women-headed households (as noted previously). Where women are already organizing and collaborating through informal micro-networks, explore the opportunity to expand and structure these networks to work collectively to optimize profits (as discussed above) and divisions of labor.

Box 7: Men's Engagement

Working with men is essential to advance gender equality and strengthen markets. Evidence shows that if men are not thoughtfully engaged it can have negative consequences for women, whereby men may co-opt resources women gained through new income generating activities. It can also lead to increased incidence in domestic violence, sexual harassment, and coercion. Five positive ways to engage men include:

- 1. Help men identify and act as allies*
- 2. Address gendered attitudes and behaviors directly*
- 3. Work through cooperation, not only through isolation*

To bolster these efforts, explore partnerships with local NGOs that support women entrepreneurs in the informal sector and may offer additional business opportunities.¹⁰⁰ In addition, the Activity should **draw on lessons learned from other relevant USAID efforts to enhance women's entrepreneurship in Jordan** (e.g., the Jordan Local Enterprise program); **as well as USAID recycling sector activities that focus on**

catalyzing women's economic empowerment – namely, Clean Cities Blue Ocean, which recently launched the Women in Waste's Economic Empowerment (WWEE) Activity, as well as the Municipal Waste Recycling Program.

- ii. **Increase women's access to, understanding and application of market information.** The Activity should build the capacity of informal women, youth and PWD waste pickers and sorters to access, understand and track changes in the recyclables market in order to better negotiate prices and to strategically plan for market fluctuations. Increasing women's access to market information can help enable women to improve their income and livelihoods; but this must be done in tandem with sensitization of intermediaries (e.g., itinerant waste buyers and scrap dealers) and must include **innovative solutions that enable women to either sell directly or oversee sales negotiations remotely**. For example, negotiations could be handled remotely using smart phones, and providing women with a list of potential buyers that have engaged in sensitization efforts. Ultimately, both women and men must be consulted to help identify solutions that work for them.
- iii. **Explore the creation of women-led community-based enterprises and cooperative efforts among women** who have already established micro-networks through which they purchase recyclables from other women, as well with groups of women-headed households. Document lessons learned and replicate successes.

¹⁰⁰ The Jordan River Foundation, for example, offers social and economic empowerment programs for women focusing on entrepreneurship, the culinary arts, and handicrafts. These programs are particularly designed to leverage the women's employability and social skills, and to build their business acumen.

Finally, in planning and implementing these interventions, the Recycling in Jordan Activity should address the following key considerations:

- **Employ the ‘do no harm’ principle at all times** and ensure that implementing partners understand and uphold this principle as well. (Refer to Box 5 above.)
- Ensure the **inclusion of woman-headed households**, which make up 12% of all households in Jordan¹⁰¹ and are among the most vulnerable group working in the informal recycling sector.
- Interventions involving women should always **engage men** and be accompanied by positive masculinities training. (Refer to **Error! Reference source not found.**)
- **Do not deliver capacity building in a vacuum.** Informal women WSWs face formidable obstacles – from rigid cultural norms and social taboos, to structural and legal constraints. They require concerted, all-around support and multi-disciplinary solutions that target all actors in the value chain.

iii. Private sector Recommendations

WASTE SECTOR WORKERS

9. **Promote the expansion of labor standards and working conditions for private sector workers, including decent wages and basic physical, social and legal protections.** Jordan’s WSWs face the compound risk of nationally poor labor standards and sector-specific occupational safety and health risks. Meanwhile, 90% of Jordanian companies do not offer health insurance benefits to their employees and low wages are rampant. To identify solutions to reduce the occupational risks of waste workers, the Activity could conduct a **methodological risk assessment** to identify and develop counteractive measures according to internationally acknowledged standards. Solutions should aim to tackle risk at the source, for example: constructing ramps to dump collected waste straight into roadside containers and skips; and the adaptation of pushcarts and collection procedures to minimize direct handling of waste. In addition, the Activity should:
 - i. Work with GOJ and private sector businesses and associations to promote decent wages and improve labor standards throughout the value chain, ensuring safe working conditions and the provision of personal protective equipment.
 - ii. Encourage private sector businesses to provide health insurance to all WSWs, making the business case for this benefit as an institutional investment. Explore the possibility of collaborating with relevant business associations to promote this concept among sector stakeholders.
 - iii. Work with waste sector business and associations to review and develop HR policies that support safe working standards, the provision of benefits, protections from and recourse for sexual harassment in the workplace, and a commitment to gender equality, inclusion, and equal opportunity. (For additional GESI-related recommendations, see below.)

WOMEN IN THE WORKPLACE

¹⁰¹ Department of Statistics [Jordan], and ICF. 2019. “Jordan Population and Family Health Survey 2017-18: Key Findings.” DOS and ICF. <https://dhsprogram.com/pubs/pdf/SR256/SR256.pdf>

Increasing women's participation in private sector companies begins with de-mystifying waste and recycling as masculine work, as discussed above, and must include **robust incentives to attract women to work in the sector.**

10. Create programs and partnerships that incentivize private sector firms and GAM to hire and invest in women and PWDs, and that promote gender equality, inclusion, and equal opportunity in the workplace. Making progress on the integration of gender and social inclusion in the male-dominated recycling sector will be a long-term endeavor comprising a wide range of activities that should be carefully sequenced and driven by explicit gender outcomes. Activities include:

- i. **Making the business case for women.** Promote the value of women's economic contribution at the business level, focusing on large and medium-size recycling enterprises, using an evidence-based approach to make the business case for hiring and promoting women, and including women on boards. (Refer to Box 8.)

Box 4: Making the Business Case for Women in Male-Dominated Industries

*Today's companies are being pushed to improve productivity and efficiency while evolving their business models to address critical environmental, social, and health challenges. Evidence has shown that increasing gender diversity could provide a means to respond to such pressures and enhance competitiveness and profitability. A recent global study of companies in 12 legacy male-dominated industries (including 'utilities and waste services') found that **a higher percentage of women in executive management is associated with higher profitability:***

"The top-quartile of companies with the highest percentage of women in executive management roles are, on average, 47 percent more profitable than the bottom quartile."

Women are not only leading organizations down new revenue-generating paths, they are also advancing innovation in inertia-prone industries, and increasing transparency to build stakeholder trust.

- ii. **Encourage the adoption of non-discriminatory HR policies as well as practices and programs that facilitate the recruitment, promotion, and retention of female talent.** Work with companies and GAM to develop **gender-sensitive and inclusive HR policies that ensure equal opportunities for advancement, protect against sexual harassment, and provide parental leave.** Additional incentives for women could include the guarantee of an equivalent position to employees returning from maternity leave, and the availability and/or subsidization of childcare, which has been shown to increase women's participation in the labor force.¹⁰² Partner with organizations like SADAQA, which has worked extensively at the national level to promote equal pay and access to childcare at the workplace.¹⁰³ Introduce these concepts through informal discussions and presentations about the contributions of

¹⁰² Among Organization for Economic Cooperation and Development (OECD) countries, for example, the availability of public childcare is strongly correlated with employment rates of mothers with young children. See: Council on Foreign Relations. "Support for Working Mothers Creates Workplace Equality." [Support for Working Mothers Creates Workplace Equality \(cfr.org\) https://www.cfr.org/legal-barriers/barriers/providing_incentives_to_work/](https://www.cfr.org/legal-barriers/barriers/providing_incentives_to_work/)

¹⁰³ International Labour Organization (ILO). (2017). "Campaigning for Pay Equity and Childcare in Jordan." ILO.

women and the benefits of hiring women employees. Explore the possibility of leveraging corporate social responsibility (CSR) as an entry point to establish high-level targets for hiring women – including targets for technical and managerial positions – and other marginalized groups, such as persons with disabilities. The Activity should showcase champions and success stories such as Jamil Sahori and Brothers Company for Plastic, where disabled persons make up 8% of their total staff, and Tadweer, whose chairwoman holds the most senior private sector position in the sector, and who has successfully mentored and recruited women in other sectors. Awards and other incentives (in partnership with other organizations) should be explored to showcase successes, attract more women professionals, and stimulate positive perceptions about improvements in the sector. Draw on the experiences, lessons learned, and tools generated through USAID programs, including the Engendering Utilities project¹⁰⁴ and other relevant projects in male-dominated sectors such as power, water and construction.

iii. **Promote equal pay for women.** To achieve and sustain impact in this challenging domain, the issues of equal pay and opportunity cannot be addressed separately from other discriminatory practices impacting women; they must be tied to other policy reform efforts in both the private and public sector and done in cooperation with national and non-governmental efforts, capitalizing on high profile government-led activities such as recent efforts around equal pay. To this end, the Activity can collaborate to advance pay equity as follows:

- Work with relevant organizations such as the Jordanian National Commission for Women (JNCW) and the Jordanian National Committee for Pay Equity (NCPE), which is chaired by the Ministry of Labor and JNCW, to promote equal pay and equal opportunity in the workplace. Leverage Jordan’s membership in the Equal Pay International Coalition¹⁰⁵ (supported by the ILO) as well as its prior ratification of the ILO [Equal Remuneration Convention, No. 100](#) and the [Discrimination \(Employment and Occupation\) Convention, No. 111](#), to help advance reforms.
- To galvanize government support, leverage the Jordan National Vision and Strategy 2025, namely its policies and initiatives aimed at encouraging women’s entry into the labor market and closing the gender gap in order to increase women’s economic participation from 13 percent (in 2015) to 27 per cent by 2025.
- Build upon social media efforts by the NCPE to raise awareness and engage stakeholders in social dialogue to build support among communities, local government, and the private sector.

WOMEN ENTREPRENEURS

As described above, women entrepreneurs require robust technical assistance to strengthen their business acumen and help them to start and grow small- and medium-size recycling businesses and social enterprises. Building on the recommendations above, the Activity should actively nurture the creation and growth of women- and youth-owned businesses, building on lessons learned from around the world and in other male dominated sectors. Beyond enhancing entrepreneurial capacity, this

¹⁰⁴ Maday, B. and C. Novak. (2018). “Engendering Utilities: Increasing Women’s Participation in the Power Sector through Human Resources Interventions: A Best Practices Framework,” USAID. <https://www.usaid.gov/sites/default/files/documents/1865/gender-equity-energy-sector-best-practices.pdf>

¹⁰⁵ Refer to: <https://www.equalpayinternationalcoalition.org/members/jordan/>

includes identifying and facilitating business opportunities, network building, increasing women and youth entrepreneurs' access to resources, and reducing their barriers to entry in the recycling value chain. Specific recommendations follow.

11. **Identify key value chain entry-points for women, youth and PWD entrepreneurs:** Based on the outcome of the Activity's comprehensive market systems analysis, identify key leverage points where youth, PWDs and women-owned businesses (WOBs) can fill critical gaps and address bottlenecks in the value chain that constrain supply or demand of recyclable materials and recycling services. The Activity is targeting approximately 270 large waste generators that produce more than 20 percent of GAM's commercial waste by volume. Among them, hotels, and restaurants—which represent 38 percent of the large waste generators in Amman—offer an opportune entry-point for women-owned businesses. Schools, universities, and conference centers may offer additional entry-points for WOBs. To this end, GESI sensitization efforts must be integrated throughout all efforts by the Activity to catalyze wide adoption of recycling services, especially among hotels and restaurants.
12. **To help incentivize these commercial waste generators to contract with women-and youth-owned businesses,** GESI contracting targets could be recognized through CSR efforts and award programs, such as the Green Key Award,¹⁰⁶ and/or as a standalone award sponsored by a high-profile NGO that actively supports women's economic empowerment and/or environmental protection in Jordan, such as the Jordan River Foundation. (The foundation works to strengthen women's entrepreneurship and the creation of social enterprises, with a focus on women-headed households.)
13. **Unlock access to finance for women and youth entrepreneurs.** Limited access to commercial credit is a common problem for SMEs and especially women entrepreneurs in Jordan, and throughout developing economies. This can stunt business growth and limit opportunities for women to improve their performance and expand their roles in the sector. To help unlock access to finance, the Activity should **support enterprises in the development of business plans and loan applications and explore strategic partnerships with financial institutions.** The Activity could work with microfinance institutions (MFIs) that already serve WOBs to explore the development of specialized credit products for woman-owned recycling sector enterprises, including seasonal loans and equipment leasing arrangements. Consider the partnering with MFIs and other projects that already have access to USAID loan guarantees that can be leveraged to support women-owned businesses and startups.
14. **Increase access to professional training opportunities for women and youth entrepreneurs.** Women entrepreneurs in the recycling sector lack access to professional training to help enhance their entrepreneurial capacity and grow their businesses. The Activity should focus on strengthening the all-around business acumen of women entrepreneurs – from business planning, contracting, and negotiations, to increasing their access to and understanding of market data and pricing information. This can be done separately and in tandem with other programs and partners. For

¹⁰⁶ Green Key is a voluntary eco-label awarded to more than 3,200 hotels and other establishments in 65 countries. It is the leading standard for excellence in the field of environmental responsibility and sustainable operation within the tourism industry. For additional information, see: <https://www.greenkey.global/>

example, the Activity could link entrepreneurs and startups with business incubators and accelerator programs such as the Zain Innovation Campus (ZINC).

15. **Introduce gender-sensitive procurement policies and procedures.** To help grow and generate opportunities for youth- and women-owned businesses, work with GAM, national, and private sector stakeholders to develop GESI-driven procurement targets and set-aside contracts, and to create a system which makes it easier for these businesses to identify and access procurement opportunities.¹⁰⁷ Helping women- and youth-owned enterprises to secure such contracts is an important aspect of unlocking their access to finance.

LEADERSHIP, REPRESENTATION AND ORGANIZATION

16. **Strengthen leadership among women and youth and increase access to mentoring and networking opportunities for women and youth professionals and entrepreneurs.** As the entrepreneurial ecosystem begins to grow, it is important to create a space where women and youth entrepreneurs can network, receive mentoring, and offer support. However, currently there are no associations or organizations that represent the interests of businesses, women, youth or disadvantaged groups working in the recycling sector. In this case, it is especially important for the Activity to **partner with other relevant organizations and programs** working to enhance youth and women's leadership and business acumen, such as the Jordan Forum for Business and Professional Women, one of the Jordan's leading platforms for women professionals and business owners,¹⁰⁸ and the USAID-funded YouthPower project. The Activity can draw upon USAID's Positive Youth Development Framework and tools to identify and implement interventions that improve youth assets, agency contributions, and the enabling environment.¹⁰⁹

As more women and youth entrepreneurs emerge within the sector over time, the Activity should **support the creation of professional networks linking these actors at all levels of the value chain.** Such networks not only generate business opportunities, they have also been shown to encourage women to set higher aspirations for their businesses, plan for growth, and embrace innovation.

17. **Identify and promote women and youth role models and male allies.** In light of the significant hurdles women, youth and marginalized groups face in participating in the recycling sector – both as entrepreneurs and as employees – these champions can help to boost the image of the sector and

¹⁰⁷ This has been done with success, for example, by New York City's Department of Sanitation under the Sustainable Operations and Readiness/Resource (SOAR) program. The department recently launched SOAR to enable minority and women-owned businesses to easily identify department procurement opportunities and take advantage of capacity building initiatives. For further information see: <https://suppliertynews.com/2019/03/29/the-city-of-new-york-department-of-sanitation-presents-s-o-a-r-program/>

¹⁰⁸ Supported by USAID's Local Enterprise Project and others, the Jordan Forum for Business and Professional Women (JFBPW) is a well-established NGO that develops, empowers, and advocates for business and professional women in Jordan. The forum works to ensure that women have equal opportunities, rights, and leadership roles in the business. JFBPW is an inclusive organization that leverages its powerful networks to help women at all levels of business reach their full potential. For additional information see: <http://bpwa.org.jo/>

¹⁰⁹ Information regarding the USAID Positive Youth Development Framework is available at: <https://www.youthpower.org/positive-youth-development-pyd-framework>

encourage the increased participation of women and youth, as well as a greater acceptance of their potential roles. Champions should include a combination of well-established business personas, community champions, and local success stories. Examples include: the CEO and Chairwoman of Tadweer – a champion for women; the owner of Jamil Sahori and Brothers Company for Plastic – a champion for PWDs; and the leaders of local youth-run green initiatives or environmental groups. Candidates also include national figures that advocate for recycling, the environment, and/or women’s economic empowerment. These individuals can play a pivotal role in de-mystifying waste and recycling as masculine work, and de-stigmatizing public opinion to raise the profile of the recycling sector as a critical societal and environmental priority.

18. The Activity should provide **extensive gender sensitization and positive masculinities training¹¹⁰ among all stakeholders and at all levels of the value chain to help women penetrate the male-dominated recycling sector network.** Without such efforts to directly engage and change the attitudes of men, women entrepreneurs will continue to be excluded from historically off-limit male spaces where business relationships are cultivated, and deals are negotiated.¹¹¹
19. Finally, as the recycling sector matures, it is important to **ensure that women are represented in leadership and decision-making positions within new sector-specific organizations that are established** – such as the entity that will oversee extended producer responsibility in Jordan. Without targeted support in this area and those articulated above, women’s abilities to lead and significantly contribute to the development of the recycling sector will remain low.

¹¹⁰ Training resources related to positive masculinities can be found in Annex VI.

¹¹¹ Khaled, Delila. (2020). “Want to Boost Global Economic Growth? Unleash the Power of Women Entrepreneurs.” Massachusetts Institute for Technology, The Legatum Center for Development and Entrepreneurship. <https://legatum.mit.edu/resources/want-to-boost-global-economic-growth-unleash-the-power-of-women-entrepreneurs/>

ANNEXES

Annex I: Scope of Work

The gender analysis will be prepared by the Recycling in Jordan Activity Gender and Informal Sector Specialist, with the STTA Gender and Social Inclusion Specialist and Banyan's Home Office Gender and Social Inclusion Specialist. This gender analysis methodology will use qualitative and quantitative methods to examine key gender-based constraints that are relevant for the USAID-funded Recycling in Jordan Activity. The gender analysis will reflect the five (5) domains of gender analysis in USAID's ADS 205 on Integrating Gender Equality and Female Empowerment in USAID's Program Cycle. To better understand the gender-based constraints that impact the sector and will affect the achievement of the Recycling in Jordan Activity objectives, this gender analysis will examine three key aspects of the recycling value chain: 1. Barriers to entry and/or requirements for men's and women's participation in the value chain (at different nodes); 2. Differences in men's and women's ability to access and control the benefits derived from participation; and 3. Barriers and differences in men's and women's ability to meaningfully contribute to decisions affecting participation, benefits, and the stability or growth of the sector. Women and men will not be treated as homogenous groups. The data will be analyzed and further stratified by other social markers including citizen status, disability, etc.

Data collection procedure will follow the Recycling in Jordan team's data collection protocols. The gender analysis will include a combination of desk review and approximately two working-day weeks of interviews and focus group discussions in November 2020. The desk review will draw upon existing global, regional, and most importantly existing country-specific data on gender and social inclusion issues in the recycling sector. The in-country gender and informal sector specialist will lead interviews and focus group discussions (FGD), using interview guides developed for specific value chain actors, including recyclers; waste pickers; sorters; intermediaries; micro, SME, and larger enterprise owners/managers, and employees; and representatives from recycle organizations and potentially government (e.g., Ministry of Local Administration and MoENV). The STTA Gender and Social Inclusion Specialist may participate remotely in a few interviews with stakeholders in Amman. The sample size will be determined based on input from project leadership and take into consideration issues like COVID-19, distance to interviews, and the projected timeline for the data collection. The data will be stored in a password protected file. The STTA Gender and Social Inclusion expert will clean, code, and then analyze the data by source, gender dimension, and area of inquiry. The HO Gender and Social Inclusion Specialist will provide quality oversight throughout this process.

An initial draft will be reviewed internally by Banyan Global prior to submitting it to Chemonics for review and final approval. The team will update the Recycling in Jordan team and Chemonics on progress and discuss any challenges that may arise which would need to be resolved jointly.

