



## Article

# Driving Green Job Opportunities in Sustainable Waste Management through Co-Production Strategies: Informal Recycling Workers, Municipalities, and the National Agenda—A Case Study of İzmir

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**Abstract:** Informal recycling workers (IRWs), including waste pickers (WPs) and waste sorters, are essential constituents of sustainable ecosystems in many cities in the Global South. Despite their valuable contributions to the economic and environmental dimensions of sustainable urban waste recycling, most IRWs work in precarious conditions. This paper examines recent efforts by local municipalities in Izmir to implement co-production design as a new institutional arrangement to generate green jobs for informal workers that provide high and stable incomes, job security, and social recognition. Using qualitative analyses of recent developments in the legal framework and in-depth interviews with key stakeholders, this paper identifies the following challenges associated with the current co-production efforts as its main findings: the lack of fiscal and legislative support from the central government; failure to include all IRWs in the co-production schemes; and the potential exclusion of marginalized communities due to the arbitrary requirements of a security clearance, which limit the inclusion of IRWs in co-production efforts.

**Keywords:** co-production; informal waste workers; waste pickers; co-operatives; green jobs; decent work; waste management; Turkey; Izmir; Romani community



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## 1. Introduction

Informal recycling workers (IRW), including waste pickers (WP) and waste sorters, are indispensable constituents of a sustainable ecosystem in many cities in the Global South. They play an essential role in urban waste management by collecting and separating plastics, metals, glass, and paper discarded in the streets or rubbish bins, thereby reducing the amount of waste sent to landfills. The materials recovered by the IRWs leads to significant cost reductions on the supply side by providing industries with reusable and cheaper inputs. Reducing demand for additional raw material extraction relieves the pressure on the ecosystem by curbing greenhouse gas emissions and saving energy. Additionally, recycling tends to lower the financial burden on the municipalities by decreasing the volume of waste that must be collected and processed (Dias 2016).

According to the World Economic Forum (2020) and ILO (as cited in WIEGO 2020), the number of informal workers working in the waste management and recycling sector globally is 15 to 20 million, i.e., about 1% of the urban workforce. case studies, mostly from Latin America, Africa and Asia (Wilson et al. 2006; Medina 2010; ILO 2012; Dias and Samson 2016; Coletto and Bisschop 2017; Velis 2017; Pegels et al. 2020), have shown that most IRWs suffer from low and unstable incomes, inferior working conditions, job insecurity, and a lack of social recognition. Despite their economic and environmental contributions being invaluable inputs to a successful transition to a green economy, the said transition will not automatically be just and inclusive without introducing decent work

criteria for the IRWs and transforming their existing occupations into green jobs (Van der Ree 2019).

Although most IRWs are employed as own-account workers without any association with an employer, various attempts have been made to improve their working conditions to match green job standards by involving them in IRW co-operatives in co-production arrangements in the Global South (Navarrete-Hernandez and Navarrete-Hernandez 2018; Gutberlet et al. 2020; Goodwin et al. 2022; Rosaldo 2022). Co-production emerged as an alternative institutional arrangement for more effective delivery of public services, as it emphasizes the contribution of these organized citizens at different stages of service delivery, in addition to contributions of state and non-state actors (Ostrom 1996; Joshi and Moore 2004). The co-production framework not only considers the contribution of various actors to the delivery of public services from a technical perspective, but also emphasizes the potential impact of communities' active involvement on their ability to articulate their needs and promote their own interests against those of more powerful stakeholders (Mitlin 2008; Mitlin and Bartlett 2018).

This paper explores the early stages of co-production efforts by local authorities to improve the precarious conditions experienced by IRWs and get them to align with the decent work criteria of green jobs through a case study based in Izmir, Turkey. Drawing on a review of the developments in the legislative framework and in-depth interviews with key stakeholders, our case study highlights three major challenges in the use of co-production efforts to improve IRWs' conditions and ensure higher and more stable incomes, job security, and social recognition. Firstly, the lack of central government support via fiscal and legislative channels reduces the capacity of municipalities to back the IRWs' co-operative plans and offer their full involvement in the co-production designs. Secondly, excluding the sorters, who are one of the key actors, from both the planning and implementation stages of the co-production design and, therefore, not utilizing their tacit knowledge and skills lowers both the quantity and quality of the recyclable waste. Thirdly, the ambiguities related to the security clearance stage of the recently introduced official recognition directive jeopardizes the inclusion of members of marginalized communities into the formal role and excludes a core group of IRWs from the co-production process.

