# WASTE MANAGEMENT BUSINESSES - REFLECTIVE STUDY SUMMARY, DECEMBER 2021

OXFAM

RESPONSE INNOVATION LAB

## OVERVIEW

With a growing population in Iraq, the demand for resources has continued to increase, along with increased waste production. It is hard to miss the dangerous levels of rubbish that can be seen in heaps around most cities and urban areas of Iraq[1]. As it stands the country does not have a proper waste management strategy[2]. Research estimates that 31,000 tons of solid waste are produced daily[3]. This is in addition to the many challenges that Iraq is facing around salinity and poor soil management especially in the south. With farm waste often being burned, and plastic, and other types of debris being dumped into open fields, the environmental burden of waste has affected, and continues to affect Iraq in various ways.

However, this waste does not have to be 'wasted', and in many parts of the world, ideas of 'wealth from waste' have been shown to be highly successful[4] (e.g., Golden Mushroom project that was implemented under the agribusiness incubator has successfully produced the needed compost from the farm waste). As climate and environmental issues continue to be more pressing, and with the rising population of Iraq (expected population reaching 81 million by 2050)[5], and the young people is presenting 35% of the Iraq population[6]. The Iraq Response Innovation Lab (IRIL) launched a study to explore the waste management scene in Iraq. We wanted to understand the existing capacity, gaps, and opportunities in which innovation can play a role in tackling this issue.
From the study, we were able to identify the following gaps:

- Existing structures lack the necessary equipment to facilitate a waste management process. Such equipment such as (vertical waste compactor baler, inclines conveyor belt, and other compacting, segregating or shredding equipment) – should these be available – the process can be made safer and more lucrative.
- There is a lack of coordination between waste management actors and environmentally conscious populations. This hinders the crucial part of recycling that is collecting and segregating waste. With increased support of local businesses, and advocacy work delivered with a participatory approach in communities, we would expect this gap to narrow. Currently there is no clear intervention from any humanitarian actor in Iraq.
- There is a lack of use of technology in the waste management business which would make the process far easier, for example at the stages of finding, segregating, and processing waste. Our research showed that most collectors currently rely on scavenging and have limited equipment to support them with the rest of the waste cycle.
- There is a lack of government facilitation for waste management plants. Governments classify these as chemical factories and impose high taxes on them. In addition to this, the lack of government support also hinders transporting waste from one city to another and outside of Iraq. Growth of agribusinesses in this sector would support advocacy efforts for a shift in the governance of waste management.

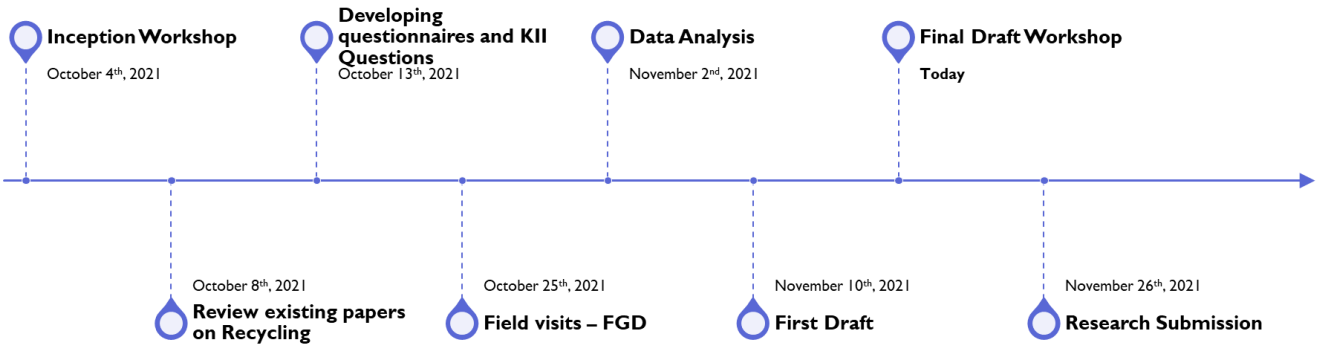
These challenges, alongside other environmental challenges pave the way for the business of recycling to play an active role in creating jobs, supporting existing structures, and reshaping the narrative around waste in Iraq if approached correctly.

[1] UNEP in Iraq. Post-Conflict Assessment, Clean-up and Reconstruction, pp. 12-14. [Online] here.
[2] BioEnergy Consult (2020) Waste Management in Iraq. [Article online] here.
[3] World Bank. Environmental and Social Management Framework (2018). P.6. [Online] here.
[4] Wealth From Waste Cluster [Online] here.
[5] UNICEF (2021) Iraq, Demographic Projections. [Online] here.
[6] https://www.statista.com/statistics/327299/age-structure-in-iraq/

## PROCESS & TIMELINE

The research was launched in October. Throughout the two months, key informants were interviewed, data was collected from waste collectors across 11 governorates in Iraq, and we undertook surveys with ten factory plants that recycle plastic, 15 that process iron and several facilities that process cardboard and non-ferrous metals. The viability of different waste management solutions were examined to recommend actionable project ideas that can be applied within the context of Iraq.

.




*Timeline*

## MAIN FINDINGS

The data collected and examined the processing of two types of recyclable materials:

- Biodegradable items, meaning waste that can be broken down by bacteria, natural organisms, and environmental factors. This includes food waste, farm waste, paper, and other biological waste produced by humans, animals, or plants.
- Non-Biodegradable Items, defined as materials that cannot be broken down naturally. This includes plastic, glass, iron, chemical waste, copper, rubber, and other inorganic materials.