Annex II: Literature Review

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Annex III: Key Informant Interviews

Table 1: Key Informant Interviews

	Date of Interview	Organization Name	Interview Method	Key Informant Name/Title
1	3/11/2020	Saudi Paper Recycling Company (Middle East)- Private Sector	In Person	<ul style="list-style-type: none"> Hasan Al-Najjar/ Site Manager
2	9/11/2020	Modern Jordanian Company for Iron Scrap (Manaseer)- Private Sector	Phone	<ul style="list-style-type: none"> Mr. Odai Al-Manaseer/ Site Manager
3	9/11/2020	Al Reyadeyah for organic waste treatment - Private Sector	Phone	<ul style="list-style-type: none"> Luai Jaber/ Owner
4	9/11/2020	"Mohamed Reyad "for the manufacture of plastic granules- Private Sector	In Person	<ul style="list-style-type: none"> Mohammad Riyad / Owner Naser Fayez / Owner
5	9/11/2020	First Paper & Cardboard Recycling Company- Private Sector	In Person	<ul style="list-style-type: none"> Fares Abu Hatab / Sales and Site Manager Rae'd Hamida/ Sales and Site Manager
6	14/11/2020	Al-Abura Metals / Jordan Metal Smelting Factory- Private Sector	In Person	<ul style="list-style-type: none"> Hassan Al-Abourah/ Vice chairman
7	15/11/2020	Nuqul Group - Private Sector	Phone	<ul style="list-style-type: none"> Maen Tabari / Industrial Manager
8	15/11/2020	Salim Kittaneh & Sons Co- Private Sector	Phone	<ul style="list-style-type: none"> Alaa' Kittanhe / Deputy Manager
9	16/11/2020	Jamil Al-Sahouri & Brothers Company for Plastic Industries /Samba- Private Sector	In Person	<ul style="list-style-type: none"> Amer Balawaneh

10	17/11/2020	Jordan Paper and Cardboard Factories Company - Private Sector	Phone	<ul style="list-style-type: none"> Mr. Majdi AlAqqad / Acting General Manager
11	9/11/2020	Abu Rashed shredder- Private Sector	Phone	<ul style="list-style-type: none"> Abu Rashed/ Owner
12	14/11/2020	The Arab Company for Manufacturing and Trading Paper- Private Sector	Phone	<ul style="list-style-type: none"> Nidal Hamdan / Manager Abdel Latif Saleh/ Chairman
13	16/11/2020	Khaled Judeh for Iron Scrap Trade- Private Sector	In Person	<ul style="list-style-type: none"> Khaled Joudeh – Owner and CEO
14	16/11/2020	Masafat Company- Private Sector	online	<ul style="list-style-type: none"> Khaldoun Katouri / Operation Manager
15	17/11/2020	Zawati Brothers CO.- Private Sector	online	<ul style="list-style-type: none"> Eng. Nizar Zawati/ Operational Manager
16	1/12/2020	Green Future for Sustainable Solutions- Private Sector	online	<ul style="list-style-type: none"> Hanan Murad / Owner
17	18-11-2020	Technical Packaging Company for Plastic Packaging (Petco Jordan)- Private Sector	Phone	<ul style="list-style-type: none"> Mohammad Salameh/ Site Manager
18	18-11-2020	Tarkhan Company for the manufacture of plastic granules- Private Sector	In Person	<ul style="list-style-type: none"> Abu-Rashed / General Manager
19	18-11-2020	Jordan Environment Society- NGO	Phone	<ul style="list-style-type: none"> Man Nasaireh/ Executive Manager
20	18-11-2020	Jordanian green point for project management- Private Sector	Phone	<ul style="list-style-type: none"> Mr. Yousef Balawi/ General Manager
21	18-11-2020	BE Environmental Services Company - Private Sector	Phone	<ul style="list-style-type: none"> Mohammad Aboud / operation Manager
22	19-11-2020	TADWEER MRF- Private	Online	<ul style="list-style-type: none"> Dina Haddad/ CEO

		Sector		
23	18-11-2020	Khaled Abu Hadbah- Private Sector Foundation	In Person	<ul style="list-style-type: none"> Khaled Abu Hadba
24	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Alia (last name not provided)
25	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Abu Mohammad (last name not provided)
26	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Wafaa (last name not provided)
27	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Hassan (last name not provided)
28	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Ibrahim (last name not provided)
29	7-11-2020	Street Sweeper	In Person	<ul style="list-style-type: none"> Ahmad (last name not provided)
30	27-11-2020	Green Plans Consultancy Firm	Online	<ul style="list-style-type: none"> Ammar Abu Drias / Regional and Local SWM advisor
31	30-11-2020	USAID Recycling in Jordan Activity	Online	<ul style="list-style-type: none"> Ehab Al Manaseer / SWM and recycling sector expert
32	23-11-2020	Zawati Bro. Co	Online	<ul style="list-style-type: none"> Jihad Abul Al Feylat
33	1-12-2020	UNDP	Phone	<ul style="list-style-type: none"> Manal Sweidan/ Previous Head of the Gender Statistics Division, Dept of Statistics

Annex IV: Key Data and Statistics

Following is a summary of country-level data and statistics related to demographics, the economy, and women's economic empowerment in Jordan.

Demographic Data and Statistics¹¹²:

Population	Total population:10,820,644 (July 2020 est). Population of Greater Amman Municipality: 4 million (2015) ¹¹³ (Note: Total population estimate reflects revised assumptions about the net migration rate due to the increased flow of Syrian refugees.)
Median age	38.39% of the population is between 25-54 years of age, of which 2,250,328 are male and 1,903,996 are female
Literacy (over age 15)	Total population: 98.2%; male: 98.6%; female: 97.8%. (2018)
School life expectancy (primary to tertiary education)	Total: 11 years; male: 11 years; female: 11 years (2012)
Ethnic groups	(percent of total population) Jordanian 69.3%, Syrian 13.3%, Palestinian 6.7%, Egyptian 6.7%, Iraqi 1.4%, other 2.6% (includes Armenian, Circassian) (2015 est.) ¹¹⁴
Refugees and internally displaced persons (by country of origin)	2,272,411 Palestinian refugees; 661,997 Syrian; 66,835 Iraqi; 14,640 Yemeni, 6,098 Sudanese. (2020 est.)

¹¹² Unless, otherwise indicated, all data presented in this Demographics and Statistics table have been obtained from the Central Intelligence Agency's World Factbook available at: <https://www.cia.gov/the-world-factbook/countries/jordan/>

¹¹³ This figure is based on the 2015 national census as noted by GAM: <https://amman.jo/ar/gam/amman.aspx>

¹¹⁴ These estimates are based on the 2015 census, the latest national census to be conducted in Jordan.

Economic Data and Statistics:

- According to the Department of Statistics (DOS) of the Kingdom of Jordan, 49 percent of employed women work in the private sector,¹¹⁵ constituting 13.6 percent of the national workforce, compared with 86 percent for men.¹¹⁶
- Jordan's gender gap is among the greatest globally. In the 2020 Global Gender Gap Report, the World Economic Forum ranked Jordan 138 out of 153 countries in terms of gender gap. This was driven by the country's near-bottom ranking of 145 for "economic participation and opportunity."¹¹⁷
- Per the latest national unemployment report for the third quarter of 2020 issued by the DOS, the unemployment rate in Jordan reached 23 percent during the second quarter of 2020 – an increase of 3.8 percentage points over the third quarter of 2019. The unemployment rate is 21.2 percent among males and 33.6 percent among females. These rates increased by 4.1 percentage points and 6.1 percentage points for males and females respectively compared with third quarter 2019.¹¹⁸
- The unemployment rate among males is 21.5 percent, and 28.6 percent among females. (Note: The unofficial unemployment rate is approximately 30%.¹¹⁹
- Youth unemployment (ages 15-24) is 35.6% with the rate of female youth unemployment (57%) almost double the rate for males (31.5%). (2016 est.)¹²⁰
- The most recent analytical study issued by the DOS in August 2018 reports that the average monthly wage for workers in the public and private sectors (both male and female) increased by nine (9) JOD (equivalent to USD 12.50) during 2016, with the average monthly wage for males at 507 JOD (USD 710), compared to 458 JOD (USD 640) for females - a gender gap of 49 JOD (USD 69) or a rate of 10.7%¹²¹

Women's Economic Empowerment Data and Statistics¹²² :

¹¹⁵ Department of Statistics (DOS). (2018). "[Jobs Creation Survey for 2017](#)."

¹¹⁶ Business Reform Environment Facility (BRF). (2017). "[Assessment of Business Environment Reform in Jordan](#)."

¹¹⁷ World Economic Forum (WEF). (2020). "[Global Gender Gap Report 2020](#)."

¹¹⁸ Source: DOS. <http://dosweb.dos.gov.jo/23-9-unemployment-rate-during-the-third-quarter-of-2020-2>

¹¹⁹ Central Intelligence Agency. (2020). [World Factbook](#). (Last updated November 25, 2020).

¹²⁰ Central Intelligence Agency. (2020). [World Fact Book](#). (Last updated November 25, 2020).

¹²¹ The New Arab. (2019). "[The Jordanian Parliament amends the Labor Law to close the gender wage gap](#)" The New Arab.

¹²² Source: [USAID's Women's Economic Empowerment and Equality \(WE3\) Dashboard](#)

ACCESS TO MARKETS

The 'Access to Markets' dimension includes data related to women's labor force participation, legal ease of starting businesses, and entrepreneurship. Easier access for women to all levels of the labor market and simpler procedures for starting a business empower women economically.



2.4 Business score (0 to 5, higher is better)

The 'Business' sub-dimension is calculated from data on time, cost, and procedures related to starting a business.

0.4 Labor Force score (0 to 5, higher is better)

The 'Labor Force' sub-dimension is calculated from data on labor force participation, discriminatory attitudes, and researchers.

N/A Entrepreneurship score (0 to 5, higher is better)

The 'Entrepreneurship' sub-dimension is calculated from data on family workers, self-employed, and middle management.

A score of "N/A" means that the country does not have data in the last five years.

LEADERSHIP AND AGENCY

The 'Leadership and Agency' dimension includes data on women's political leadership, private leadership, and decision-making. Women with higher degrees of decision-making agency have more social, political, and economic empowerment.



4.4 Decision Making score (0 to 5, higher is better)

The 'Decision Making' sub-dimension is calculated from data on household responsibilities and laws on divorce.

1.2 Private Leadership score (0 to 5, higher is better)

The 'Private Leadership' sub-dimension is calculated from data on employers, ownership, and management.

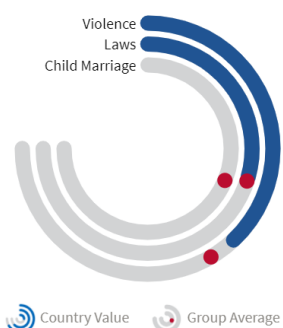
N/A Political Leadership score (0 to 5, higher is better)

The 'Political Leadership' sub-dimension is calculated from data on parliament seats and power distribution.

A score of "N/A" means that the country does not have data in the last five years.

GENDER-BASED VIOLENCE

The 'Gender-Based Violence' dimension includes data on laws pertaining to violence against women, prevalence of violence against women, and child marriage. When women are safer from gender-based violence, there are fewer obstacles to economic empowerment.



2.5 Violence score (0 to 5, higher is better)

The 'Violence' sub-dimension is calculated from data on homicide.

2 Laws score (0 to 5, higher is better)

The 'Laws' sub-dimension is calculated from data on laws on violence against women, laws on reproductive autonomy, and compliance with human trafficking laws.

N/A Child Marriage score (0 to 5, higher is better)

The 'Child Marriage' sub-dimension is calculated from data on legal age of marriage and parental consent.

A score of "N/A" means that the country does not have data in the last five years.

Annex V: Legal and Institutional Framework

Table 1: Solid waste management and recycling-related legislation

Legal Instrument	Status	Related Issues Addressed		
		Recycling	Gender	Informal Sector
The Waste Management Framework Law No.16 of (2020) ¹²³	In force	Yes	No	No
Ministry of Environment Strategic Plan (2020-2022) ¹²⁴	In force	Yes	Yes	No
Regional Solid Waste Management Plan for the Central Region 2016	In force	Yes	No	Yes
Waste Sector Green Growth National Action Plan (2021-2020) ¹²⁵	In force	Yes	Yes	Yes
The Jordan 2025: A National Vision and Strategy ¹²⁶	In force	Yes	Yes	No

¹²³ http://www.mma.gov.jo/Files/Docs/11102018_043930BaselineReport.pdf

¹²⁴ http://moenv.gov.jo/ebv4.0/root_storage/en/eb_list_page/ministry_of_environment_strategy_2020-2022.pdf

¹²⁵ https://gggi.org/site/assets/uploads/2020/10/20022_Jordan_Waste_v03_HL_Web.pdf

¹²⁶ <http://inform.gov.jo/Portals/0/Report%20PDFs/0.%20General/jo2025part1.pdf>

Table 2: Gendered legislation affecting employment and business growth opportunities for women¹²⁷

Legislation	Enacted	
	Yes	No
Employment		
Does the law mandate equal remuneration for work of equal value?	X	
Does the law mandate nondiscrimination based on gender in hiring?		X
Does the law mandate nondiscrimination based on gender in promotions?		X
Does the law mandate nondiscrimination based on gender in dismissal?		X
Can women do the same jobs as men?		X
Can women work in jobs deemed morally or socially inappropriate in the same way as men?	X	
Sexual harassment in the Workplace		
Is there legislation on sexual harassment in employment?	X	
Are there civil remedies for sexual harassment in employment?		X
Are there criminal penalties for sexual harassment in employment?		X

¹²⁷ This table was completed based on the team's literature review (refer to Annex II), including the comprehensive legal review provided in the USAID Jordan Gender Analysis and Assessment (2020).

Legislation	Enacted	
	Yes	No
Sexual Harassment in General		
Is there legislation that specifically addresses sexual harassment?		X
Sexual Harassment in Education		
Is there legislation on sexual harassment in education?		X
Sexual Harassment in Public Places		
Is there legislation on sexual harassment in public places?		X
Access to Credit (important for business owners)		
Does the law prohibit discrimination by creditors based on sex or gender in access to credit?		X
Does the law prohibit discrimination by creditors based on marital status in access to credit?		X

Annex VI: Resources

The following resources can be used by the Recycling in Jordan Activity staff and implementing partners to make progress on advancing GESI.

Table 1: Resources for Engendering Male-Dominated Sectors

Engendering Male-Dominated Sectors	NOTES
Engendering Utilities: Increasing Women's Participation in the Power Sector through Human Resources Interventions: A Best Practices Framework https://www.usaid.gov/sites/default/files/documents/1865/gender-equity-energy-sector-best-practices.pdf	Provides practical examples of strategies for decreasing gender bias and increasing women's participation and advancement in the male-dominated power sector.

Table 2: Resources for Gender-Based Violence Protection and Prevention in the Workplace

Gender-Based Violence (GBV)	NOTES
Toolkit for Integrating GBV Prevention and Response into Economic Growth Projects, USAID, 2014 https://www.usaid.gov/documents/1865/toolkit-integrating-gbv-prevention-and-response-economic-growth-projects	The sections on integrating GBV prevention in the value chain, enterprise development and finance development may be the most useful.

United States Strategy to Prevent and Respond to Gender-based Violence Globally, USAID, (2016).	The sections starting with “Mainstream and Integrate Gender-Based Violence Prevention and Response Activities into Sector Work” and ending with “Collaborate with Civil Society and the Private Sector” may be the most useful.

Table 3: Resources for Positive Masculinities Training

Positive Masculinities	NOTES
Gender Equity and Male Engagement: It Only Works When Everyone Plays, ICRW, (2018). https://www.icrw.org/wp-content/uploads/2018/02/ICRW_Gender-Equity-and-Male-Engagement_Brief.pdf	Identifying the need for and providing useful strategies and best practices for multi-sectoral, intersectional, long-term program and policy efforts.
Working with Men and Boys to End Violence Against Women and Girls, USAID, (2015) https://www.usaid.gov/sites/default/files/documents/1865/Men_VAW_report_Feb2015_Final.pdf	Based on a literature review to identify best practices, this report includes work-related situations.
Critical Positive Masculinity, Lomas, T. (2013), <i>Masculinities and Social Change</i> , 2(2), 167-193. http://www.hipatiapress.com/hpjournals/index.php/mcs/article/view/532/pdf	A theoretical article shifts the perspective of men as the problem to “critical positive masculinity” exploring the complex potential for positive change among men.
Journeys of Transformation: A Training Manual for Engaging Men as Allies in Women’s Economic Empowerment. Piotre Pawlak, Henny Slegh, and Gary Barker (2012), CARE	This manual provides group education sessions for engaging men as allies in

<p>International - Rwanda and Promundo-US.</p> <p>https://promundoglobal.org/wp-content/uploads/2014/12/Journeys-of-Transformation.pdf</p>	<p>women's economic empowerment. It emerges from experiences, in Rwanda – focused on personal life and private businesses but not work environments.</p>
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Annex III: Qualitative Barrier Analysis

32 phone-based key informant interviews (KIIs), four online focus group discussions (FGDs), and three dyad discussions. These interviews were conducted with the managers or staff members responsible for waste disposal at the hotels, restaurants, cafes, malls and hypermarkets in Amman, Jordan. A short quantitative section was added to the discussion guide to capture the quantitative information related to what kind of, how much, and how frequently waste is generated by these commercial units.

Key Findings

In general, noteworthy differences in terms of capability, motivation and opportunity to recycle were not found between the various sectors. Overall, lack of awareness of recycling options and availability of service providers significantly affected waste generators' capability and opportunities to engage in recycling behavior. Motivation to engage in recycling was largely a product of multi-national corporate policies or financial incentives from either waste collection and recycling service providers or the Greater Amman Municipality.

Capability

In terms of *capability* the most significant factors are related to lack of awareness of the benefits of recycling and inadequate space within establishments to conduct waste sorting, as well as the perceived financial burden attached to recycling. Given that recycling requires at least a basic level of sorting between recyclable materials and non-recyclable waste, space is a primary limiting factor for many companies. Additionally, lack of awareness of both the importance of recycling and the service providers available were barriers to recycling.

Opportunity

Opportunities for recycling in Amman are limited, as there are few service providers that offer recycling, and even those are limited in the specific materials they collect. This was particularly relevant to cafés and restaurants that were only aware of service providers who recycle cooking oil.

Additionally, many companies who engage in recycling do so because they were approached by specific service providers, meaning many companies are left out of potential opportunities to recycle their waste.

Motivation

Motivating factors across the various sectors were related to corporate policies related to environmental protection and financial and marketing incentives. Generally, those companies who belonged to multi-national parent organizations were more likely to have headquarter-level mandates and directives regarding recycling, which was a significant motivating factor for many. Additionally, for those who were aware and eligible, tax incentives from the Greater Amman Municipality and discounts from waste collection service providers proved motivating factors for some companies.

Recommendations

Based on the key barriers and drivers that were identified from the analysis, MAGENTA has five key programmatic recommendations for how to influence commercial waste generators to adopt more recycling behaviors:

1. Educate and raise awareness among commercial waste generators
2. Development of a behavior-change-focused communications campaign
3. Facilitate communication between waste generators and service providers
4. Develop an organized system for the use of waste pickers
5. Provision of more incentives to commercial waste generators

BACKGROUND

Currently, most commercial waste generators use municipal waste collection services that take their waste straight to landfills. A small number of these waste generators across sectors allow informal waste pickers access (i.e. sorting and extraction of recyclables) to their waste prior to disposal. An even smaller number of commercial waste generators contract and use formal private sector recycling services. If the Recycling in Jordan Activity is to meet its target of diverting up to 115t per day of landfill waste into recycling markets, it is going to have to change current practices of commercial waste generators with respect to:

- Improved and increase access to waste pickers by commercial waste generators;
- Increased contracting of private sector recycling service providers; and/ or
- Establishment of internal waste management and recycling operations (i.e. separation, sorting, and sale).

Therefore, to help elaborate and inform any/all such options, the Activity conducted this study, which examines current practices and motivations of commercial waste generators in four sectors (restaurants, hypermarkets, hotels and malls) in Amman.

1.1. Analytical Framework: COM-B Model

This research has been guided by a social and behavioral change (SBC) approach, which is informed by behavioral models and insights from sociology, psychology, and behavioral science research. Social expectations and norms play a large role in determining an individual's behavior, as many negative behaviors are derived from and reinforced through social expectations. By using an SBC approach to policy-making and focusing on changing behaviors, attitudes, and beliefs, governments can create long lasting positive change for their citizens. Specifically, the COM-B model was used as the analytical framework for this research, helping to unpack and explore the drivers and barriers to recycling by commercial waste generators. This model recognizes that behaviors are multidimensional, involving three different components. The COM-B model recognizes that capability (both psychological and physical), motivation (conscious and unconscious), and opportunity (physical and social) affect an individual's, or in this case a company's, adoption of a behavior.

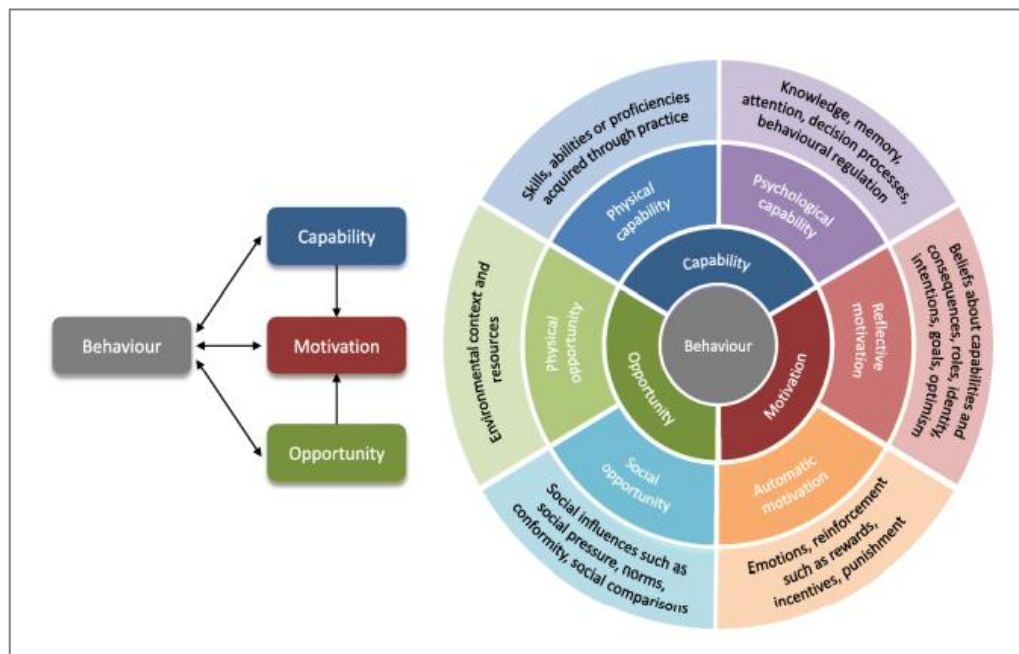
Motivation is viewed as an expression of an individual's desire to change or adopt a new behavior.

Capability relies on the individual's capacity to change or adopt a behavior, such as having the necessary physical ability, knowledge, and skills.

Opportunity captures external factors that enable or motivate behavior, including changes to the environment and social opportunities.

Therefore, COM-B considers both the individual determinants behind a behavior, as well as the sociological and environmental ones.

Figure 10: full definition of motivation, capability and opportunities



The
and (2)

below:

Context research questions:

- What kind of, how much, and how frequently waste is generated by different commercial units?
- What alternatives to private sector recycling services are being used by commercial waste generators.