The next section reviews the extant literature on the role of waste management in the green transition, the situation of informal recycling workers (IRWs) in the Global South, the role of IRW co-operatives, and the concept of co-production as an institutional framework for creating green jobs. We then provide the contextual backdrop to our case study of Izmir, including an examination of the legislative framework for waste recycling in Turkey, and describe our methodology. Following our discussion of the main findings within the broader context of co-production as an alternative institutional arrangement we highlight their significance for the broader theme of creating green jobs for IRWs. We conclude with our suggestions for future research directions.

## 2. Literature Review

### 2.1. Waste Management, Green Transition, and Green Jobs

Waste management plays a crucial role in the transition to a green economy for several reasons. Proper waste management promotes the efficient use of resources. Recycling and waste reduction techniques help recover valuable materials from waste streams, reducing the need for extraction and processing of virgin resources. Effective waste management helps mitigate pollution and environmental degradation by avoiding harmful waste disposal, such as landfilling or open burning. Waste management is also an essential pillar of the circular economy framework (World Bank 2018). Instead of following a linear "take-make-dispose" model, a circular economy aims to maximize resource use and minimize waste generation. It emphasizes reducing, reusing, and recycling materials to create a closed-loop system (Gutberlet and Carenzo 2020).

Another important contribution of waste management to the transition to a green economy is its potential to create green jobs. Green jobs were first defined by the ILO and the

UNEP as a concept that combine occupations that contribute to preserving or restoring the quality of the environment with decent work standards that target fair incomes, job security, and social recognition/inclusion of the individuals working in these professions (ILO 2016). Such a definition certainly does not describe the current working conditions of most IRWs in the Global South. The cases, which mostly come from Latin America, Africa and Asia (Wilson et al. 2006; Medina 2010; ILO 2012; Dias and Samson 2016; Coletto and Bisschop 2017; Velis 2017; Pegels et al. 2020), show that most IRWs suffer from low and unstable incomes, inferior working conditions, job insecurity, and a lack of social recognition.

## 2.2. Informal Recycling Worker (IRW) Co-Operatives in the Global South

Existing literature shows that cooperatives offer potential for improvement of living and working conditions of IRWs in various ways, resulting in higher incomes, job security, and social recognition. Dias and Samson (2016) have emphasized that co-operatives help collect and process a higher volume of recycled materials than individual IRWs and retain a larger share of the value created. This advantage of cooperatives is derived from their access to better equipment for transport and warehouses for storage, which are otherwise lacking for IRWs. Equipment-rich warehouses enable higher volumes of waste processing and, thus, higher productivity and gains for IRWs (Lima and Mancini 2017). In the case of Blantyre, Malawi, the IRWs expect that co-operatives would help combine individual incomes to finance better tools, storage, and cleaning facilities. Being able to store items in the co-operatives' facilities would allow IRWs to wait for and sell goods at higher prices (Kasinja and Tilley 2018). It is also observed that co-operatives contribute to income stability in a number of cases from Latin America, as discussed in the works of Dias (2016) and Pegels et al. (2020). Developments in global commodity markets, exchange rate movements, and import policies (e.g., imports of raw and recyclable materials) lead to higher volatility in the prices of recyclable materials. In these contexts, in which co-operatives are paid extra monthly earnings as a service payment by municipalities or the state, the IRWs are protected from market fluctuations and volatility, which significantly contributes the stability of income.

Research suggests that organizing under co-operatives also provides social benefits for IRWs. Access to childcare and education are the most nuanced advantages of co-operatives discussed in the literature. Navarrete-Hernandez and Navarrete-Hernandez (2018) shed light on the social benefits available through co-operatives in Chile. Accordingly, parents are eligible for childcare services thanks to municipal permits, which can be used as proof of employment. This access to childcare services provides women with a more flexible work schedule, leading to their higher participation in the labour force. The official recognition of IRWs also supports them in accessing credit from the formal financial system for various purposes. There are also cases where members of IRW co-operatives were eligible for education centres specifically designed to support unemployed youth people (ILO 2019).