Overall, our research indicated that the existing factory plants, majority of the time, fail to complete the waste management loop (see Appendix 1). The capacity of surveyed plants differed greatly from one to another with some segregating waste and preparing shipping, while others were involved in baling, pressing, or shredding. For example, plastic (both HDPE that is found in high density bottles like liquid detergents, and PET) is collected in all 11 governorates of Iraq that our research looked at, however with regards to the waste management cycle it is only processed into plastic flakes and then transported outside of Iraq. These plastic flakes are considered raw material for recycling plastic and can be re-used if treated at a specialised factory that uses them as raw materials, this does not exist in Iraq unfortunately.

The surveyed factory plants all demonstrated challenges of lack of proper processes that can allow them to recycle the items, this starts from the household levels with lack of awareness from communities to separate the waste, and then continues to the transportation difficulties that both collectors and factories suffer from. The machinery capacity at the factory plants also presents a challenge, as they do not have the machines that use recycled materials as raw materials.

Our research also looked at where ferrous metals are recycled. Currently, these metals are collected and recycled locally with the collectors taking the contained metals to car junkyards. Here, the metals are minimised in size before being transported to the steel factories in Iraq. The gap here is that this usually process covers large metal pieces found in cars, or construction waste and does not cover all the waste ferrous metals. The opportunity would be to link households to those collectors and to streamline the process of recycling ferrous metals.

For biodegradable waste, we collected data from only two factories located in the North of Iraq. Both mainly contain discarded bread or wheat to be given as animal feed. As per the study, the lack of information and know-how significantly

impacts the livestock health quality in terms of food production and safety. By applying the standard of biodegradable recycling methods, we will create several business opportunities within the supply chains such as sorting the biodegradable materials, developing new aggregating storage facility, introducing new healthy animal feed (e.g., fish feeds, poultry, and other types), or create an innovative device for recycling at the household level (in this area the incubation cycle will support the transformation of the global technological trends into the local context, especially the integration of the ICT into the supply chain such as mobile applications)

## OPPORTUNITIES AND A WAY FORWARD

In the light of the data presented and gaps associated, IRIL is proposing the following:

1. Back-to-Farming Project:

Back-to-Farming is a pilot project in Basra in the South of Iraq (also known as The Venice of the East) where the farmers are suffering from soil salinity that highly impacts crop yields. In 2013, an estimate of about US$300 million per year is lost due to salinity effects in the Mesopotamian plain,[7] and this loss continues to rise as salinity levels are raising coupled with drought. This project aims to support the farmer to gain back use of their lands that currently cannot be cultivated because of the soil salinity, by providing affordable and local produced compost from the farm, food waste, and other biodegradable waste. The compost and soil mixture will reduce the effect of salinization and allow the farmers to plant on their lands again.

Through this pilot, we would establish and manage three production units of compost (200-1000 KG per week depending on the season for each) and deliver it to the farmers in the targeted locations alongside the expertise needed to create their own production units. Furthermore, we would provide technical knowledge about this compost production technology to the local community and farming cooperation through a set of on-site training workshops. Production units' materials, and raw materials for the composite will be readily available either in the local market or within the farm itself. IRIL will be filling the gap that transforms these materials into composite.

Through this pilot project, we seek to answer the following:

- Can the local produced compost be of a sufficient quality that improves the effects of salinization?
- Will the farmers be able to use the compost to return to, and improve upon, their agriculture activities, and secondly, can they learn how to produce it for their own farms?
- What is the best-fit business model that can ensure the sustainability of the production (type of enterprise, operational model, and ownership modality)?
- How can the farmers integrate the innovative, intelligent irrigation solutions, biological control, and hydroponic methods that the IRIL would initially support to reduce the quantity of needed water for irrigation?

At the end of a successful pilot period, using evidence-based learning we would plan for a scale-up of the project, and would begin promoting this innovative solution as an agriculture-based intervention of Oxfam. After piloting the process, an Arabic manual can be developed around this process so that farmers can have access to how to carry out this process on their own either for their own use, or for sale to other farmers. The idea of this intervention is that it would eventually allow farmers to return to their assets that are currently unusable and generate income through farming activities. Over time we would target different locations and broader communities.

- Pilot project period: 18 months
- Estimated cost: 150K USD
- Partners: local NGOs, Agri-preneurs
- More details on the importance of the Basra region can be found here

[7] Moutaz Al Dabas, Managing Salinity in Iraq's Agriculture, 2013 [ Accessed online]

2. ICT-focused Recycling Business Incubator:

The incubation will support youth in developing innovative initiatives/businesses with the call being for a utilisation of technology to mitigate the gaps that exist in the waste management cycle in Iraq, how to launch new businesses that can use recyclable materials in Iraq, and how technology can help the promotion of waste management. We estimate the following:

- Project period: 18 months
- Estimated cost: 200K USD
- Supported innovations: 5
- Support per innovation: 20,000 USD on average (depending on the nature of innovation)

IRIL will produce a pilot project that promotes recycling as a solution and not just as a practice through these two approaches. IRIL will also promote green initiatives using technology to raise awareness and support the creation of small enterprises that address the existing gaps in the recycling sector in Iraq. All of which will be under the Go-Green initiative of Iraq Response Innovation Lab.

3. Other recommendations

- IRIL could support the existing factories by providing them with machinery needed such as a vertical waste compactor baler, inclines conveyor belt, lifting devices, weighbridge, and other devices that will facilitate the process and make it more time efficient.
- IRIL could support the creation of a committee of waste collectors to make the waste collection process more streamlined.
- IRIL could advocate for government regulations around recycling in Iraq to support and facilitate waste exportation, establish more recycling plants, and promote a safer work environment.



Appendix 1

The waste management 'cycle'.