1.2. Research Questions

research questions that guided this assessment are split into (1) context questions behavioral determinant questions. The behavioral determinant questions have been categorized in accordance with the COM-B analytical framework. These are detailed

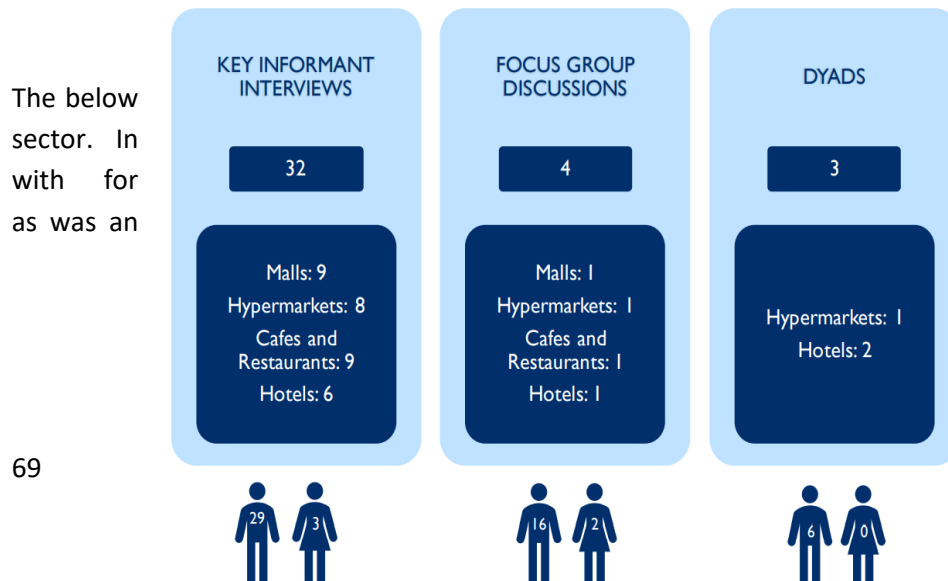
Table 15: Behavioral Determinate Research Questions

Research Question	Behavioral Driver as per COM-B
What kind of waste disposal mechanisms, or recycling services, do commercial waste generators engage in, if any?	Opportunity
What are the key factors that drive or hinder commercial waste generators from adopting recycling (and waste separation) behaviors (recyclers vs non-recyclers)?	Capability, Opportunity, Motivation
What is the experience of commercial waste generators when seeking to access recycling services, from both formal and informal service providers?	Opportunity

1.3. Research Methodology

MAGENTA conducted rapid qualitative research to assess the behavioral determinants (i.e. drivers and barriers) of recycling by commercial waste generators in four target sectors. Qualitative data was obtained through KIIs, FGDs and dyads. These interviews were conducted in Amman, Jordan with the managers or staff members responsible for waste disposal in four sectors: Hotels, Restaurants and Cafes, Shopping Malls, and Hypermarkets.

Semi-structured discussion guides were developed to assess behavioral determinants, intentions, barriers and current knowledge in relation to solid waste management and recycling, as well as to better understand the experiences of the commercial waste generators with regards to provision of recycling services, both formal and informal.

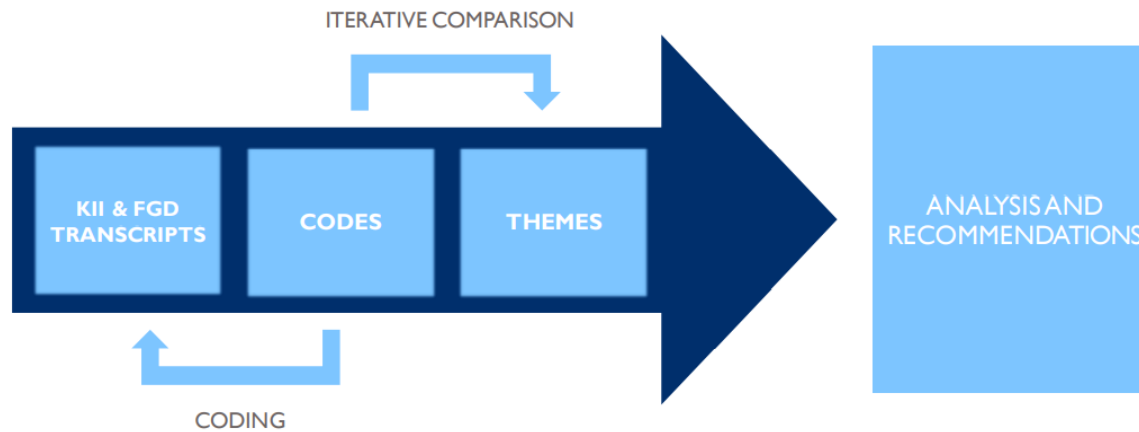


1.4. Types of Interviews Conducted

The diagram outlines the types of interviews conducted in each of the four cases. In each case, different people from the same entity were engaged for both a KII and a FGD, e.g. A KII was conducted with Abdali Mall, and a FGD was conducted with the same entity. List of entities met is provided under [Annex I](#).

1.5. Analysis Methodology

To ensure consistency between the research questions, COM-B analytical framework and data collected, MAGENTA employed an iterative approach to coding and analyzing the qualitative transcripts. An initial coding structure was developed that reflected the structure of the COMB model and questionnaire. But to allow for other themes and trends to emerge, the coding structure was routinely reviewed and updated to ensure that those insights were captured.



1.6. Classification of Recycling Behavior

As part of the analysis MAGENTA conducted a post-classification of recycling behaviors as doers, non-doers, and ex-doers. These are defined below and allow for a comparative

behavioral analysis to understand key differences between these groups.

- Doers were determined if the respondent's company has a system in place to separate recyclable materials from waste) whether internal or external process) and was taken by either private company, municipality or individual waste picker to be recycled.
- Non-doers were determined to be companies who did not separate waste materials, disposing all waste together. The intent of the company was taken into account, whereby if respondent said there were no systems or programs in place to recycle, they were categorized as non-doers.
- Ex-doers were determined respondents whose companies used to partake in active recycling processes but no longer do due to varying circumstances.

1.7. Sample Breakdown by Recycling Activity

The FGDs were not included in the doer/non-doer categorization as they contained employees from different organizations within the same sector, some of whom were doers, others non-doers. The sample included the following: 23 non-doers, 11 doers, and 1 ex-doer.

1.8. Waste Profile among Commercial Waste Generators

Table 16: type of waste generated (sectoral comparison)

	Hotels	Malls	Cafes & Restaurants	Hypermarkets
Type	Cardboard and Paper Plastic Glass Cans Cooking Oil Metals Organic Waste	Cardboard and Paper Aluminum Cans Plastic Glass Nylon Polystyrene Metals Cooking Oil Organic Waste	Cardboard and Paper Plastic Glass Cans Food Waste Cooking Oil	Cardboards and Paper Nylon Polystyrene Plastic Meta
Percentage of recyclable waste (based on respondent estimation)	≈ 40 to 50 %	≈ 40 to 60 %	≈ 40 to 50 %	≈ 40 to 60 %
Frequency of waste generated	Daily	Daily	Daily	Daily
Frequency of waste collection	Daily or every two to three days	Every two to three days	Every two to three days	Every two to three days

Type of Waste Generated (Malls)

Malls reported generating the following main types of waste:

- Cardboards and paper products, aluminum, cans, bottles (glass and plastic), nylon, polystyrene, metals (iron, aluminum, copper), cooking oil, and organic waste.

According to those surveyed, approximately 40 to 60% of the waste generated is recyclable. In the Malls sector, waste is generated daily and collected every one to three days. Generally, malls reported that on a weekly basis each mall produces around 10 tons.

- "This is daily. We have a huge quantity of cardboard- maybe 1 ton, or slightly less, because 90% of the products come in cardboard boxes."

---- Staff Member, Mall, Amman

Type of Waste Generated (Hotels)

Hotels reported generating the following main types of waste: paper and cardboard, plastic, glass, cans, cooking oil, metals, and organic waste.

According to those surveyed, approximately 40 to 50% of the waste generated is recyclable. In the hotel sector, waste is generated daily, however it is collected every two to three days from the premises. Hotels reported that monthly each hotel produces approximately 20 tons of waste (600-700 kg per day). Larger hotels, for example, reported 1,000 to 2,000 cans and bottles on a normal day before the COVID-19 pandemic.

Type of Waste Generated (Hypermarkets)

Hypermarkets reported generating the following main types of waste: Cardboards and paper products, nylon, polystyrene, plastic (bags and bottles), and metals. According to those surveyed, approximately 40 to 60% of the waste generated is recyclable. Like hotels, waste is generated daily and collected every two to three days from the premises. Generally, on a weekly basis each hypermarket produces two to four tones of cardboard and 300-400 boxes of plastic daily (according to respondents, as no constant unit of weight measurement was reported).

Type of Waste Generated (Cafes and Restaurants)

Cafes and restaurants reported the following as the primary types of waste generated

- Cardboards, plastics and paper products, glass and plastic bottles, and cans.
- Food waste (left-over food, vegetables etc.), cooking oil (recycled by the restaurants using an oil recycling machine or a private company)

According to those surveyed, approximately 40 to 50% of the waste generated is recyclable. Similarly, to the other sectors, waste is generated on a daily basis and collected every two to three days. Restaurants and cafes reported producing approximately 200-250 liters of cooking oil waste each month, as well as large volumes of soda cans and glass bottles, particularly among those serving alcohol. Several cafes and restaurants surveyed reported recycling cooking oil about every seven to ten days.

Recycling and Waste Collection and/or Transport Companies

When asked about recycling and waste collection and/or transport companies, the following companies were identified and appear to have some level of brand recognition:

- Fast step
- The Ideal Solution
- Green Future
- Zawati
- Almethaliah (Oil Recycling company)

BARRIERS TO COMMERCIAL WASTE RECYCLING CAPABILITIES

1.9. Barriers to Commercial Waste Recycling Capabilities

Capability of commercial waste generators were explored to understand the importance as a factor in determining whether a company recycles or not. Specifically, this looked at physical and psychological capabilities, such as decision-making processes, corporate policies, sorting capabilities, man-power profiles, wages and costs, physical infrastructure, financial means, and knowledge and awareness. The following have been identified as the three primary capability barriers to recycling.

- Waste Generators lack awareness of the recycling concept and the services available. Non-doers reported lower levels of awareness of recycling and the availability of service providers than doers.

- Waste Generators lack finances to afford private sector services and the tools and equipment required. Non-doers were more likely to express perceptions of recycling as being costly and financially taxing than doers.
- Waste Generators lack physical space to place containers and sort different types of waste. Non-doers were more likely to express concerns around the availability of the physical space needed for sorting waste than doers

Physical Capability- Doers

Commercial waste generators that recycle exhibited a few key factors that seem to determine their behavior.

Sorting is mostly outsourced to private companies, individual waste pickers or daily laborers by doers. Very few companies in the malls, hotels and hypermarket sectors have full-time employees for sorting waste. In the malls, the cleaning staff collect all the waste from all the stores and shops into the skip area where they separate the recyclable and non-recyclable waste. Recyclable and non-recyclable waste is then carried in separate vehicles by the employees of private companies.

Supply of recycling equipment and labor are an important component of recycling behavior. In some cases, the containers for sorting are provided by the private companies. Some respondents reported that employees of the private company come to the premises for about five to six hours per day to sort different types of waste.

Gender diversity is significantly lacking when it comes to recycling in the target sectors. All companies reported using only male employees for sorting and waste disposal. Most companies hire Jordanians. However, some of these employees are daily waste pickers, who tend to be male Egyptian or Bangladeshi laborers.

Availability of physical space is a significant factor for doers. Doers across sectors reported having dedicated rooms or outdoor space allocated for waste collection and sorting. However, a few reported that sorting by private companies on the premises requires special permissions from the municipality due to health and safety laws. Therefore, due to the lack of physical space, the waste is carried to specific areas by the private companies for sorting.

Limited recycling of waste was reported by doers. Most doers across sectors separate cardboard, nylon, and polystyrene to be taken by the private companies or waste pickers. All other kinds of solid waste are put in bin bags without sorting and taken by the municipality trucks to the landfills.

Doers in the cafes and restaurants sector only recycle cooking oil. They use oil recycling machines to recycle cooking oil or outsource it to private recycling companies that collect the oil in large drums. Most cafes and restaurants have contracts with the private companies.

- "I devised a system. In each branch we have an area it a cage around it for cardboard, polystyrene, and the company who removes our waste provided us with containers to put the trash in. And they are separated by the employees. It does not require a supervisor, it's a straightforward process."
---- Staff Member, Mall, Amman
- "We have bags for the green items, and bags for the non-solid waste. They are put in a particular area for the municipality to come and pick them up."
---- Staff Member, Mall, Amman

Physical Capability- Non-Doers

Commercial waste generators that did not recycle have been analyzed here.

Sorting is a challenge for non-doers. Most of the companies in the 'non-doers' segment do not have internal sorting capability or employees to sort waste. Staff at some malls reported that it is the responsibility of the shop owners or restaurants to adopt recycling behavior, as it is difficult for them to manage or hire employees to keep track of all shops' waste and doing so would increase their costs.

Lack of physical space is a significant barrier. It was reported that waste collection is not taken into consideration during the construction of buildings for restaurants and cafes. For example, no separate area is allocated or built for waste collection or sorting during the construction phase, and therefore the companies must dispose of the waste on a daily basis without sorting in-house. Most of the non-doers consider lack of physical space as a primary reason not being able to take on sorting or recycling behavior.

Lack of financial resources is a critical reason companies do not adopt recycling behaviors. According to non-doers from different sectors, sorting and recycling is costly as it requires buying extra bags, bins, tools and hiring more employees. These companies report that the private recycling companies charge exorbitant fees for waste disposal and recycling services. Therefore, the cost is higher than the benefit they might receive.

Lack of infrastructure is a significant problem. Many modern buildings, especially those designed abroad for the malls and big hotels, have physical space that allows for recycling activities. Most of these companies, however, do not have separate bins or containers for sorting and lack physical infrastructure to carry out sorting in house.

Lack of required machinery is also a factor. In certain areas the private companies do not have the specific machinery required for carrying trash containers. So, the private companies sign contracts with only those waste generators whose infrastructure is compatible with the kind of machinery these private companies have. This is critical as this represents a supply side barrier.

- "We spoke with a number of supermarkets and they have the same reservations that their space is not enough, the financial revenues are not worth the trouble, the effort that needs to be made is too much."
---- General Manager, Hypermarket, Amman

- "The space, for example the 5 stars hotels usually have garbage rooms where they can sort the garbage but

Decision-making Process-Doers

Lack of clear decision-making structure regarding waste management is a barrier within some companies. When trying to understand how decisions around waste management are made, it was found that most entities did not have clear or consistent policies or focal points when it came to this matter. It was found that across sectors and organizations, individuals at different levels and within a variety of departments are responsible for making decisions regarding waste management. For example, in the case of malls or hotels, the kitchen or housekeeping departments took responsibility for their own waste and there does not appear to be a centralized process for waste disposal. In some of the multinational organizations, such as Marriott, the decision is made at the headquarters level, which is then implemented globally.

Decision-Makers- Doers

Some hypermarkets, such as Safeway, have hired engineers for waste management and recycling, and the engineering department is responsible for waste management and recycling. The following is a summary of the positions or departments involved in making key decisions regarding waste management:

- Engineering department
- Finance department
- Procurement department
- Warehouse managers
- Operations managers

- General managers

Most individuals involved in making any decisions related to waste management are male employees of the companies, and who are either the owners of these companies or senior level managers.

Psychological Capabilities: Knowledge, Skills, and Awareness

Lack of knowledge and awareness is problematic. Overall, companies in different sectors have extremely low levels of knowledge and awareness of the recycling sector and/or services available. Respondents across sectors report that there is a dearth of knowledge, skill, and awareness regarding the importance of recycling at the community level in general. Some commercial waste generators reported receiving free waste transfer and sorting services from recycling companies; however, the majority of the commercial waste generators are not aware of such services or have never been approached.

Lack of interest in recycling is also common. Many respondents, particularly from cafes and restaurants, showed a lack of interest or awareness regarding the importance of recycling. Most of these companies also lack awareness about the waste disposal and recycling services provided by the private companies or individual waste pickers.

- "We collect the waste every night and put them in a dumper except for the cardboards which a company takes them and uses them again. I do not know what they do with them."
---- Staff member, Hypermarket, Amman
- "not really interested. Because we only have one place where we handle the waste. The rest are inside malls, and you know how they are with regulations. They need approvals and a whole lot of running about, so we

Waste transfer vs. recycling is an important distinction. Most of the respondents could not differentiate between waste transfer and recycling services. Most are only aware of some private waste transfer companies that remove waste from their premises but are not aware whether the waste taken away is recycled or not. Most employees of companies that have some sorting capability or mechanism are not aware what happens to the separated waste after being taken either by the municipality or a private company.

High level of knowledge is limited to few multinational companies with structured decision-making. Companies in the malls and hotels sector, where decision-making regarding waste disposal and recycling lies with the engineering departments, showed very high levels of commitment in addition to high levels of knowledge, skills, and awareness. Only multinational companies, such as Marriott, have effective procurement departments that gather information on the recycling companies working in the Amman region.

Trainings in recycling and waste management are limited. Apart from a few multinational hotels, the majority of the commercial waste generators do not have any formal training programs for employees regarding the importance of recycling, due to high costs of training. Only a couple of multinational hotels reported having recycling as part of their health and safety induction course at the start of the employment.

Willingness to adapt behavior in the future is high. Most respondents across sectors showed high optimism regarding adopting recycling in the future. This was seen among the waste generators, as well as the public in general if effective social and behavioral change campaigns are conducted.

- "I am not in need of these companies. My goods, when I buy them, they are all in boxes. In my work, I do not need cardboard boxes. I receive my goods in boxes, I empty them out, and I have to get rid of the empty boxes, that's all!"

---- Staff member, Hypermarket, Amman

- "Among my responsibilities is also waste management, from a technical perspective, and all other waste materials that can be reused. We signed a contract with a company to remove the cardboard, the polystyrene and the plastic. "

----Engineer, Mall, Amman

1.10. Barriers to Commercial Waste Recycling Opportunities

Opportunities- Key Barriers:

Opportunities of commercial waste generators were explored to understand the availability and quality of services as a factor to determine if the company recycles or not. Specifically, this looked at physical opportunity and social opportunity, such as the availability and quality of services, and social norms and influences, and knowledge and awareness of the services available. The following have been identified as the three key opportunity barriers to recycling.

- Waste generators lack awareness about the availability of recycling services and perceive the services provided by the private companies as expensive and unreliable.
- Waste generators perceive that private sector companies have limited capacity and can only recycle select items, such as cardboard and cooking oil.
- Waste Generators realize that recycling is not aligned with social norms and there is no social pressure, as not recycling is not considered unethical by society.

Perceived Availability of Service:

The research explored what commercial waste generators understood to be available in terms of waste management services. It should be noted that this was not a mapping exercise and, as such, all findings are perceptions and do not necessarily reflect what is actually available. Awareness of following types of services was assessed:

1. Private Sector Companies
2. Public Waste Disposal Services, i.e. Greater Amman Municipality
3. Individual Waste Pickers

Private sector companies are used by some doers. Private sector recycling services are mostly contracted by the big hotels and malls in Amman. At some malls, doers sort the waste on-site and different companies are contracted only for disposal of different types of recyclable waste. Some hotels, cafes and restaurants have contracted private companies that specialize only in the recycling of cooking oil.

Public waste disposal services are the services provided by the Greater Amman Municipality. These public waste disposal services are used by companies across the target sectors. These services, however, are mostly used by the non-doers as they simply throw all the waste in a dumpster and the municipality takes it to the landfill . The municipality does not provide any kind of sorting services. Moreover, these waste disposal services are quite irregular and the reliability of it depends on the specific area in Amman. A couple of hotels reported that the municipality has recently initiated recycling services as part of some foreign funded NGO projects.

Individual waste pickers are mostly used by cafes and restaurants and hypermarkets. They pick up the recyclable waste and sell it to the recycling companies. Most of them provide this service for free.

Insufficient suppliers of recycling services. The respondents perceive that there are not many companies available in the formal sector that provide recycling services. Very few private sector companies operate in the Greater Amman Municipality, however they are not sufficient to cater to the different needs of different kinds of waste generators in the region. Almost every doer using private sector services said that private companies approach them offering waste disposal and sorting services. Therefore, even among doers, the behavior is not always sought out. The majority of commercial waste generators are not aware of any such services, as they have never been approached by a service provider.

Limited services available affects perceived reliability. Respondents report that the service providers do not have the capacity to recycle all sorts of waste. For example , respondents in cafes and restaurants sector either have oil recycling machines or have contracts with private companies who specialize only in recycling oil. These respondents only recycle oil, because the service providers do not have the capacity to recycle other forms of waste and/or they lack the financial capital to set up the infrastructure and hire the human resources required to provide services at a large scale. Some doers also report that they have contracted separate companies for different types of waste, for example cardboard and paper is taken by one company, whereas glass and plastic by another.

No Public Sector Recycling Services. None of the companies described any public sector entity as a recycling service provider. The Greater Amman Municipality only provides waste disposal services that pick up the waste from the area and take it to the landfills without sorting or recycling.

- "we signed a contract with a company to remove the cardboard, polystyrene, and plastic, and they give it to the concerned entities for a very nominal fee!."

---- Engineer, Mall, Amman

- "No. It is only the Municipality. They come and take the waste. And sometimes we have an individual who takes

Perceived Quality of Services

The perception of the quality of services provided by different type of services provider depends on the various priorities of doers and non-doers (for example how they define the quality of the service provided) as summarized in this table:

	Private Sector	Public Sector	Individual waste pickers
DOERS	<ul style="list-style-type: none">• Perceived reliability• Perceived adequate frequency of collection• Perception of provision of full services	<ul style="list-style-type: none">• Perceived lack of reliability• Perception of provision of limited services	<ul style="list-style-type: none">• Perceived as not relevant due to their inability to handle the large volume of waste produced
NON-DOERS	<ul style="list-style-type: none">• Perceived cost• Perceived lack of reliability	<ul style="list-style-type: none">• Perceived as acceptable service despite irregularity	<ul style="list-style-type: none">• Perceived absence of costs for the waste generator

Perceived Quality of Services- Private Sector (Doers)

Perceptions about the quality of private services are mixed depending on the service provider.

Commitment and reliable services are the main determinants of the quality of the services. Services provided by the private sector are hailed as opposed to the public sector services, as they provide timely services and are committed to removing the waste from the company premises regularly.