One of the most important contributions of co-operatives regarding the status of IRWs is enabling social recognition of these workers by the wider society. Carmo and de Oliveira (2010) contended that social stigma related to IRWs exists not only because of the "dirty" image associated with the task itself. Rather, it is also reinforced by the fact that most IRWs belong to lower socio-economic groups, such as international and/or domestic immigrants, and other socially excluded peoples, such as ethnic minorities. The lack of social recognition paves the way for their systematic harassment by authorities through various methods, such as randomly issued decrees inhibiting their regular work activity or confiscation of their equipment and materials (Dias 2016).

Co-operatives can also help diminish negative public perceptions towards waste pickers by publicizing the significant role and responsibility of IRWs in improving the economy and environment (Kasinja and Tilley 2018). In the cases of São Paulo and Buenos Aires, IRW co-operatives promoted educational campaigns aimed at schoolchildren, citizens, associations, and industries to disseminate knowledge of the collection and separation of recyclable materials (Gutberlet et al. 2017). In Santiago, Chile, besides providing waste

pickers with identification cards and uniforms, municipalities assigned a group of workers to specific neighbourhoods. [Navarrete-Hernandez and Navarrete-Hernandez \(2018\)](#) have shown in their study there that there is a positive impact on the income of workers, the amount of recyclable material collected, and the diversity of material. The latter gain was mostly due to the new, long-term relationship built between workers and people living in the assigned neighbourhoods. As local residents started to become familiar with IRWs, their awareness regarding recycling was raised, and they became more willing to make relevant recyclable and reusable material ready for their neighbourhood's IRWs. The close relationship with the IRWs also helped individuals overcome their negative attitudes towards them and significantly contributed to their social recognition.

### *2.3. Co-Production and the IRW Co-Operatives in the Global South*

Co-production is conceptualized as an alternative institutional arrangement for the more effective delivery of public services that emphasizes the contribution of organized citizens at different stages of the service delivery, in addition to state and non-state actors. The initial studies of co-production in the delivery of public services in developing countries highlighted the advantages of community contribution for cost efficiency that could not only be achieved by state and/or the private sector delivery ([Ostrom 1996](#); [Joshi and Moore 2004](#)). Mutual dependency based on the complementarity of the resources of various actors and the credible long-term commitment to each other play a significant role in increasing the likelihood of success ([Ostrom 1996](#)). [Joshi and Moore \(2004\)](#) pointed out that co-production strategies did not only emerge as a response to declining state capacity; rather, the failures of the privatization and contracting out of public services also shifted attention towards alternative arrangements, in which organized communities participate more actively in long-term relationships with state actors.

[Mitlin \(2008\)](#) sheds light on broader implications of co-production strategies, especially for the urban poor. Although Mitlin acknowledges the significance of improvements associated with co-production methods in terms of lower costs of and better access to public services, she further emphasizes the potential impact of communities' active involvement on their ability to articulate their needs and promote their own interests against those of more powerful stakeholders. Communities' participation in different stages of co-production, such as planning, design, or implementation, can provide them with further opportunities to improve their organizational capacity and restructure their relationships with other stakeholders, such as municipalities, NGOs or the private sector, in order to negotiate with them on more equal terms ([Mitlin and Bartlett 2018](#)).

Recent studies analysing the importance of co-production in the waste recycling sector indicate that the favourable outcomes on the IRWs are not taken for granted. [Rosaldo \(2022\)](#) shows that different co-production strategies adopted in Sao Paulo since 1990s resulted in variable outcomes for IRWs depending on the changing nature of the relationship between the IRW associations and local governments. Despite the early success of co-production in generating favourable conditions for IRWs because of strong municipality and NGO support until the 2000s, the inclusion of private waste management companies and policies favouring technical knowledge held by professional consultants reversed all pro-IRW outcomes. [Goodwin et al. \(2022\)](#) and [O'Hare \(2020\)](#) focused on co-production experiences in the recycling sector in Montevideo. The earlier pro-poor outcomes as a result of including IRWs via co-operatives in the recycling sector started to fade away for most IRWs after they were given the option to become formal workers at the newly established recycling plants, which occurred after their co-operatives were disbanded by policy makers ([Goodwin et al. 2022](#)). Although pay and conditions improved, this transformation of the co-operative members into formal employees did not gain the expected support among IRWs because they lost the workplace autonomy that was preserved by co-operatives ([O'Hare 2020](#)). In more successful co-production cases in Santiago, Chile, the IRW co-operatives became an integral part of co-production from the initial stages of policy design onward in a multi-

stakeholder platform and initiated most local policies regarding waste recycling with steady support from municipalities (Navarrete-Hernandez and Navarrete-Hernandez 2018).

### 3. Research Context

Turkey's daily municipal waste is comparable in volume to Balkan and East European countries with an equivalent GDP per capita (EUROSTAT 2022). The province of İzmir has a daily waste volume of 1.46 kg per capita (TURKSTAT 2022b). This volume is above both the national average and the averages of two other major metropolises: Ankara (1.03 kg per capita) and İstanbul (1.23 kg per capita). In contrast, İzmir's recycling rate is 12.2%, which is slightly lower than the national average (13.2%). The average municipal waste recycling rate waste in Europe in 2020 was 48%. Although part of the difference in recycling rates between Turkey and European countries can be accounted for by the higher share of recyclable materials used in countries with relatively higher GDP, the remaining gap still demonstrates the necessity of future developments in Turkey's recycling sector.

In Turkey, IRWs are made up of people who cannot find a place in the formal labour market in urban areas and who make their living by informally collecting waste from the streets and bins and sorting it in small scrap shops. Most of these people live in conditions of urban poverty and are subject to severe social and institutional exclusion (IPA 2022). Recent attempts by some municipalities, including in İzmir, have sought to design urban waste recycling in a co-production framework by organizing IRWs into co-operatives and involving them as key stakeholders in a wider urban recycling structure.

There are two main actors within the IRW community. One actor is the waste picker (WP), who collects recyclable waste from the residential areas and delivers it to the scrap shops. The other key actor is the sorter, who, generally, owns the scrap shop and specializes in sorting out the recyclable waste using labour-intensive methods. The WPs and sorters share similar demographic characteristics because many of the sorters previously worked as WPs. They work in similar conditions to those observed in other major cities in the Global South, and most sorters work as own-account workers without any collective association or organization, such as co-operatives.

According to rough estimates, there are around 30,000 IRWs in İzmir, the third largest city in Turkey, making up almost 2% of the total workforce in the city (TURKSTAT 2022a). The unofficial estimations coming from the key actors in this study also show that at least one third of all IRWs in İzmir belong to Romani community, whereas other ethnic groups, such as Kurds and Syrian or Afghani refugee communities, make up the majority of the labour force in the informal recycling sector. The literature makes it clear that the people involved in informal recycling activities are, generally, people who are excluded from labour markets due to a lack of social inclusion mechanisms, education, and/or legal status and documents. These individuals include members of ethnic minorities and domestic or international migrants (Porrás Bulla et al. 2021; Scheinberg et al. 2016). In Europe, especially in Central and Eastern Europe and in the Balkans, Romani people are the predominant ethnic group that engages in informal waste picking (Gittins 2020; Vaccari and Perteghella 2016). Dinler (2016) shows that in Turkey's capital Ankara ethnicity and kinship ties determine the reach and type of involvement in waste picking of individuals including in "Gypsy" communities, Kurds, and migrants from Central Anatolian cities. The case of İzmir also supports this observation regarding the roles played by different ethnic communities in the informal recycling sector.

The metropolitan municipality law in Turkey assigns the responsibility for collecting and transporting solid waste to the district municipality, whereas the metropolitan municipality oversees the storage- and disposal-related services. This distribution of power is also the case for İzmir's metropolitan municipality and its 30 district municipalities. At the district level, the municipalities mostly contract out the responsibility of collecting and transferring the recyclable waste to private companies, which are in charge of sorting out the recyclable waste at their own facilities. The private recycling companies mainly collect the recyclable material from big facilities, such as supermarkets or universities,

where the waste is already sorted out in order to fill up their quota in accordance with their contracts with the municipalities. The task of dealing with the recyclable material in the residential waste is left to IRWs. According to a directive issued by the Ministry of Environment, Urbanization, and Climate Change (MEUC) in 2015, collecting and sorting activities carried out by unauthorized people are considered illegal, and municipalities are required to monitor these illegal activities. Despite this directive, the actual policies of the municipality actually ignore the IRWs and officially exclude them from the urban recycling structure, rather than legally avoiding them (IPA 2022). While the official position toward IRWs and scrap shops stayed the same, considering them as 'problems' in the new set of regulations entitled "Zero Waste", which was issued in 2019, the same directive also recognized the need to improve their socio-economic conditions by delegating the task of dealing with them to the municipalities (MEUC 2021).