Frequency of waste collection factors into perceived quality of services. Private sector companies are preferred over public sector services due to more frequent waste collection. Private companies provide daily services and collect waste on a daily basis from the premises of most of the commercial waste generators. Additionally,, some companies collect waste two to three times a day from some of the malls and hotels. Some food sector waste generators have a negative opinion of the quality of services, as the organic waste need to be removed on a daily basis from the premises, whereas some companies do not provide daily services.

- "Another thing is that I am dealing with a company that is maintaining the cleanliness of the place. If I was dealing with the Amman Municipality, they come, they pick up the garbage, and they leave. They have nothing to do with anything else. These companies on the other hand, and depending on the contract, you have with them, leave everything clean."

---- Manager, Mall, Amman

Full-service waste collection providers are preferred. Some of the private sector companies provide employees and containers for sorting and removing all the recyclable and non-recyclable waste from the premises, in addition to cleaning the waste area. Some recycling companies, such as Green Future, provide a full-time employee to clients to sort waste at origin. The recyclable waste is taken to the recycling facilities, whereas the non-recyclable waste is taken to the landfills in a separate vehicle.

Communication with service providers is key. Private sector services are preferred over public services and individual waste pickers due to better communication and response from the private companies. Lack of sufficient infrastructure and logistics affects perceived quality. Waste generators report that most of the private companies lack the logistics of large-scale recycling service providers. They do not have sufficient

finances to cater to all the recycling needs of the waste generators. According to the respondents, most of these companies are only able to recycle cardboard, polystyrene and plastic, whereas no company has the facility to recycle organic waste.

- "for the company to provide recycling services, I need the containers where I can separate the waste. Also, the cleanliness of the location and the regular pick-ups."
---- Manager, Mall, Amman

Perceived Quality of Services- Private Sector (Non-Doers)

Lack of commitment and reliable services turn off non-doers. Many non-doers perceive that the recycling services and waste disposal companies are not committed and do not provide timely services in accordance with their contracts.

Costs of recycling services are perceived to be too high for many waste generators. Some waste generators reported installing separate containers and bins for sorting, but the service provider quoted a huge fee for removing the recyclable waste from the premises. Most private companies do not provide containers or bins for sorting. Whereas some of the waste generators declined recycling services, because the waste generators were only providing containers, but lacked the workers needed to sort the waste. These companies are not willing to bear the extra costs of employing staff for sorting. Waste generators prefer a full-service company that can provide services from sorting to picking up and cleaning the premises. The Marriott in Amman region cancelled their contract with a private company because the company increased its fee to a level where it was not within their budget allocated for recycling.

Frequency of waste collection impacts perceived quality of services. Cafes and restaurants tended to have apprehensions regarding the quality of the services provided by the private sector companies. According to the non-doers in this sector, private sector companies do not come to pick-up waste two to three times a day, and the waste needs to be removed more than once a day.

Restaurant sector non-doers, however, would still prefer to contract private sector companies as they think they would have a better plan and communications compared to the public sector and individual pickers.

Quality of Services (Private Sector)

Types of waste that is taken by the companies for recycling: cardboard and paper, nylon, polystyrene, plastic, aluminum, soda cans, bottles (plastic and glass), iron, copper, and cooking oil.

Perceived Quality of Services: Public Sector (Doers)

Perceptions about the quality of the public sector waste disposal are mixed.

Low quality services lead many companies to avoid public sector service providers. Doers and large-scale waste generators such as hotels and malls deem the public sector services to be of extremely low quality, as they need a more reliable and frequent service provider that can provide full services, including sorting, removal of waste from the premises and cleaning the area. These waste generators do not rely on the public sector services as those are irregular and not timely. The municipal government does not provide any sorting or recycling services; and it only provides waste disposal services more regularly in certain areas. In certain areas the municipality picks up the waste once a day, whereas in other areas they come once every two or three days. Due to an insufficient number of dumpsters present at the site, commercial waste generators leave the garbage around the containers. These public sector services are considered to be of extremely low quality as they only pick up the waste and leave the premises unclean.

Perceived Quality of Services: Public Sector (Non-Doers)

Satisfaction with public sector waste disposal service was high among non-doers and small-scale waste generators, such as cafes and restaurants. These companies tended to be most interested in waste transfer, rather than in recycling. These waste generators seemed to be content with the quality of services provided by the municipality. However, they complain about these services being irregular and would prefer the waste being taken more frequently from their areas.

Perceived Quality of Services: Individual Waste Pickers (Non-Doers)

While doers do not rely on individual waste pickers due to their limited capacities as mentioned above, Individual waste pickers are used by commercial waste generators in different sectors.

Free of cost service is appealing to many waste generators. Many medium and small-scale waste generators use individual pickers as they do not charge any fee for picking up the waste and for cleanliness. Their services are perceived as a favor or free service provided to the company. In return the company offers free recyclable waste as an incentive or a source of income to the waste pickers.

Full-service recycling is appealing to many waste generators. Some of these more regular individual waste pickers provide full-service recycling by sorting the waste, taking the waste to the dumpster, and cleaning the waste area in the building. Those individual pickers sort and sell recyclable items to the recycling factories. The individual waste pickers come more regularly to pick up the waste as that is their only source of income.

However, **communication** with individual waste pickers is difficult on the days when commercial waste generators need to dispose of the waste more than once during a day.

Lack of capacity to meet the needs of larger waste generators is a main reason why individual waste pickers are not preferred by these companies. Large-scale waste generators such as malls and hotels cannot rely on the individual waste pickers due to the large volume of waste generated, which requires special machinery to carry the waste. Some large-scale waste generators, however, give some recyclable waste to the individual waste pickers to support them financially.

- "I personally deal with individuals, because they are usually committed since they too benefit. And in the end, what we need is someone to clean up the area."

Social Opportunity: Social Norms and Influences

Most of the participants surveyed believe that recycling is still not part of the social norms and ethos in Jordanian society. There is a severe lack of awareness about recycling in the society and people are generally not aware of the concept of recycling. People lack awareness about the importance of recycling and its impact on the environment, and therefore generally dump everything together without sorting.

There is no social or peer pressure from the community, given that not recycling is not considered harmful for the environment if the area or premises is clean, and the waste is disposed of. The cultural and social norms do encourage cleanliness; however, the concept of recycling is still new and present only in certain socio-demographic groups. Therefore, recycling behavior needs to be made part of everyday life. The concept of "green hotels" is emerging but it is still far away from achieving any tangible results, requiring more awareness raising among the customers to make it more widespread in the hotel sector.

- "Most of the people have no idea about recycling. Maybe some malls do, but in general, people do not really understand this concept, basically how to do proper sorting such as separate the cardboard from the organic waste, plastic, nylon, etc. people have not reached there yet. They just dump everything together and dispose of it."

1.11. Barriers to Commercial Waste Recycling: Motivation

Motivations of the commercial waste generators were explored to understand the primary factors that drive the behavior of doers, and what could possibly be the factors that influence the non-doers behavior. The following were identified as the three key drivers to recycling.

- Provision of waste disposal and recycling services at a lower than-normal cost will encourage the waste generators to adopt recycling behavior.
- Incentives such as discounts, tax exemptions, free publicity and provision of free recycling tools and equipment will motivate waste generators to take up recycling behavior.
- Clear corporate policies regarding waste disposal and recycling activities compel companies to adopt recycling behavior.

Motivating Factors- Doers

Cleanliness is a central motivator for proper waste disposal by companies. Hiring private sector recycling or waste collection and transfer companies helps the commercial waste generators keep their place clean and maintain the cleanliness by providing timely and consistent services.

Monetary/Cost efficiency is a critical motivator for some companies. Some recycling service providers or waste pickers remove the waste from the premises is a central motivator for proper waste disposal by companies. Hiring private sector recycling or waste collection and transfer companies helps the commercial waste generators keep their place clean and maintain the cleanliness by providing it for free, which reduces the cleanliness or waste disposal cost for waste generators.

Using recycling service providers reduces the amount of waste they must dispose of in other ways. Doers reported that using recycling services reduced their waste disposal cost or fees significantly. Companies report to save around two thirds of the cleanliness and waste disposal cost. Moreover, recycled products are low cost as compared to the new branded products imported from abroad.

- "if you want to employ a company that is specialized just in the removal of waste it costs anywhere from 1500, 1800 to 2000 Jordanian Dinars per month. Yet, when you have recycling company that have their own employee to separate the waste, and clean up, the maximum you pay them is 600 Jordanian Dinar on a monthly basis. So, you are saving particularly two thirds of the cost!"

Organizational values and policies play a central role. Some companies include environmental protection in the company values. This is done to increase customer awareness and garner support. Malls try to raise awareness about recycling and the environment by installing separate bins in the marketplace for different kinds of waste, which creates awareness among the public and, in turn, helps them sort the waste before being taken away by the recycling or waste collection and transfer company.

Discounts for recycling are also a significant motivator. Waste generators reported receiving discounts from service providers on the fee they charge for removing waste from the premises. In addition, it was reported that a new initiative was launched by the Municipality, where those companies that do the sorting properly receive a waste compressor free of charge.

Environmental concerns are central to companies' decision-making processes in some cases. Several doers cited corporate social responsibility and protecting the environment as the main driving force for adopting recycling behavior.

Image-recognition plays a role in motivating companies to recycle. Several doers mentioned image-recognition and good reputation as a driving force to be involved in the recycling process. Their goal is to be branded one of the leaders in protecting the environment through recycling waste and motivate more companies to adopt recycling behavior. Private recycling companies expressed interest in adopting more recycling behaviors and would like to be marketed and advertised for adopting recycling behavior, which would compensate for the costs and time required to recycle.

- "I have a contract with a company to remove my waste, which is my main concern. I pay about 24 thousand a year. If the fact that if they recycle reduces the fees I have to pay to 14 or 15 thousands, I am saving money!"
---- Manager, Mall, Amman
- "It is a global hotel policy. We are concerned with the environment and our employees too. Any recycling operation is very acceptable and properly followed."

Motivating Factors (Non-Doers)

Cleanliness of recycling is a concern. Non-doers expressed interest in adopting recycling behavior if the recycling or waste disposal companies provided more frequent and reliable services.

Lower costs and discounts would motivate many non-doers. Despite some commercial waste generators or doers reporting free or discounted waste disposal and sorting services from the recycling companies, most commercial waste generators are not aware of such services or have never been approached. Therefore, the majority of the non-doers consider recycling to be costly and one of the primary reasons why they are not interested in or able to sort and recycle their waste. Reduced cost of waste disposal and cleanliness will motivate the non-doers to adopt recycling behaviors. In addition, tax exemptions or reduction in license costs would drive the non-doers to take up recycling behavior.

- "They will save us the burden of disposing of our waste, when we place them in the Municipality container, sometimes, due to weather conditions, they give out a horrible smell. What I care about is that my waste is removed."

— Manager, Restaurant, Amman

Supply of tools and equipment is a central motivating factor. Some non-doers expressed an inability to purchase the tools and equipment required for separating and sorting recyclable waste (e.g. compressors and separate bins). Therefore, the companies would be willing to sort and allocate time for recycling activities if they are provided both the tools and human resources necessary to sort recyclable waste.

Publicity/image-recognition could be better leveraged to motivate non-doers. Many non-doers see free publicity as an incentive that would encourage them to adopt recycling behaviors and start sorting waste. If their brand or names of their entities can be publicized for protecting the environment, this would motivate some companies to recycle.

Association of restaurants has significant influence in the café and restaurant sector. The Association of Restaurants can be an influencing actor in driving the restaurant owners to adopt more recycling behavior as part of an initiative taken by the association.

Increased Revenue/Financial Rewards could be better utilized to motivate non-doers. Non-doers expressed a willingness to invest in recycling activities, if the recyclable waste would increase their revenue and cover the cost of the recycling or sorting. As profit-making entities, these commercial waste generators look at the cost-benefit analyses, and most of them consider recycling costly which lowers their net profit, therefore incentives in terms of discounts in electricity cost or gas or tax would help develop their interest in adopting recycling behavior.

- "I cannot hire an employee for 300 Jordanian Dinars to sell cardboard boxes worth 10 Jordanian Dinars each month."

RECOMMENDATIONS

This section presents key programmatic recommendations based on the key barriers and drivers that were identified from the analysis presented above. The following are the key five programmatic recommendations for how to influence commercial waste generators to adopt more recycling behaviors:

- Educate and raise awareness among the commercial waste generators, including management, regarding the importance of recycling and the benefits and incentives they can receive.
- Employ a comprehensive behavior-change focused communication campaign, targeting the behavior of commercial waste generators.
- Solve information asymmetry by connecting the commercial waste generators with the private sector recycling services providers in the Amman region.
- Develop an Organized System for the use of Waste Pickers
- Provision of more Incentives to the Waste Generators

1. Educate and Raise Awareness among Commercial Waste Generators

While a number of companies are actively engaged in recycling in Amman through the services of the private sector recycling companies, the majority of the commercial waste generators are still not aware of the concept of recycling or any private sector companies that provide recycling services. Lack of awareness about the concept and process of recycling is the primary barrier to adopting recycling and waste separation behaviors. Therefore, it is recommended that the Activity together with implementing partners aim to educate and raise awareness among the commercial waste generators regarding the importance of recycling for the environment and the benefits and incentives available.

The awareness training programs can focus on the following:

- Importance of recycling
- Better quality services provided by the private sector companies
- Different kind of benefits/discounts these commercial waste generators can receive by adopting recycling behaviors
- Access to recyclable items at a reduced cost
- Development of training guides for collection and sorting of waste for different sectors.

2. Development of Behavioral Change Communication Campaign

Recycling waste is not a mainstream behavior in Jordanian society; therefore, it is recommended that a comprehensive behavior-change-focused communication campaign is designed to target the behavior of the commercial waste generators. This would help develop new recycling norms through commercial waste generators and change perceptions of residual waste, while fostering social influence to encourage the adoption of recycling behaviors. The social behavioral change communications (SBCC) approach should include a 360-degree, design, implementation, and evaluation approach.

SBCC Design

- Target audience segmentation and analysis
- Key message house – per audience segment
- Communications channel selection
- Creative concept
- Communications tactics
- M&E framework

SBCC Implementation

- Message testing
- Content development
- Content testing
- Media and outreach activities

SBCC Evaluation

- Longitudinal perception studies

3. Facilitate Communication between Service Providers and Waste Generators

Most non-doers have a negative perception of the quality of services provided by the private sector companies. Additionally, the perceived costs associated with the provision of services by the waste disposal companies are high. As identified in the research, several private recycling companies cost less than the traditional waste disposal companies. **Therefore, it is recommended that the Activity seeks to bridge this misinformation gap or solve information asymmetry by connecting the commercial waste generators with the private sector companies in the Amman region.**

4. Develop an Organized System for the use of Waste Pickers

The perceived high costs associated with the purchase of extra bags, bins, tools and hiring additional employees is another significant barrier towards adopting recycling behavior. This, however, can be addressed by connecting individual waste pickers with the small and medium scale commercial waste generators with limited resources. As these waste pickers provide services free of charge, smaller companies may be more likely to engage in recycling through these means. **It is recommended that the Activity develop a more structured and formal system for availing the extremely low cost or free services provided by the individual waste pickers.**

5. Provision of more Incentives to the Waste Generators

Commercial waste generators are eager to adopt recycling if the incentives or benefits associated with it outweigh the costs. Therefore, it is recommended that the Activity and recycling companies provide incentives such as:

- Branding and Publicity campaigns
- Provision of tools, free bins and containers for recycling
- Municipality fee discounts and tax exemptions via public-private partnership.

ANNEXES

Annex I: List of Commercial Sectors Met

#	Sector	Name of Company
I	Hotel	Amman Marriott Hotel

2	Hotel	Corp Hotel
3	Hotel	Sheraton Amman Al Nabil Hotel & Towers
4	Hotel	Intercontinental
5	Hotel	Al Qasr Metropole Hotel &Fakhreddin
6	Hotel	Holiday In
7	Hotel	Compass hotel
8	Hotel	Crwon Plaza
9	Hotel	Farah Hotel
10	Mall	Al Hurriyah Mall
11	Mall	Istiklal Mall
12	Mall	Abdali Mall
13	Mall	Amman Mall
14	Mall	Galleria Mall
15	Mall	Izmir Mall
16	Mall	Areefa Mall
17	Mall	Avenue Mall
18	Mall	Swefieh Village
19	Mall	City Mall

20	Restaurant	Romero restaurant
21	Restaurant	Texas Chicken
22	Restaurant	Fat Tony's
23	Restaurant	Zuwar
24	Restaurant	Peking
25	Restaurant	Abu Mariam Restaurant/Amber Lounge/RAJ
26	Restaurant	Baqet qronfol
27	Restaurant	Blue Fig
28	Restaurant	Burger Maker
29	Restaurant	Ahmad Salsabeel Resturant
30	Restaurant	Reem Restaurant
31	Restaurant	KFC
32	Restaurant	Sahle Al Akhdar
33	Hypermarket	Carrefour
34	Hypermarket	Lumi Market
35	Hypermarket	KAREEM HYPERMARKET
36	Hypermarket	SAFEWAY
37	Hypermarket	C-TOWN- Istiklal mall

38	Hypermarket	C-TOWN-7 th Circle
39	Hypermarket	H&H Supermarket
40	Hypermarket	Prime Fresh Food
41	Hypermarket	Amman Mart
42	Hypermarket	Select foode Shoppe
43	Hypermarket	Salam Hypermarkets
44	Hypermarket	Akhwa Mall
45	Hypermarket	City Stores
46	Hypermarkets	Sulala Mall

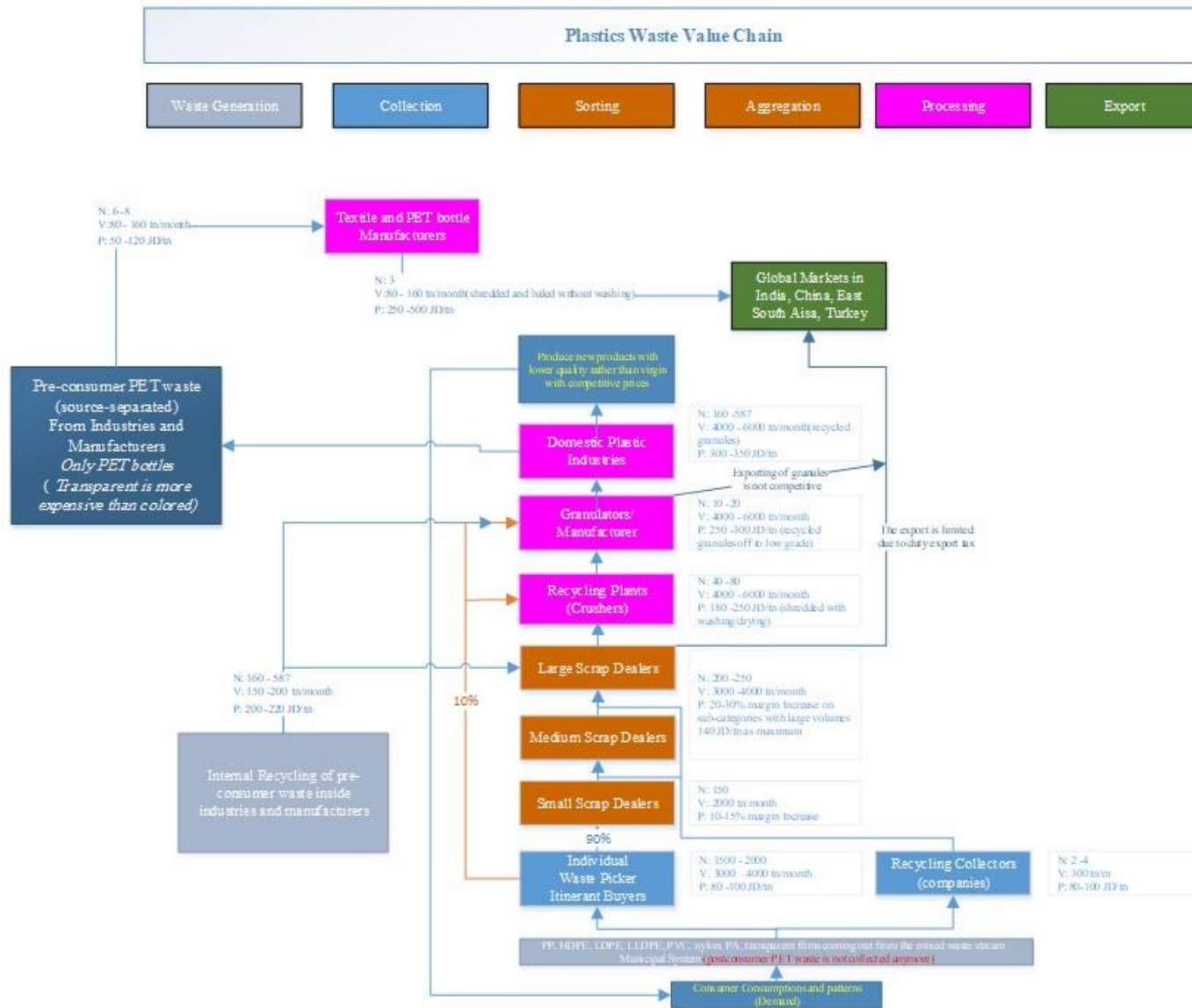
Annex IV: Summary of Value Chain Assessment

Value Chains List

Plastic Value Chains	(7) Value Chains
Paper Value Chains	(2) Value Chains
Metals Value Chains	(2) Value Chains
Other Value Chains	(5) Value Chains
Total	(16) Value Chains