The official position towards the IRWs underwent another change due to a directive issued by the MEUC in June 2022. This directive represents the first nationwide attempt toward official recognition of IRWs. Potential IRWs can be officially recognized by district municipalities only after their personal details are confirmed by the local police department. Those IRWs who pass the security stage will be provided with photo IDs that allow them to carry out their usual collecting tasks without facing any obstacles imposed by the municipal police and other authorities. The district municipalities are also required to make the relevant equipment available according to the standards set by the main municipalities. IRWs are paid for the recycled materials at the ongoing rates upon their delivery to either district municipalities' recycling transfer facilities or licensed private recycling centers. According to this directive, IRWs are only required to collect waste in their own districts (MEUC 2022).

#### 4. Methodology

Our study draws on an analysis of information available in secondary sources and supportive interviews with the key informants. To understand the national standards and most recent regulations regarding waste management and waste picking work in Turkey, we collected and analyzed data directives issued by the corresponding ministry, ordinances by the municipalities, and NGO reports. Next, to find out more about the situation in İzmir and local dynamics, we continued our data collection through semi-structured interviews with key informants in February and March 2022. Each of the interviews lasted from an hour to an hour and half. The interviews focused on three main dimensions: the perception of current conditions of IRWs; their expectations of the co-operatives in co-production designs; and the possibility of engagement with the other actors, such as the municipality, in the designed co-production framework. For the seven respondents, the research team interviewed two community leaders of co-operative initiatives (CL 1 and CL2), one WP, and three scrap shop owners (SO1, SO2 and SO3). One of the community leaders was also a municipal employee. The team also interviewed a policy planner (ADV) who advised the metropolitan municipality on developing co-operative models to involve IRWs in the co-production efforts of the municipality. We included actors who worked in the different levels and roles in the local waste management process. These accounts provided significant nuance, depth, and detail to our data.

The participants of the present research are mostly members of the Romani community in İzmir who engage in various waste picking and sorting activities. Other than being a core part of the labour force in the waste-picking sector for many generations, the choice of the Romani community can be further justified on the following grounds. Active engagement in initiatives towards empowering WPs in co-operatives is primarily witnessed among the members of the Romani community. Therefore, we were able to observe the expectations of the key participants regarding the efforts of the municipality to design co-production models and form IRW co-operatives as major actors in these models. Moreover, the research team had pre-existing contacts with two community leaders, whom they met in a focus group meeting as part of a previous project related to co-operative mapping in İzmir. These contacts enabled us to form further connections with other key actors.

## 5. Findings

In this section, we describe both the expected benefits and the potential limitations associated with the co-production design for the IRWs in terms of improvements to their incomes, job security, and social recognition.

### 5.1. Expected Benefits

#### 5.1.1. Income

Our interviewees stated that the collectors could generally earn 100 Turkish liras per day, which corresponded to approximately 70% of the minimum wage in 2022. The collectors would consider good earnings to constitute 300–400 Turkish liras per day. Given the poverty line in Turkey, these earnings are very low and not sufficient to sustain families. When we asked our WP interviewee for a rough estimate of his daily, weekly, and monthly earnings, he simply said “nasip”, meaning one’s luck or lot.

“I have been wandering since early morning to collect old domestic appliances for scrap. Today, I have collected nothing at all. Sometimes I cannot find anything at all for 15 days. There are 6 people at home waiting for me. I have a wife, three children and two grandchildren. My kids could not attend university after finishing high school. Now they are all unemployed.”

(WP)

Our interviewees pointed out that having access to licensed waste collection and sorting warehouses is one of the key expected gains achieved by forming co-operatives and being involved in co-production design. As shown in the previous literature section, WPs are expected to have higher and more stable incomes due to access to these warehouses.

“Getting licensed warehouses where the recyclable waste is collected and sorted out plays a crucial role. We will be able to accumulate the waste in huge amounts in these places. The waste-picker will get their daily payment based on the amount of waste collected [ . . . ] We cannot force anyone to become a salaried employee. These people are used to get daily payments. If we change their status, they will feel like a fish out of water [ . . . ] Additionally, the waste-pickers will also get their share out of the surplus that is only possible if we are able to get better prices as a result of selling the recovered material in large amounts and of choosing the best time to sell them in the markets.”