Plastic Value Chains

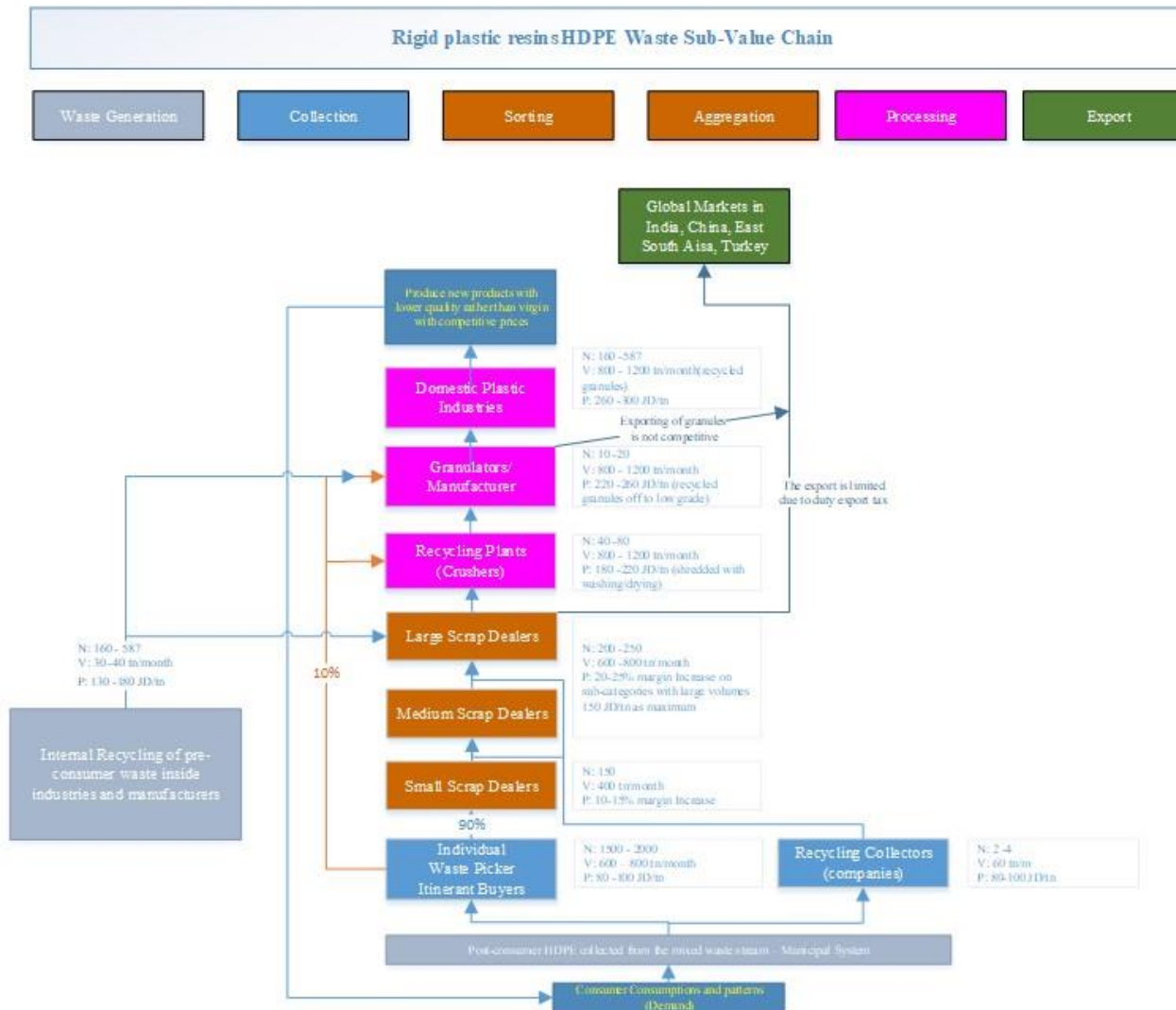
(6) Value Chains



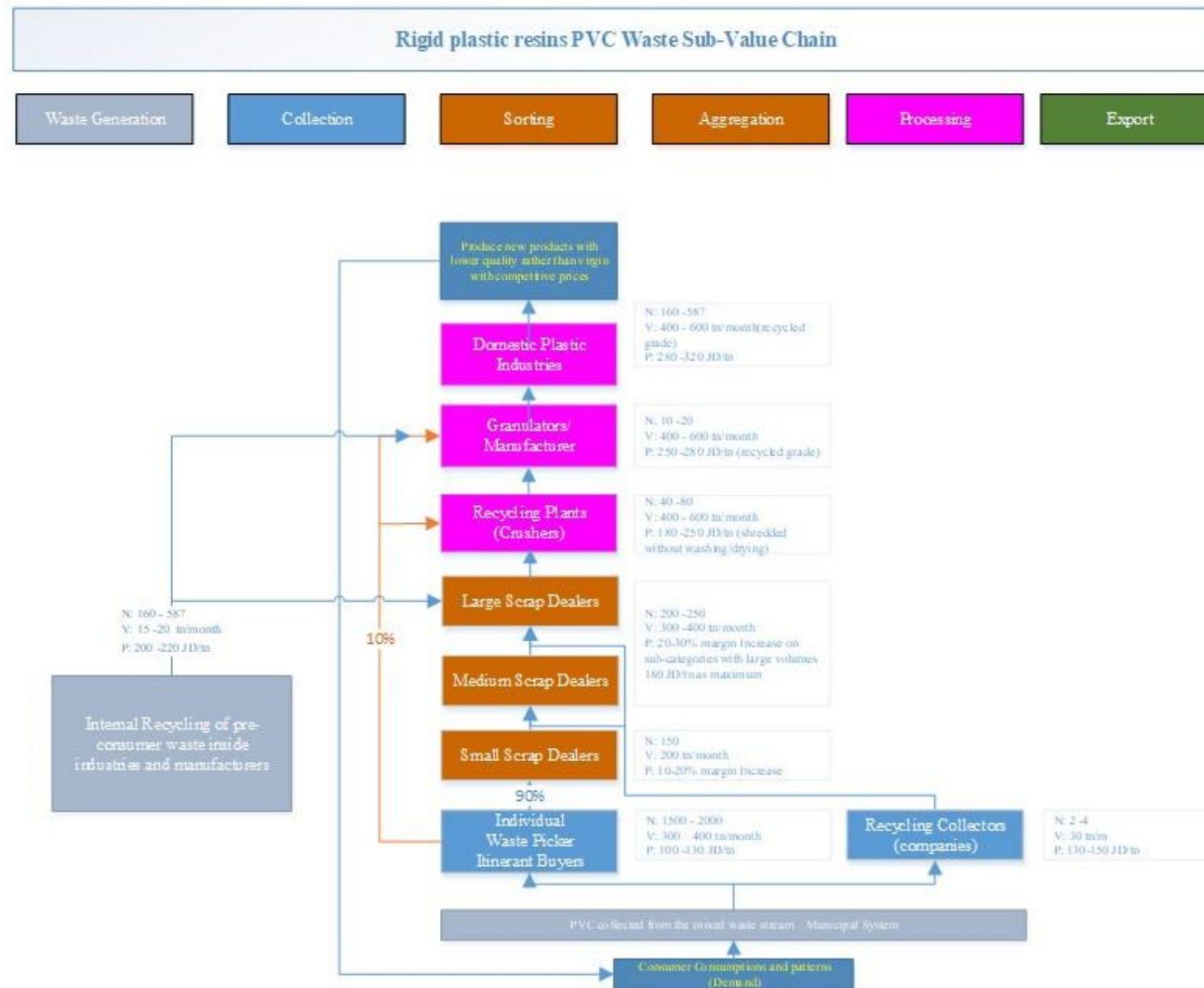
I – Polyethylene Terephthalate (PET) - Value Chain Mapping



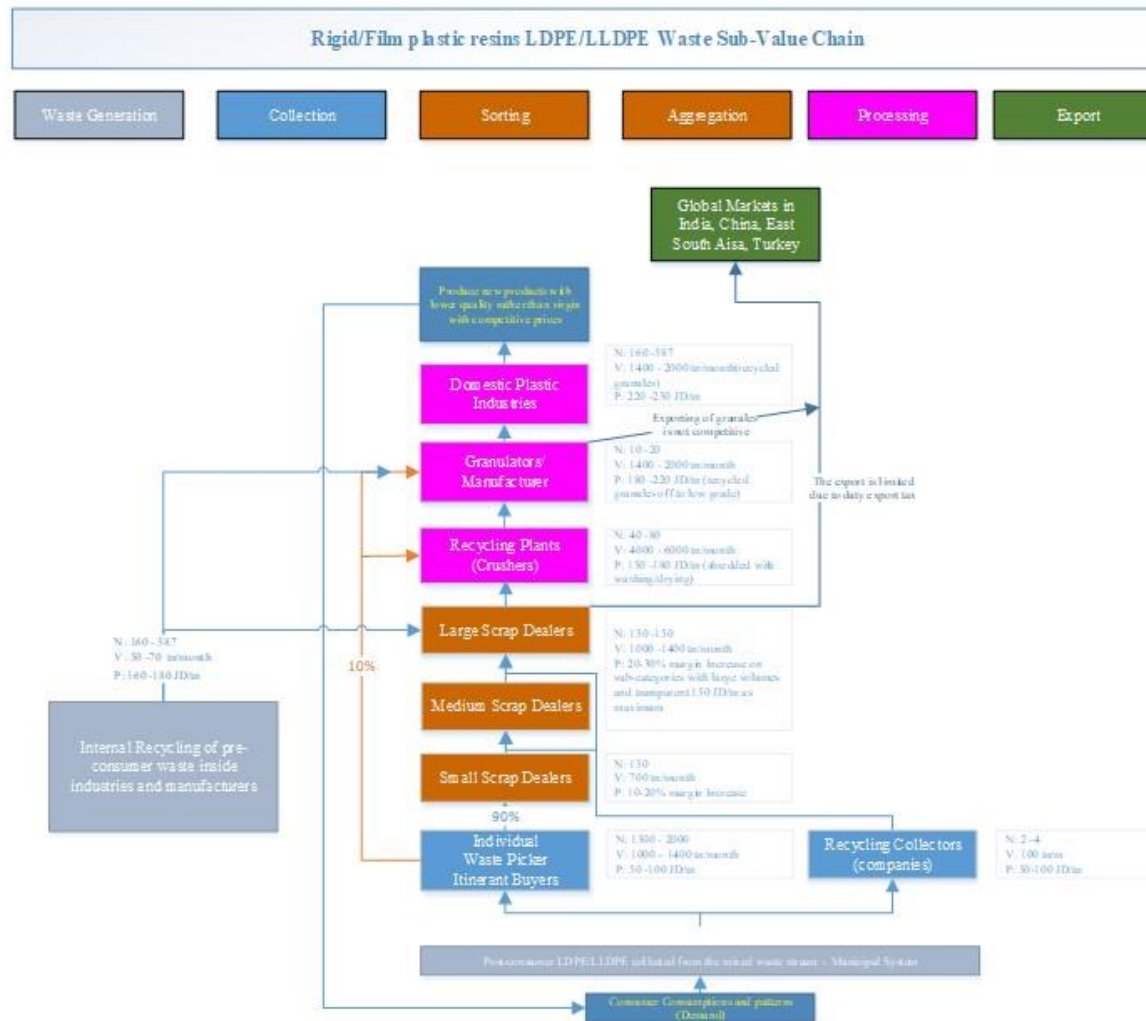
2 – High-Density Polyethylene (HDPE) - Value Chain Mapping



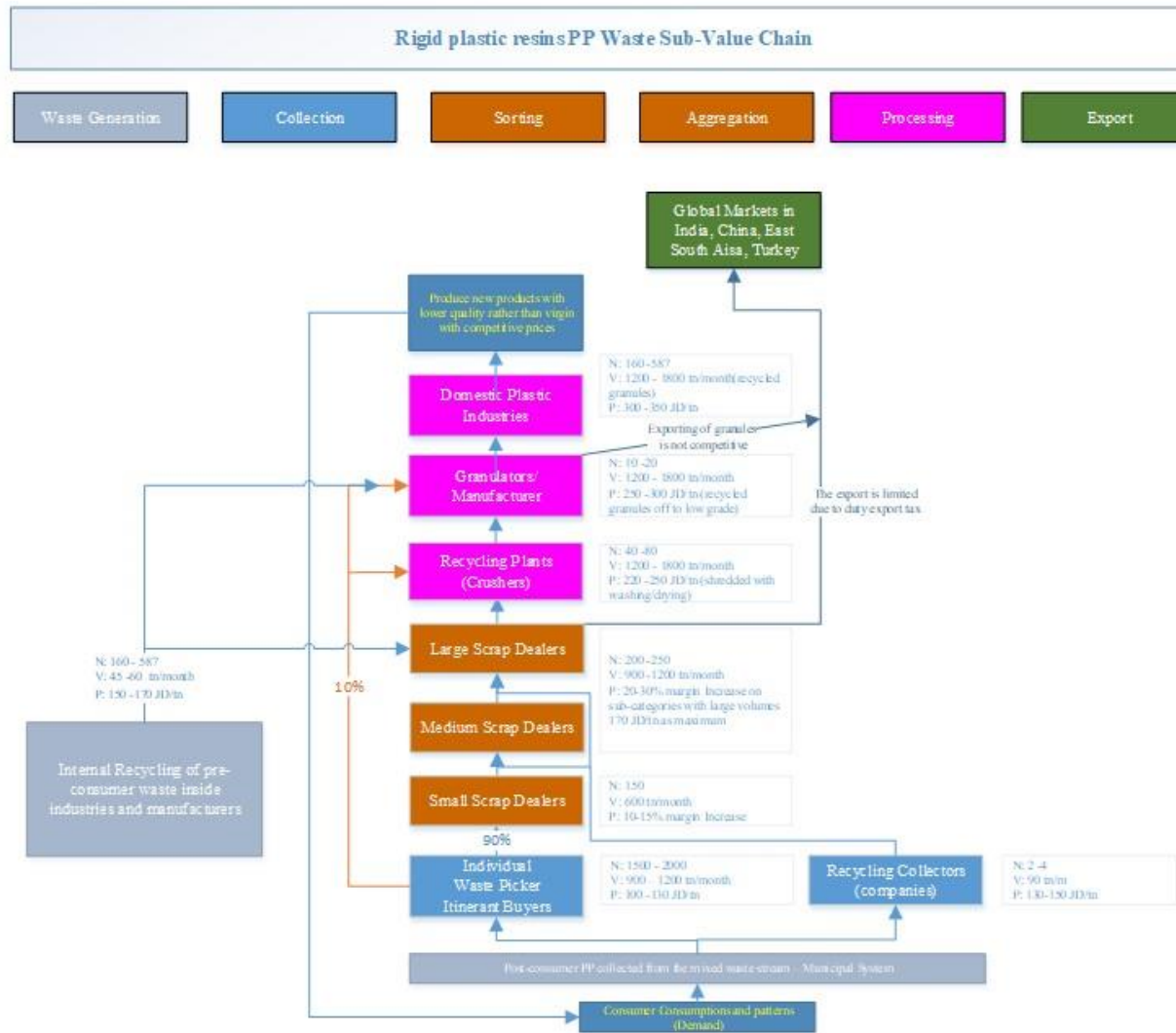
3 – Polyvinyl Chloride (PVC) - Value Chain Mapping



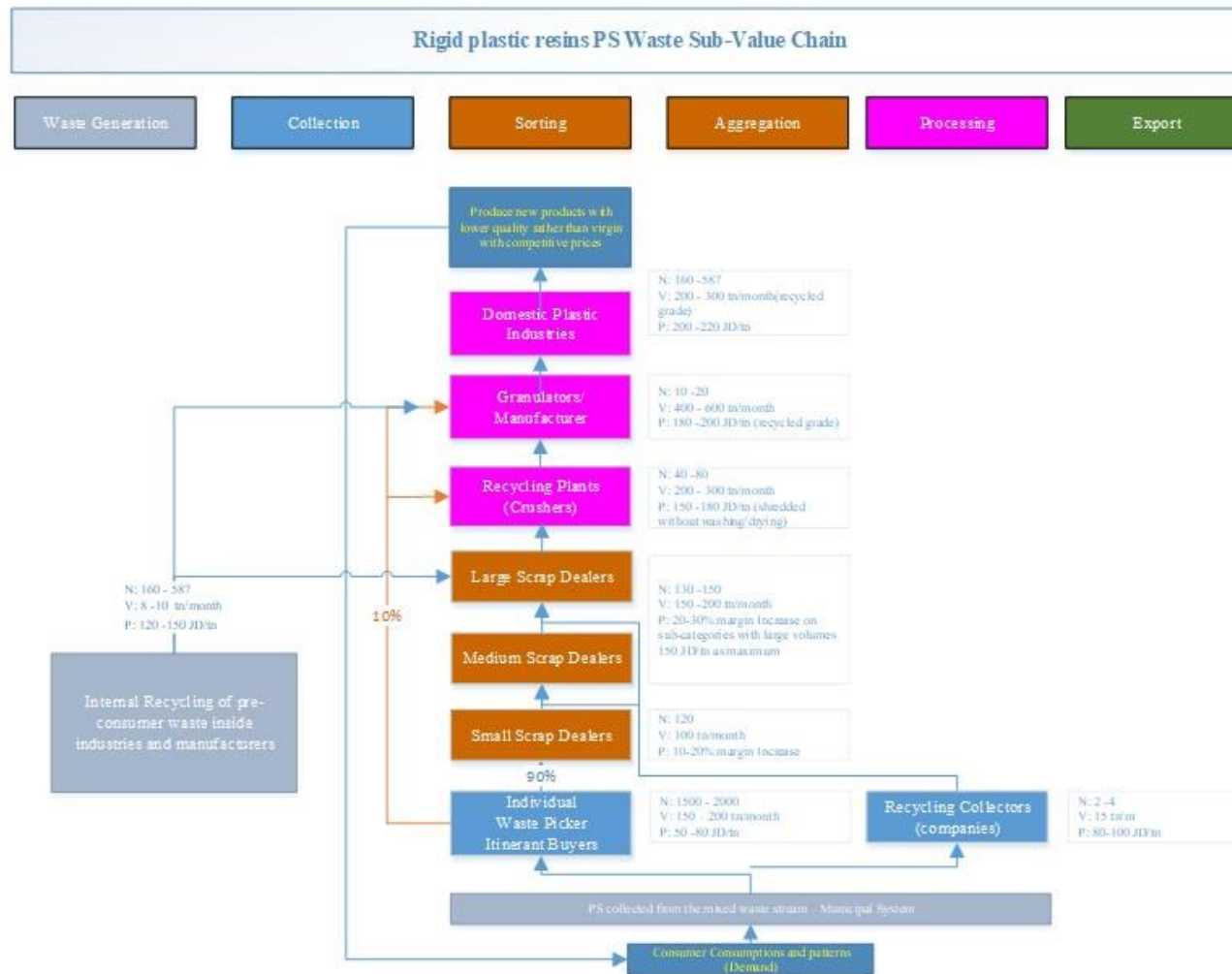
4 – Low-Density Polyethylene (LDPE) - Value Chain Mapping



5 – Polypropylene (PP) - Value Chain Mapping



6 – Polystyrene (PS) - Value Chain Mapping



Plastic Value Chains

Overview

- Plastics have a variety of products that find use in a wide range of applications and currently comprise approximately 15-18% of municipal solid waste generation in Amman, which is increasing primarily due to proliferation of single-use plastics mainly in packaging and other consumer products.
- Despite Jordan is non-oil country, the plastic industry is a leading economic sector and growing over the last two decades due to the low cost/easy access to virgin plastic sources mainly from Saudi Arabia and other Gulf countries.
- The current production volume of the plastic industry sector is more than \$1.1 billion, which constitutes approximately 5 percent of the total industrial production in Jordan, from the 587 active factories across the country. The packaging, agricultural, construction, furniture and medical supplies are the main sub-sectors of the Jordanian plastic industry while the plastic textile industry is very limited so far. Plastic products accounts for 3.6% of the total Jordanian exports to 65 markets across the world.

End Market Analysis

- Plastics has a fairly developed value chain in the local market in Jordan because there is a strong plastic industry in Jordan providing an end use to the recycled material. The proliferation of single-use plastics in packaging and the reduced investment requirements for treatment and recycling facilitate handling plastic waste of varying quality and value.
- The main plastic sub-value chains are PET, HDPE, PVC, LDPE, PP, PS and most of the collected quantities are locally recovered. While the only notable exception type is PET, whose only end destination, at present, seems to be export. Few manufacturers use recycled PET that separated from the source (industrial sources) to avoid the high cost of double stages of hot and cold washing.
- Plastic manufacturers operate very high levels of internal recycling for pre-consumer material recovered from the same facility, especially in food grade plastic packaging industry. In some case, this waste is segregated and sold to specialized scrap dealers, brokers, itinerant waste brokers, as well as, granulating manufacturers.
- The end market of the plastic recycling consist of nearly 160 small to medium plastic manufacturers located in east and south Amman, as well as Zarqa and Russeifa that use recycled granules/pellets from local sources to manufacture off-grade consumer products in fields of agriculture, packaging, construction and home furnishings. Recycled plastics are banned in the food grade products according to local regulations and standards.
- The local plastic recycling has an approximate capacity of 4000-6000 tons of per month, with the bulk of the plastics locally recovered. Up to 2000 tons per year are being collected from industrial sources and exported as PET waste for recycling in Turkey, India and southeast Asia.
- At the down of the value chain, about 1500-2000 street waste pickers over Amman are playing vigorous role in recovering the plastics of a marketing value. Some of them usually employ their family members in collection and the others practice waste picking as a side-source income generation. There are women involved in collecting waste while their men for selling out.
- The recovered plastics is traded up through the value chain through 250-350 small and medium scrap dealers and 50-60 specialized waste brokers, as well as 600-700 itinerant waste brokers are dealing with plastic waste, ending up in east and south Amman and Zarqa where 20 - 40 local, small crushing plants and end market industries is located. These crushers are often managed by the very same specialized scrap dealers, who extend their control over the valorization chain as a strategy to increase profits and minimize the risks associated with price fluctuations.
- Thousands of workers are employed in these small and medium specialized scrap dealers, crushing plants and granulating manufacturers including marginalized refugees and foreign workforce with a few number of women. Those workers involved in separating, sorting, dismantling, shredding, cleaning, depolluting, granulation and grinding.
- The revenues of the most scarp dealers and plastic manufacturers have shrink trends over the last five years. This is attributed to the following reasons: 1) global and national industrial production decline; 2) the consumer's demand and pattern; 4) the construction and housing projects decline; 5) the oil prices and competition with virgin materials; and 6) the annual increase of the operating costs especially the electricity cost and overheads. The decline in revenues could be estimated between 30% and 40% compared with the revenues in the period 2008 and 2012. In this year, the revenues were the worst and considerably affected by COVID-19 worldwide epidemic and country lockdowns impacts.
- Recycling of plastics contains several different plastic resins, color pigments and impurities/filler additives represents a low-grade of the material, and thus normally also the value which will limit the usage areas. Plastics of high-quality grading and processing are marketed with higher prices over the chain and are easier to distribute.

- The color will also determine the end market for a product. The transparent plastic is commonly preferred for the recyclers because it has more potential to be recycled to a wide variety of applications, so the value of the transparent plastic waste is higher. The unpigmented packaging material is preferred as well.
- There is a high seasonality in this value chain over the year in terms of supply the plastic wastes to the plastic recyclers either through the street waste pickers or the industries that sell out their off cuts and stock materials.
- The flow of plastic waste depends on the agricultural and construction seasons in Jordan. Thus, the pricing of the recycled materials in the local market is often linked to the global virgin prices (increased in summer and decreased in winter).
- The key buyers of the recycled granules are manufacturers that produce the following products: garbage bags, irrigation pipes, vegetable boxes and packaging, chairs, tables, broom fibers. Recycled granules are not used in food grades, houseware items, medical items, etc.
- The agricultural plastic industries are allowed to import recycled granules no more than 20% of the yearly production. However, they are one of the main buyers of the recycled granules locally produced.
- The plastic recycling market in Amman is linked for the vast majority of the plastic segments with the existing industrial capacity in the same governorate. These factories have the capacity to recover larger streams of recycled waste. Nevertheless, the market is strictly linked with the global commodity prices for virgin raw materials.
- SABIC Saudi Arabia is a global market leader in supplying all virgin plastic polymers to almost plastic manufacturers and industries in Jordan, as well as, the region. The polymers' virgin prices decreased in winter and increased in summer according to the market demand and supply dynamics. Global Virgin prices of plastics usually range between 970 – 1200 USD/tn.
- There is no strong competition in the local market in terms of the virgin plastic supply. Even, Jordan market is open the import of the international plastic products mainly from the Gulf countries that compete with the local products. Therefore, a strong competition between the local and imported plastic products is notable, and this resulted in reduced the price profit margins and expansion of low quality grades

Key Data on Numbers, Volume and Price

- The majority of plastic waste come from the post-consumer market, which are mainly found in the municipal solid waste (MSW), as well as in economic agricultural, industrial and construction projects. The main sources of the post-consumer plastic wastes are classified as follows:
- Commercial sources which have two market channels as follows: some of the large commercial generators and centers have contracted with waste pickers or scrap dealers to separate packaging wastes including plastics and OCC from the mixed stream for recovery purposes. The commercial waste generators are often practice this to reduce operating costs related to waste management while the waste pickers maintain a small profit margins when they sell these materials to the recyclers.
- The waste pickers collected plastics from the municipal containers dispatched over streets and commercial areas with a high contamination and the scarp dealers usually offer them lower prices compared with the source-separated materials. The most common plastic resins are rigid types (PP, HDPE, LDPE, PVC) film types (LDPE). The plastic types not targeted by waste pickers are PS and PET bottles.
- There is another market channel for the supply plastic wastes, which generated from the agricultural farms, construction projects and food preparation industries. This kind of waste diverted directly by the waste pickers or the owners to the scarp dealers with low level of contamination.
- The Upstream actors are those who collect and store recyclables, and includes waste generators, waste collectors and scrap shops and small and medium dealers. Downstream actors, or, large scrap dealers, traders, recycling and manufactories, are those who process recyclables until they are re-manufactured.
- The local plastic waste value chains indicates linear interactions between the primary market actors in presence of minimum two or three intermediators or middlemen along the value chain who offer cash payments and high storage capacity. Those intermediators especially the large ones involved in multi steps over the chain (dealer, trader, brokers, processors and recyclers). Eventually, the end market industries and factories affect the prices offered in the value chain based on the demand changes and global prices of virgin resources. Waste collectors and primary sorters are the first actor in the value chain and they are mostly informal waste pickers with few number of waste collection companies that involved in separate collection of recycled plastics.

Supporting Services and Interconnected Industries

- Most of the market actors interviewed confirmed that there are no fair competition and horizontal relationships between the different formal and informal actors within the same step of the plastic value chain. There are no associations or unions represent the sector which may offer support to members or dialogue meetings with the constituencies regarding the common issues and constrains.
- The official licensing and registration require the entity to be a member of Amman Chambers for Commerce and/or Industry and therefore, all the industries and factories are members and these bodies are crucial in the import and export concerns.
- Most of the formal and informal recyclers started their businesses with self-financing while the manufactures and factories, which need for large investments have a good access to finance. They have the capacity to provide finance institutions with a well-defined investment plan, feasibility studies and loans guarantees.
- Some small dealers or recycling industries they do not have good access to finance because they have mostly no valid registration and licensing documents, and they do not well informed about the micro financial institutions. They preferred to have direct access to equipment providers who offer them forward payments. Some of the interviewed actors have deficiencies in their investment and business capabilities.
- There are no active NGOs or CBOs in fields of sorting plastics over the value chain. Most of the existing NGOs/CBOs focused on the environmental concerns and they practiced short-term initiatives for public cleanliness and piloting separation at source without any kind of coordination with waste collectors and scrap dealers.
- Most of the scrap dealers and recyclers require transport services from the local market and the prices increased over the last five years from 10 JD for short trips up to 25 JD/trip (pickup truck 3 tons). The large scrap dealers and industries own their transport trucks while hundreds of the itinerant buyers offer transport services to the small scrap dealers and street waste pickers. All of the interviewed actors confirmed that the transport cost is a challenge in waste recycling in terms of cost and availability especially those plastics and papers are bulky and loose materials.
- In terms of standards and certifications, there are lack of such relevant certificates in the upstream of the value chain while the manufactures and factories have the certifications and commitment to the customers' requirements.
- In respect of equipment and technologies, the most of the interviewed recyclers and industries use old fashion small to medium sized technology and equipment in shredding, washing and granulating production lines that they bought when start the business.
- They have renovation plans including use of the state of art technologies and energy efficient equipment but this planning is postponed at present time because of the decline market trends, current low virgin prices, and lack of financial resources. Some of the small scarp dealers have plans to invest on smaller shredders equipment while the seasonality of the waste supply in the local market extend the payback period of the project. The inconsistent supply of the materials over the year is challenging the investment planning.

Policies, Laws, Regulations and Norms

- Lack of effective public awareness and legislative policies/regulations encourage the waste segregation at the source are one of the main challenges in ensuring a consistent supply of plastic materials into the recycling value chain. The quality and level of contamination is an important factor in creating the value of the plastic material.
- The instability of the governmental decisions on import/export context of the virgin and recycled plastic sources affect the competitiveness and reduce the profit margins and sometimes interrupt the economics of the market.
- The high production costs of plastic handling, recycling and manufacturing especially the electricity and fuel prices limit the global and regional competitiveness of the Jordanian products compared with the Saudi and Egyptian products. The closure of the Iraqi and Syrian borders affect their market channels to export recycled granules and products.
- The governmental support is very weak especially in the recent years especially in the electricity costs and there is no governmental protection for the local products in the Jordanian market. The competition with the foreign plastic products becomes very strong especially in the last five years and this reduce the revenues accordingly.
- The weak governmental inspections and law enforcement especially in the remote areas cause a high informality and incommittment to the legal obligations of the businesses. This adversely influences the competitiveness of the legal businesses.
- The Bureaucracy in licensing procedures for the solar energy systems for the industrial sector is a challenge.
- The seasonal change in the consumption patterns and cultural expectations in Jordan also over pressed the economics of the plastic recycling value chain due to price fluctuations between summer and winter. Therefore, large number of scrap dealers, recyclers and industries have significant stock materials in storage.
- The common use of the forward payment agreements between the industries and the local distributors and customers affect the cash capacity in the recycling market.

Business model at Enterprise Level

- The existing plastic recycling value chains operate in a difficult trading situation because of the low price gap between the virgin and recycled creating lower profit margins while the operating cost is increasing. The plastic industrial production declines due to the weak demand and strong competition with the imported products.
- The participation of women and marginalised groups is clearly notable at the source of the value chain (upstream side) and they mostly involved in collection, sorting, loading and uploading activities. This is attributed to socio-economic context and lack of employment opportunities in other economic sectors. The vast majority of them have low educational capacities and involved in this sector without any kind of training or certificates.
- The skilled workers from foreign workforce and marginalized groups are widely involved in the processing of plastic recycling in post sorting, shredding, washing, grinding and granulating. Lack of PPEs, safety and good ventilation are reported especially in the informal recycling businesses. Even, most of the workers in this value chain are day workers or part-time agreements and do not have social security inclusion.
- As concluded from the KIs, most of the formal recycling actors have business modalities and they have the ability to calculate their direct and indirect costs as well as the profit margins. Record keeping is reported. On other hand, the informal businesses do not have a proper legality and lack of well record keeping skills is reported. Despite the high informality increase the business risks and limit access to market, most of the owners preferred this situation to create larger profit margins because he does not pay any kind of taxes or fees.

Growth Opportunities and Constraints

- **Inconsistent supply of materials:** At the upstream side of the value chain, the waste pickers and itinerant buyers play a crucial role in collecting plastics from the waste streams and therefore, optimizing access to waste for those informal collectors will ensure delivery of large volumes of plastics in a consistent supply. Improving both access to finance and technical knowledge to the small actors in the upstream of the value chain will improve their capacity to collect waste with low level of contamination. Improving their record keeping skills for the waste collectors will create entry points to the waste generators whom are looking for this kind of data.
- **Poor quality of materials:** The level of contamination is crucial in the plastic recycling value chain and influence the prices offered by the scarp dealers and recyclers in the downstream. For example, manual sorting by color should be a primary focus by the waste collector at the source. Most of the waste collector have limited theoretical knowledge of the classification of plastic polymers resins and therefore they offered scarp dealers mixed plastics. On the other hand, improving the scrap dealers' management skills and certifications would increase their profitability margins and assisting in raising awareness of the importance of ensuring safe and hygienic working conditions
- **Weak horizontal cooperation:** Because of the most actors in this sector are based on families' businesses culture, the horizontal relationships among actors in the steps of the value chain and especially in the upstream are unrelated, unfamiliar and lack of cooperation. The effective cooperation will provide a united voice in negotiations with the authorities concerning the common issues of the sector and increase the organization.
- **High price market volatility:** The plastic recycling value chain have seasonal price fluctuations and tenuous stability due to the direct impact of the global oil prices and export limitations to global markets. Therefore, the actors at the downstream should increase their capacity to store recycled materials.
- **Lack of access to finance:** Access to finance for working capital and for investment is a key requirement for value chain development.
- **Business skills and legal recognition:** Improving the business skills of the informal scrap dealers and waste pickers could help in expanding their performance and profitability. This include development of a business modality with feasible flow of supplies and products.
- **Source segregation:** High purity waste streams have higher value, avoids costs of sorting, and issues with contamination. Maximizing the linkages between the extra-large generators from the commercial, industrial and tourism sectors (1000 ton/ annum) could facilitate separation at source to reduce the waste fees collected at the landfill site. The scrap dealers or professional waste pickers could contribute in collection and transport of plastic recyclables.

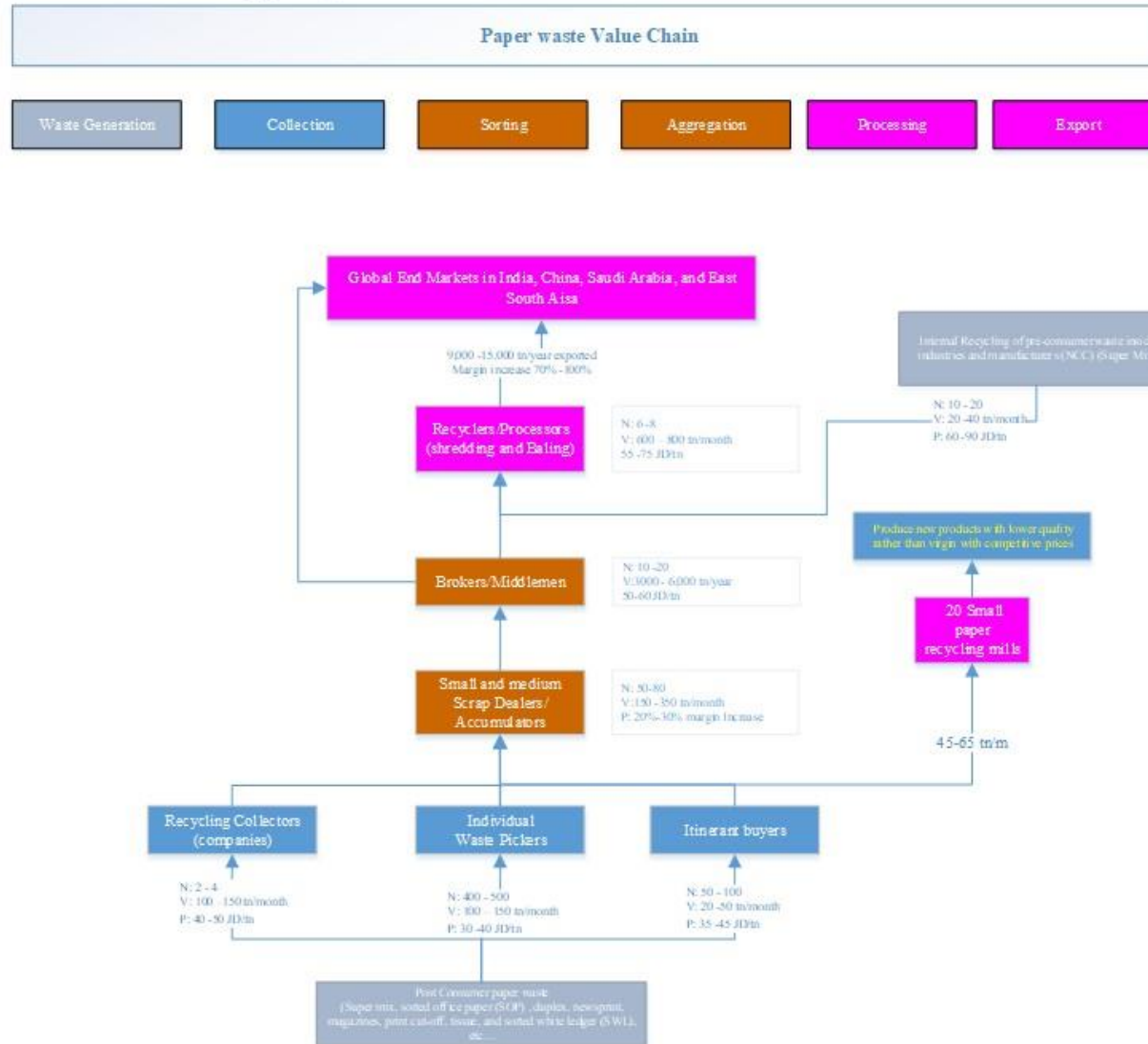
Constraints and Intervention Focus

- Technical knowledge and market information transfer
- Increase the involvement of waste pickers and certification program to increase the waste volumes
- Increase market linkages and horizontal coordination at the upstream side of the value chain
- Supporting the enforcement of Extended Producer Responsibility regulation issued by MoENV
- Support the innovation and efficient technology and equipment in plastic recycling to reduce the high electricity costs, water consumption and chemical additions
- Support investment in PET recycling machinery
- Such machinery would be designated for advanced hot and cold washing and fiber and pellet production
- Access to higher purity waste streams – e.g. industry waste and increase the value
- Energy from waste – additional cost recovery stream for low value waste streams
- Increase the business skills of the small scrap dealers and waste pickers for expansion and legal recognition.

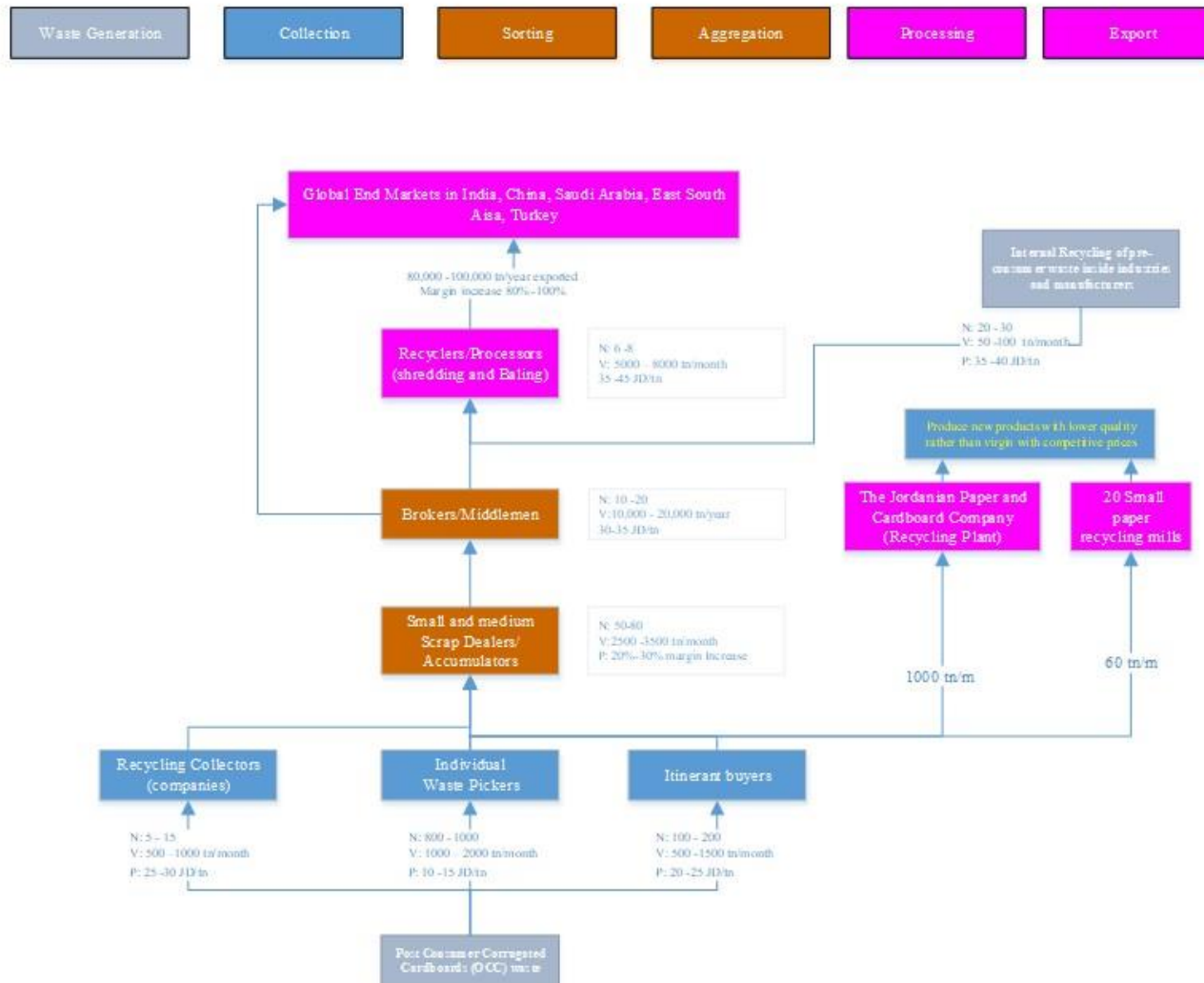
Paper and Cardboard Value Chains

(2) Value Chains

I – Paper Value Chain Mapping



2 – Cardboard Value Chain Mapping



Paper and Cardboard Value Chains

Overview

- Paper and cardboard are main recyclable constituents of the waste composition in Amman where paper comprises 8 percent and cardboard 7 percent. Nearly 200 tonnes of paper and cardboards per day are being generated as waste from the commercial sector, where approximately 78 percent of this waste is currently being disposed of at landfills, with the remaining 22 percent being recycled and recovered.
- According to the Jordanian Chamber of Industry, the paper industry sector in Jordan consists of paper pulping and manufacturing of paper and cardboard, printing and publishing, and stationery and supplies of packaging products. There are about 930 firms operating in this sector, where 28% of these entities industrial establishments, while the remaining 72% are small craft establishments.
- Jordan's primary trading partners for paper and paperboard include Saudi Arabia, Iraq and the United Arab Emirates mainly for Printed books and newspapers, a downstream paper sector product. Jordan exported paper with a total value of 141M USD in 2018 while imported paper with a total value of 324M USD, where 7 percent of the imported paper is recycled paper.

End Market Analysis

- Like other sectors in Jordan, the paper and packaging sector is an upstream sector whose growth potential is inextricably linked to the performance of downstream sectors such as food processing and other consumer product industries. Printing and paper converting technologies will become increasingly important, as brands demand more colorful packaging.
- Overall, there are over 1500 - 2000 people employed at the various levels of the paper and cardboard value chain in Amman from waste pickers to cardboard manufacturers. Waste pickers have no barriers to entry, and they can freely go and pick the paper and cardboard from the streets or buy the materials from selected commercial entities.
- The structure of the recycled paper and cardboard value chain is associated with end markets outside Jordan as there is no recycled paper mill in Jordan, however, there are some large-scale wastepaper dealers, in Amman and Zarqa associated with foreign paper manufacturers. They are mainly focusing on the collection, segregation, shredding, baling and storage practices for export purposes. There are around 20 small paper mills in Amman and Zarqa using locally produced recycled paper and cardboard products. The quantity and quality of the local recycled paper and cardboards are not enough to cover the full extent of the demand to produce new recycled products such as egg trays, recycled office paper, and tissues and toilet paper. Even the recycled paper products from Europe and other countries are commonly imported and traded too.
- The paper and cardboard value chain is characterized by lower prices and profit margins and therefore, a specialization within the value chain is formulated, with a reduced numbers of street waste pickers and generalist waste brokers dealing with such materials. They are increasingly attentive to segmentation or further sorting of recovered materials based on origin, quality and contamination. However, such practices are more common among brokers exporting paper, as they compete on the global markets, and not among local recycling companies and the lower levels of the sub-value chain.
- The main types of paper are sorted office paper (SOP) or (black and white), duplex, old newspaper print paper, old magazines, print cut-off, tissue, and sorted white ledger (SWL). The main types of packaging cardboards are old corrugated containers (OCC) and Double lined Kraft cuttings.
- The global trend in paper and cardboard industry is growing, over the past few years, the revenues of local paper recyclers increased over the past years.
- The local market of the recycled paper and cardboard have two main segments, the first segment is the Old Corrugated Cardboard (OCC), this segment includes three main types; the "Clean OCC" includes source separated cartoon boxes/rolls/boards generated from the malls and main commercial markets, the "Dirty OCC" includes cartoon boxes/rolls/boards collected from the municipal waste stream whether from the street bins or from landfill/dumpsites, and the New Corrugated Cardboard "New OCC" includes new cartoon boxes/rolls/boards that generated from the packaging factories as by products or defected stocks.
- On the quality side, the collection of Clean OCC usually occurs before mixing with the waste stream, these materials is characterized with a high quality and low contamination levels, Dirty OCC is normally include used material of low quality and high contamination levels, on the other hand New OCC is normally includes very clean materials with zero contamination levels.
- The second segment is the Super Mix this segment comprise of various types that collected from printing and press companies including but not limited to the books, Sorted Office paper (SOP), old newspaper pulp (ONP), magazines (OMG) without laminated plastics, carbonic paper, and others, these types are normally sorted when delivered to the recycling industries into sub-categories to increase the quality and to create decent profit margins.

Key Data on Numbers, Volume and Price

- There are no estimates for the waste pickers working on paper and cardboard sector, however there are few hundred professional waste pickers working on collecting segregated paper and cardboard in Amman for free from the main generators - i.e. Hypermarkets and malls (commercial waste), schools banks, and offices (institutional waste), and manufacturers and printing shops (industrial waste)- while there is little recovery of waste paper and cardboard at household level.
- Professional waste pickers then sell the recovered wastepaper and cardboard as loose directly to local recycling plants, or to specialized wastepaper dealers who also act as export-oriented brokers. The average collected paper and cardboard per professional waste picker is estimated at around 80 – 100 kg per day, while the selling price of waste pickers is ranged between 0.025 – 0.035 JOD per Kg depending on the quality and quantity. The selling price of paper is 30 – 40 JOD per tonne while the duplex type with minimum ink content reaches 60 – 70 JOD per tonne.
- The specialized wastepaper dealers provide further sorting and segmentation of the materials and sub-materials prior to baling and compaction. Some of materials are shredded before baling. The processing unit cost ranges between 10 and 15 JOD per tonne.
- Specialized wastepaper dealers also offer global prices for the compacted/baled recycled paper and cardboards as follows: 55-65 JOD per tonne for cardboards (OCC) and 65-75 JOD for shredded paper. The duplex paper reaches 90 JOD per tonne. These prices include the transport to final-destination and cargo fees.
- Most of the waste pickers working on the paper and cardboard are professional pickers (motorized) who are specialized in this wastepaper stream only or focus on determined areas/streets where recyclables are more easily found or where they have verbal agreements with a group of commercial entities.
- The recycled paper and cardboard value chain attract a limited number of waste pickers – about hundreds – compared to other recyclables value chains; this could be attributed to the small profit margins that the chain offer (around 5 JOD per tonne if purchased from source and 25 JOD per tonne if the waste picker collects the materials freely from the sources), this is mainly due to the export oriented end market reactive to internal and external variables.
- There is no large-scale paper and cardboard recycling industries in Jordan due to the high manufacturing cost (electricity, labour and land requirements), therefore, the wastepaper dealers have only the choice to export paper and cardboard to global end market recycling industries in Saudi Arabia, Egypt, India, and Southeast Asia.
- Even though, currently there are around 20 small-scale paper recycling mills working in paper and cardboard but their operational capacities are less than 1-1.5 tonne per day for each and they mostly depend on Clean OCC coming from internal recycling to produce egg trays, cartoon dishes and fruit trays.
- Each wastepaper dealer has a minimum of 10 to 20 workers usually employed for further segregation and sorting activities and perform their activities in baling, compaction and storing of paper. It is noted that they are mostly from foreign workforce.
- Regarding the market size the Ministry of Trade and Industry reported that Jordan generates monthly about 13 thousand tonnes of paper and cardboard waste. Out of which around 5-9 thousand tonnes recovered through either specialized waste pickers or collection contractors while the rest ends up in dumpsites and landfills. This figure does not include the internal recycling done by paper and packaging industries and factories.
- Paper and cardboard have less complicated chain in terms of collection and sorting than plastic due to the limited number of actors and the quite limited market segments.

Supporting Services and Interconnected Industries

- Waste pickers could work with the private waste contractors to sort and collect at generation. Some of wastepaper dealers already agreed with certain number of commercial sources to provide resident waste pickers and baling machines to sort and collect paper and cardboards and offer a transportation mean for big quantities.
- Even though, waste pickers have barriers to enter the paper and cardboard sub-value chain; these barriers include obtaining the initial capital required to buy or the truck and acquiring a valid driver's license. In fact, motorized waste pickers provide material transport services to some wastepaper dealers.
- In addition to the specialized waste picker, the wastepaper dealers source their inputs through direct contracts with main commercial centres, malls and hypermarkets, other sources also include official destruction of materials from corporates and governmental institutions through tendering, auctions, and service quotations. Other sources also include the on-site shredding services for the official and confidential papers that offered to banks, embassies and security authorities.
- In respect of the institutional sector in Amman, several Non-governmental Organizations (NGOs) and Civil Society Organizations (CSOs) have already launched long-term initiatives in agreement to segregate and collect office paper types from the source (schools, official buildings, corporates, etc...) for free against offering separate collection containers in their premises. For example, Jordan Environment Society (JES) is one of the main actors in collecting paper from the residential sector and JES has a long-term partnership with GAM to support the collection of these recyclables.
- On the financial side, most of the businesses are self-funded with minimal rely on bank loans, it was obvious that the local investors have no intentions to take bank loans, mainly due to the high interest rates and the prolonged procedures. On the other side it is not uncommon for the wastepaper dealers to lend money to the motorized waste pickers to increase their recovery capability.

Policies, Laws, Regulations and Norms

- The paper and cardboard value chain – like all other recyclables value chain – is extremely affected by the prevailing prices for paper and cardboards in the local market, which is also affected by internal and external shocks and fluctuations. The global commodity prices, the competition between local and imported paper and cardboards pulps, the high local operation costs and the export duty taxes took a toll mainly on local value chain's economics especially and the prices have been progressively reduced or increased, producing a cascade or boosting affect down the supply chain.
- In fact, the export tax imposed on the used paper and cardboard is the main factor affecting the performance of the local wastepaper dealers in this sector and decrease the flow of recyclables to the end markets industries in Saudi Arabia, Egypt, India and Southeast Asia. In May 2019, the government adjourned the tax decision for one year and this extended in July 2020 for an additional year, adjourning the tax creates a more instability and increase the vulnerability of the sector, keeping in mind that the government is not imposing any taxes on the imported recycled products.
- The increase of the clearance fees in Aqaba port over the last three years also play a major role in reducing the export profit margins which led to close of many small businesses working in this sector.

Business model at Enterprise Level

- It's obvious that majority of the existing businesses are owned and operated by men and a few number of women are involved in the chain as a specialized waste picker or wastepaper dealer. However, the level of women participation in the chain as entrepreneurs in this sector is practiced so far in the existing NGOs or CSOs initiatives and the waste collection companies that owned or managed by women. This facilitated the involvement of more women to access the value chain.
- Women have greater ability to overcome the difficulties, they also have better leadership and management skills. On the sorting works women performs much better than men, they also have good skills and knowledge of producing simple recycled paper (upcycling) and operating such equipment.

Growth Opportunities and Constraints

- Maximizing the role of waste pickers in the paper and cardboard would be effectively help in increase the recovery in terms of quantity and quality, as the individual waste picker has minimal paper and cardboard collection and storage capacity.
- There are a potential to expand the existing paper and cardboard value chain in the local market by focusing on the specialist businesses that could maintain profit margins by adding processing capacity to their operations and introduce quality considerations in the choice of their feedstock to improve the overall efficiency. Access to finance is so crucial for the recycling plants in providing investments and expanding their running capitals.
- By investing in expanding the limited capacity and renovating the equipment and systems of the small-scale paper mills which would increase efficiency in the value chain and allow this local industry to boost competitiveness and value-added.
- Like other waste value chains, sectorial professionalization and development is crucial to promote growth of the recycling sector in Jordan. Establishing prices based on contamination and point of diversion and common standards for quality of the recyclables would allow for an increased quality of the recycled end products, expanding revenues throughout the whole sub-value chains, and promoting separation at source.

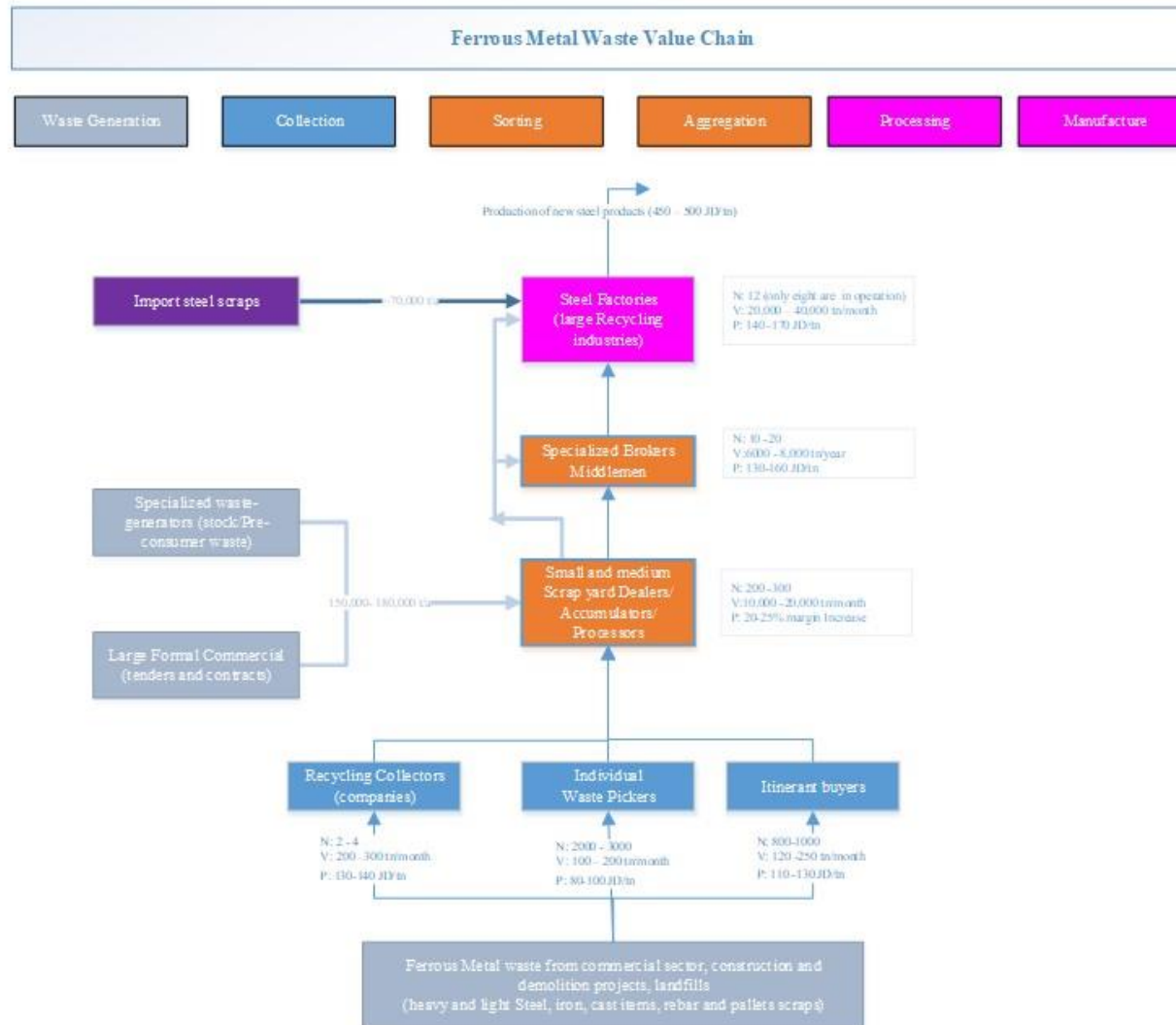
Constraints and Intervention Focus

- The energy prices, water cost, competitive imports, weak local paper end market industry, export duty taxation on wastepaper and the global economy issues took a toll mainly on the recycled paper and cardboard value chain in Jordan and the prices have been progressively reduced, producing a cascade affect down the supply chain.
- The recycling sector in Jordan is a very dangerous and risky sometimes, as investors might be exposed to some informal fines (holders of precedents and royalties), adding to that, the Jordanian workers have low level of acceptance for the work, low level of productivity.
- Waste pickers are facing public fines when they collect cartoons, as some authorities are considering waste picking activities as begging. This affected volume of collected papers and cardboards from streets and the commercial clusters in Amman.
- Having these constraintsd in the market, the paper sub-value chain is now much more concentrated with a specialized wastepaper dealers who act as handful of export oriented specialized brokers making up for the bulk demand for recycled paper, and few small-scale paper recycling plants left in the country playing an ancillary role.

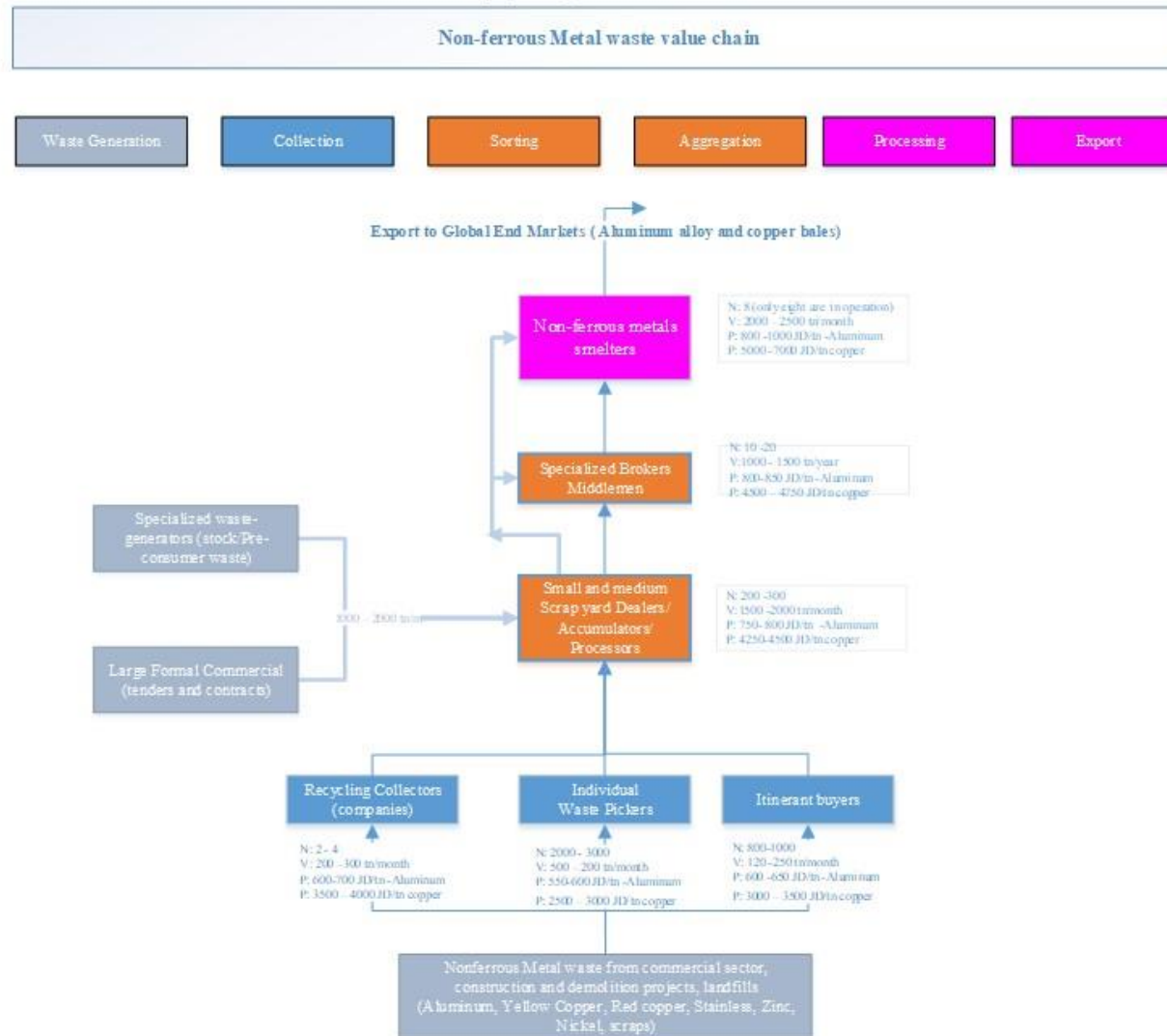
Metals Value Chains

(2) Value Chains

I – Ferrous Metals Value Chain Mapping



2 – Non-Ferrous Metals Value Chain Mapping



Metals Value Chains

Overview

- Despite metals made up only a small percentage of the waste generation in Amman (1 - 3%), a substantial market for metal recycling and processing exists formulating clear and stable metal waste valorisation chains offering the highest and most stable returns, started at the base with street waste pickers and itinerant waste buyers along through the scrap dealers to end up with scrap industries.
- Due to intensive waste picking activities, little amounts of metals end up into the landfill and these materials are mostly recovered by local end market industries. Where input supplies sources can be commercially found in the construction and demolition projects (housing and building), vehicle service and maintenance, industrial activities, etc...
- The main generators of metal and scrap waste in the commercial sector are the beverage and catering activities (restaurant and hotels), construction and demolition projects (housing and building), vehicle service and maintenance, vocational workshops, industrial activities, etc...
- The metals is divided into two main categories: 1) Ferrous scraps such as: steel, iron, tin and 2) Nonferrous scraps like Aluminum, copper, (red Brass and yellow Brass).
- Ferrous and aluminium scrap is mainly recycled in country, although there are a number of specialized waste brokers who also sell on the international regional and global markets. Additionally, the low specialized industrial and manufacturing capacity and the high commodity price drive copper to being exported rather than recycled in country.
- The local market offers the highest and most stable returns for most metals. However, minor amounts of metals scraps (especially copper and iron) are compressed into heavy bales by the recyclers themselves for export purposes.
- The aluminium waste is the most valuable waste in the local market in Amman and it has different types or forms which are highly requested by the recyclers.
- The existing value chains in Amman indicates different forms of metal recycling including scrap storage yards, baling and compactors facilities, aluminium smelters, steel mills, and metallurgy manufacturing businesses.
- In addition to the big role of informal sector in collecting and supply of metals to end markets, the scrap dealers and industries already buys from the large commercial and governmental sources through tendering and auction processes.

End Market Analysis

- Jordan has a well-developed metallurgy-manufacturing sector and provides nearly 94% of the construction and housing demands on the different steel and iron finished products where the rest demand is imported from regional and global markets. The local yearly demand is estimated around 600 thousand tons of finished steel and iron products, nearly 50% of which are produced from recycled resources (steel scrap wastes).
- To avoid flooding the market with imported products and to protect the domestic production, the government imposed export/import duty taxes and set a ceiling for the finished steel products (3000 tons per month as a maximum limit) as well as the steel scraps. These decisions are regularly reviewed (every 6 months) according to variations in the market supply and demand.
- Metals is the oldest and most established value chain in the presence of steel and iron mills and aluminium smelters, along with a developed metallurgy manufacturing sector in Amman and Zarqa. The chain includes the following actors:
- 12 steel factories (large industries), of which (8) factories are currently in operation and (3) ones are use of the local steel scrap as a primary input to produce steel plates and rebar. The rest five have a strategy to depend on use of imported steel/iron scrap waste inputs to produce rebar or import ready-made steel plates from competitive global markets.

Metals Value Chains

End Market Analysis

- (8) Non-ferrous metals smelters (mainly export aluminium alloys and copper waste) and produce finished iron cast based products for the heavy equipment and machineries.
- Around 200 - 300 medium to small scrap dealers, processors, middlemen and brokers are dealing with metals scrap wastes and buy it from informal collectors and formal contracts and tenders (industrial)
- Informal collectors: Up to 3000 individual waste pickers and 1000 Itinerant buyers are involved in collecting different types of ferrous and non-ferrous metals from residential and commercial sources.
- Given the duty export taxes are in applicable, the steel scrap waste is locally recovered, while aluminium and copper is mostly processed and exported to global markets because this kind of heavy industry requires large investment capitals, availability of raw materials and ores, industrial knowledge and high-level technology and management. It is estimated that about 200 thousand tons of metal scraps are yearly generated and about 70 thousand tons of steel scraps are imported while the annual demand is estimated not to exceed 300-400 thousand tons.
- The import of steel scraps is subjected to a security permit to be issued by the Ministry of Interior.
- The vast majority of the local materials are collected through the formal contracts and tender sources. Of which, 9,000 - 12,000 tonnes of aluminium and 14,000 – 20,000 tonnes /year of steel scrap waste are delivered to industries by the informal collectors.
- The copper is also a valuable metal in the market (2000 – 4000 JD/tonne) and it mostly exported without any processing element other than collection, sorting and pressing in some cases. Around 4000 tonnes of copper are collected per year in Jordan. The commercial yellow Brass includes 60% copper and the Red Brass includes 85% copper (Red copper is more expensive).
- There are external and internal factors that affect the available volumes of recyclable metals of different types (iron, copper or aluminium) in the local market.
- The external factors are more related to external business environment of the recycling sector's actors related processes, it can be summarized in two factors: Dependency and seasonality.
- The internal factors are more related to the recycling sector actors' internal capabilities and processes. volumes differ based on both the scrap dealers and melting factories capabilities i.e. infrastructure, processing systems i.e. (sorting, collection, quality control, quality assurance, etc), financial capacities, business's resources, and production capacity versus efficiency.
- The high uncertainty in the local market and no access to information regarding waste generation reduce the potential of the actors to increase their investments and capacity especially in metal value chains. The sector is segmented and there no market data and statistical benchmarks showing its contribution in the national economy.

Metals Value Chains

Key Data on Numbers, Volume and Price

- There are many people involved in the metal value chain, especially in collection and sorting, mostly by the informal sector (Assuming that men are dominated this metal value chain while a weak participation could appear for women/ disabled and refugees). About 70% of the metals diverted to the scrap yards and recycling plants are directly from informal individual street waste-pickers and Itinerant waste buyers, as well as, auction deals.
- Several people are employed in scrap dealers, aggregators, and processors/metal workshops mainly for sorting of mixed metals and scraps into types and other functions crushing, baling, compressing, melting. Marginalized groups are involved at the base of the metal value chain – like most value chains – in waste picking and sorting in relatively small quantities.
- Around 6000 formal employees/workers are employed in the existing metal value chain and end market industries where up to 3000 informal individual waste pickers and 1000 Itinerant buyers are involved in collecting metal scrap waste.
- The average collected metal per professional waste picker is estimated at around 150 – 200 kg per day, while the selling price of waste pickers is ranged between 0.80 – 1.00 JOD per Kg depending on the quality and quantity. The selling price of aluminium is 550 – 600 JOD per tonne while the copper reaches 3000 – 3500 JOD per tonne.
- The specialized dealers provide further sorting and segmentation of the materials and sub-materials prior to baling and compaction. The processing unit cost ranges between 15 and 20 JOD per tonne.
- Specialized metal dealers also offer cash with lower prices rather than the global trends especially for the unprofessional waste pickers and itinerant buyers.
- The metal value chain attract a large number of waste pickers – about thousands – compared to other recyclables value chains; this could be attributed to the valuable returns and fair profit margins that the chain offer (around 15-30 JOD profit per tonne if purchased from source and 10 -15 JOD profit per tonne if the waste picker collects the materials freely from the sources).
- Each metal scrap dealer has a minimum of 10 to 20 workers usually employed for further segregation and sorting activities and perform their activities in baling, compaction and storing of metals. It is noted that they are mostly from foreign workforce.
- In the metal value chain, most of the steel mills offer lower prices than what it should be according to the global commodities market and finally the recyclers and collectors have to sell out to them due to the export duty taxes that delimit the regional and global competitiveness. The recyclers and collectors cannot store these materials for long time, as they need for cash money.
- There numerous number of aggregators (specialized brokers, scrap dealers and intermediaries) who have a high cash capacity and store recyclables in large volumes with no processing. Those intermediaries control the supply to industries and benefit high profit margins.
- The export tax on steel scraps have significant impacts on the value chain and lower the prices and profit margins.

Metals Value Chains

Supporting Services and Interconnected Industries

- Waste pickers could work with the private waste contractors to sort and collect at generation. Some of small and medium metal scrap dealers already agreed with certain number of commercial sources to provide resident waste pickers to sort and collect metals and scrap waste and offer a transportation mean for big quantities.
- Even though, waste pickers have barriers to enter the metal sub-value chain; these barriers include obtaining the initial capital required to buy or the truck and acquiring a valid driver's license. In fact, motorized waste pickers provide material transport services to some metal scrap dealers and specialized brokers.
- In addition to the specialized waste picker, the metal scrap yard dealers source their inputs through direct contracts with main industrial and construction contractors, malls and other sources also tender/auction deals from corporates and governmental institutions through tendering, auctions, and service quotations.
- On the financial side, most of the industries are large companies and self-funded with minimal rely on bank loans, it was obvious that the local investors have no intentions to take bank loans, mainly due to the high interest rates and the prolonged procedures.
- It is of importance to investigate more on non-financial services, where several products could be tested including micro-leasing of machinery, processing equipment, etc., the development of invoice discounting and the development of warehouse receipt systems.
- Limited capacity in the preparation of financial and cash-flow statements, project feasibility studies and business plans especially the metal scrap dealers and specialized brokers.
- The analysis showed that levels of usage of Business Development Services (BDS) are extremely low, where most of training activities - for example - done internally where employees functions within the business evolve from shipping workers who collect and handle recyclable materials till they become experts in sorting and distinguishing material based on their physical appearance and specification.

Metals Value Chains

Policies, Laws, Regulations and Norms

- The recycling sector is significantly affected by governmental decisions undertaken to protect the domestic production where the instability and inconsistency of these decisions influence the supply chain of recyclables to global end markets. Even the duty export taxes decrease the profit margins and global competitiveness. This is clearly evidence in the metal value chain as (200 -300) export-oriented scrap yard dealers and specialized brokers are struggling in marketing their products to the domestic industries with better profit margins during the past five years and the revenues are declined as well.
- The export duty tax is 50JD/ton for steel exports (represent 10% of local prices and 5% of the global price) and 30JD/ton for aluminium and copper exports (represent 3% of the global price). Currently export duty tax are frozen for one year on all recyclable items except steel scrap exports.
- The high uncertainty in the local market and no access to information regarding waste generation reduce the potential of the actors to increase their investments and capacity especially in metal and paper value chains. The sector is segmented and there no market data and statistical benchmarks showing its contribution in the national economy.
- The competitive imports of the recycled metal scraps also affect the domestic recycling end markets chains and increase price volatility in the market.
- The existing sector lacks of well representation of the both informal and formal recycling actors over the different chains, which could provide several benefits in improving the horizontal cooperation, official recognition, linkages, access to market and advocacy.
- Scrap dealers and manufacturers believe licensing their businesses is one of the most difficult and complex processes among any other businesses. They always face complex requirements by licensing and monitoring governmental entities especially those endorsed by the MoEnv. and Greater Amman Municipality (GAM).
- The recent waste framework law (16/2020) will consolidate and expand the recycling sector and increase the waste valorisation in the upstream side of the value chain. This will be an opportunity to improve the policy and regulatory framework of the recycling sector.

Metals Value Chains

Business model at Enterprise Level

- It's obvious that majority of the existing businesses are owned and operated by men and a few number of women are involved in the chain as a specialized waste picker or specialized brokers and even the large industries. Women are involved mainly in administrative positions.
- Limited number of NGOs or CSOs are involved in the metal value chain mainly in the collection services.
- Most of recycling businesses in Jordan are family businesses vary in size and number of years in business. Well-established businesses that have more than 10 years and have more than 20 employees (on average) have well-defined business structure, functions and processes (i.e. marketing and sales, procurement, business development, and HR systems that have employees' salaries scales and performance appraisals, etc).
- On the other end, micro businesses (number of employees less than 10) do not have clear procedures and HR manuals.
- The large industries in the value chain are mostly public holding companies and private holding companies with large investments

Growth Opportunities and Constraints

- Among different actors across the value chain there are common challenges and constraints that possibly hinder increasing volumes of production, increasing the added value of their outputs as well increase and/or improve the jobs. These constraints could be summarized as follows:
- High production costs especially energy (electricity and fuel) and raw materials combined with high indirect production costs.
- Limited government support especially when it comes to:
 - Sales and export taxes
 - Sales tax refund - Government of Jordan refund some deducted tax values, if the company export. The GoJ took long time to refund.
 - Limited protection for locally produced products as it is somehow easy to import
 - Bureaucratic and long-time governmental procedures
 - Licensing recyclable businesses is a very costly and difficult-long process.
 - Difficulties to get benefit of renewable energy (solar energy)
 - Unstable regulatory systems (different and high frequent decision over short time intervals)
 - Misinterpretation of Laws, bylaws, instructions by government officers/employees as this would cause delays and not tapping market opportunities
- Limited access to finance due to banks' long procedures, needed collaterals and high interest rates.
- No access to non-financial resources.
- Limited access to business development services
- Limited logistics and transportation solutions
- Limited access to available, reliable, accessible and up-to-date information about government policies, laws, bylaws, etc...

Metals Value Chains

Growth Opportunities and Constraints

- Industry informality: there a lot of informal businesses working in the market
- Unorganized sector: there is no horizontal business linkages among the actors within different layers of the value chain. There is no sector business association or syndicate.
- High cost of skilled workforce.
- Market uncertainty and other industries dependency: There no well-defined projects pipeline, agenda and plan
- Lack of well-defined pricing criteria among the different actors.
- Quality consistency: Waste-pickers and some scrap dealers do not have consistent quality.
- Production efficiency: we can assume that most business across the value chain needs to upgrade their production lines and need more innovative processes.
- Most of production machines and equipment are imported therefore; there is no/limited skilled-labour, high maintenance cost, limited spare parts, etc
- Limited marketing and promotional activities
- Limited financial inclusion represented by the lack of Digital Financial services use and utilization

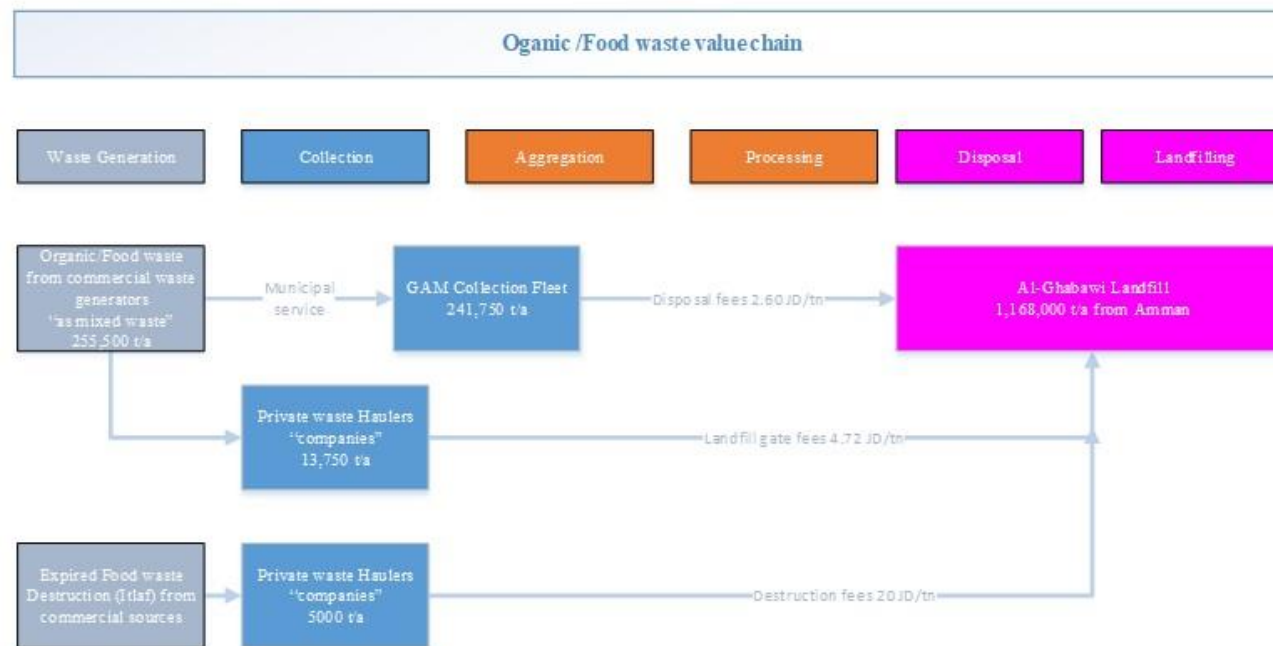
Constraints and Intervention Focus

The potential interventions shall focus on the following:

- Developing business models to strengthening horizontal business linkages among larger group of recycling businesses to reach scale.
- Improve production and resources efficiency among different value chain actors
- Skills development for credit analysis
- Improve the functioning of BDS providers to allow recycling businesses to become more "investible"
- Reduce fiscal disincentive to deploy certain instruments to businesses (incl. tax incentives)
- Improve the enabling environment for associations
- Capacity development to present clearer business and financing plans
- Greater emphasis on providing commercial match-making and mentorship for businesses
- Clarity on customer protection and production of information / offering to businesses
- Improving access to information to businesses in relation to BDS and its benefits

Other Value Chains (5)

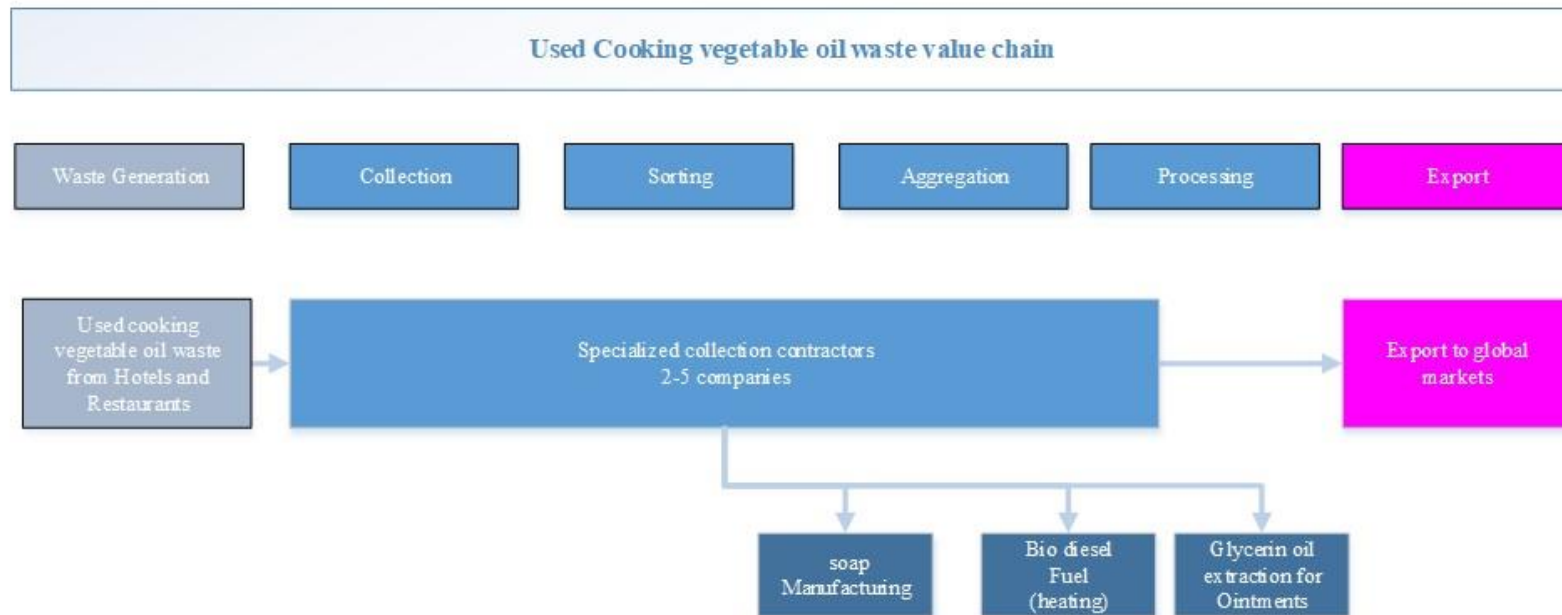
I – Organic Value Chain Mapping



I – Organic Value Chain Mapping

- The predominant fraction in Amman MSW is organic matter which makes up as much as 50 percent of the solid waste stream and the major source of leachate and landfill gas in Al-Ghabawi. Moreover, it is the least valorized waste stream and no private sector led organic waste value chains in the market so far.
- GAM takes the responsibility to collect the municipal waste including the organic fractions from the household and commercial sectors and diverted to Ghabawi landfill for disposal without further processing or recycling. However, such social initiatives were recently established to sort and separate the food waste leftovers in certain hotels and restaurants in Amman. The source separated putrescible waste like dried bread, fruits and vegetables are collected by some waste pickers and then sold to the livestock owners as animal feedstock. There are no real estimates regarding these quantities and nonetheless the scale of these practices is so small to divert significant amounts.
- There are only one company namely "AL RIADIAH CO. FOR RECYCLING ORGANIC MATERIALS" registered and licensed in Amman where its business is to handle the organic waste and convert it into animal feedstock. Due to inconsistency in source separated food waste supply, the operations interrupted after few months of operation. The company is now discussing with GAM facilitating the destruction of expired food stuff from commercial sources in their facility instead of Al-Ghabawi landfill (ITLAF Service).

2 – Cooking Oil Value Chain Mapping



2 – Cooking Oil Value Chain Mapping

There is a very least value chain in Jordan where only with (2) private collection companies are registered and licensed for collecting the used vegetable oils for export markets outside the country. Several individual collectors (informal) are involved in collecting the cooking oil from restaurants and hotels as well.

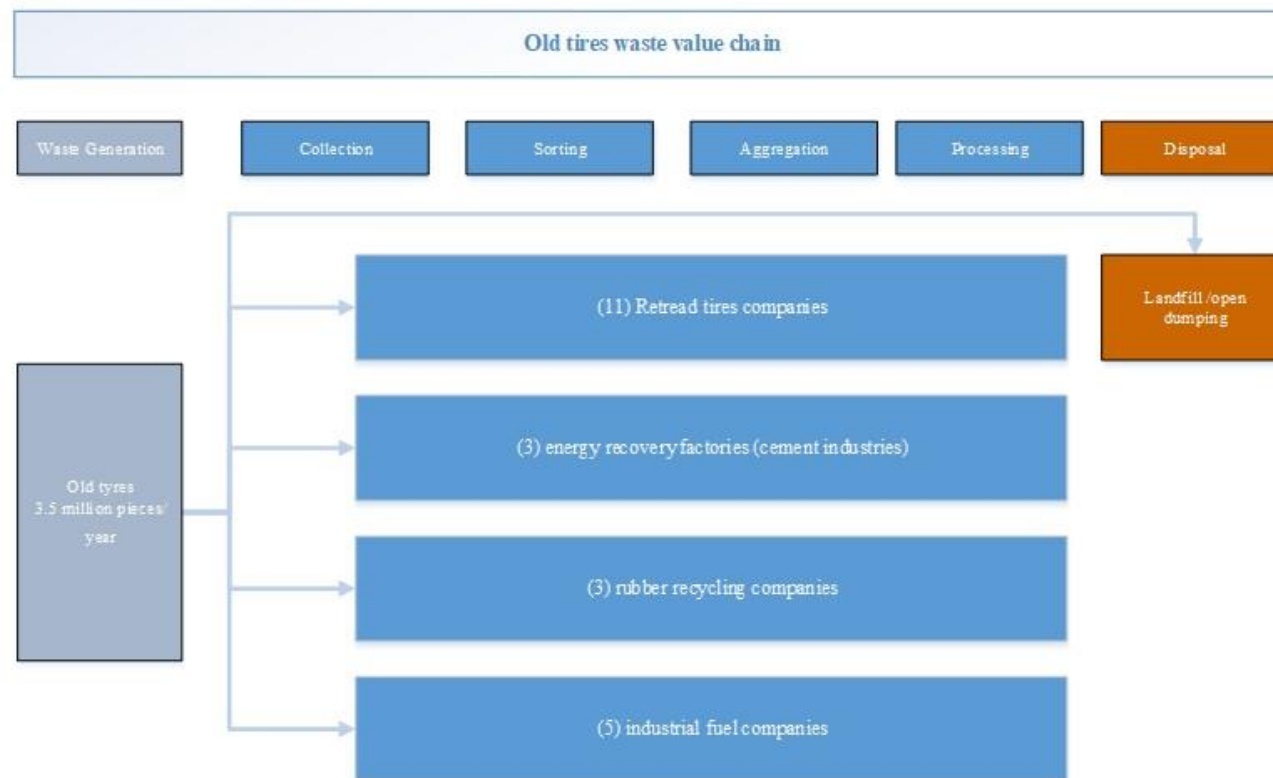
2 – E-waste (WEEE) Value Chain Mapping



2 – E-waste (WEEE) Value Chain Mapping

The Waste Electrical and Electronic Equipment (WEEE) is approximately 8500-9000 pieces/ year are generated as a waste in Jordan which recycled and exported. The e-waste includes PCs, white goods, batteries, mobiles, PCs, and flat screens. Only few companies in Amman (~2-7 companies) that perform kinds of WEEE collection, dismantling and recycling, and then exported to global markets.

2 – Old Tires Value Chain Mapping



2 – Old Tires Value Chain Mapping

The volume of tire trade in Jordan is estimated at more than 50 million JOD annually where significant environmental problems could be caused by the growth in the volume of used tires each year. Approximately 3.5 million pieces/year of the waste tires are recycled and utilized in products fabrication and energy recovery in Jordan. (11) Retread tires companies, (3) energy recovery factories, (3) rubber recycling companies, and (5) industrial fuel companies are registered and licensed. They buy and collect used tires from the local market for their industry (22-25 JD/ton).

Collected used tires are used as fuel in cement factories and shredded to produce soft playground surfaces. Sometimes, waste pickers burn discarded tires in open fires to retrieve the metal wires, causing environmental and health problems. While there are regulations related to waste tire disposal and reuse, Jordan currently has no clear target for treatment or reuse. Additional institutional and capacity building efforts are needed to improve existing business models in the value chain in order to enable their replicability and scale-up .

The Current Glass Value Chain Mapping



The Current Glass Value Chain Mapping

Before the Syrian crisis, glass exported via Syria to Lebanon for recycling into local furnaces. This practice ended with the start of the Syrian civil war and consequent closure of the border with Syria.

Nowadays, glass reported to offer too little value for being considered for recycling, and therefore there is no glass recycling taking place in Jordan.

Weak internal demand led to the absence of glass factories in Jordan, with most manufacturing capacity concentrated in treating and processing imported glass, rather than producing the material. High transport costs in relation to the very low profit margins are another major constraint to glass recycling, a factor accentuated by the absence of regional alternative destinations to Lebanon.