(CL 2)

The same licensed warehouses can also support WPs by providing funds for extra social payments, given the lack of access to formal welfare support faced by most of the workers, since they are not registered in the social security system.

“How the surplus will be used depends first and foremost on the decisions of our members. These can be designed as direct payments to members or as various forms of social payments. These social payments can support their children’s education, the cost of private health insurance, or be used as subsidized loans.”

(CL 2)

#### 5.1.2. Job Security

All interviewees stated that the issue of dispossession was their major concern about the current situation. The fear of dispossession reflects both the confiscation of WPs’ main equipment, such as their carts, by the authorities and the shutting down of scrap shops in residential areas of the city.

“I have been wearing this jersey (with the district municipality logo assigned to a couple of waste pickers by the community leaders) for three days now. All my fear and concern about losing my cart have gone away. Thanks to the jersey, I

now feel more confident and believe that neither my tools will be confiscated by the municipality police nor will I directly be blamed for any case of theft.”

(WP)

Being involved in co-production arrangements as co-operative members also seems to improve job security of sorters in small scrap shops, who are afraid of losing their work-places because of urban renewal projects currently being implemented by the municipality.

“People living close by suffer a lot when we burn the material in order to sort out the different types of metals. My neighbours cannot enjoy their balconies and have to stay inside their houses without being able to open their windows. Seeing that hurts me. I would also be mad about that, however, I have to burn this material in order to sell what is inside it. If they are going to shut down our shops, then we will not have any other options but leave the neighbourhood. All the problems can be solved, if we are assigned appropriate places to sort out recyclable materials somewhere else.”

(SO 1)

### 5.1.3. Social Recognition

There is a clear resentment among most of the interviewees about their place in society, despite the valuable contributions that they make to the recycling industry.

“People are hesitant to take out their trash in their neighbourhoods when they come across waste-pickers around the trash bin outside. Their child says: ‘Dad. There is a bearded person outside. I am afraid.’ I agree with them. If the waste-picker is given a uniform, there will be no need to be afraid [ . . . ] Whenever there is a case of theft in the neighbourhood, people first come to us because they immediately blame the waste-pickers.”

(CL 1)

The reasons for this resentment among WPs are not limited to their work environment. When one community leader was asked about the main reason why he applied for a grant associated with a community project, he mentioned a childhood memory.

“When the teacher asked us about the profession of our fathers, we would describe their jobs as ‘self-employed (serbest meslek)’. There were seven of us in the same classroom. The whole class would laugh at us. I remember feeling so bad. I do not want my kids to have the same embarrassment.”

(CL 2)

IRWs expect these resentments to fade away once they become legitimate stakeholders in the urban recycling structure as a result of forming co-operatives and being involved in co-production arrangements. There are other expected benefits of organizing WPs into co-operatives, such as their social recognition as indispensable actors in a sustainable recycling structure. There were previous pilot trials in Karşıyaka district of İzmir in which the WPs were equipped with uniforms and ID cards, then introduced to the residents in the pre-assigned zones in person. The results seem encouraging not only in terms of changing the negative attitudes of people towards WPs, but also having significant impact on the behaviour of residents regarding waste sorting at source.

“The results of our pilot trials are quite encouraging. After introducing the WPs along with their uniforms and ID cards to the residents in their assigned zones, we also created Whatsapp groups where we post stories about the daily lives of the WPs, as well. As a result of getting to know their WPs in person and engaging in their daily lives, the households started to be more enthusiastic about sorting their waste at home. The rate of waste sorting at source has increased from 5 percent up to 30 to 40 percent in the pilot trials.”

(ADV)



## 5.2. Limits and Challenges

While organizing IRWs into co-operatives and making them stakeholders in co-production initiatives can lead to improvements in their incomes, job security, and social recognition, there are potential limitations to consider. The national plan for waste management in Turkey, as outlined by the Ministry of Environment, Urbanization, and Climate Change, places the legal and fiscal responsibility solely on the municipalities, expecting them to adhere to regulations without providing adequate organizational and financial support. Our interviews clearly indicate that municipalities lack the necessary fiscal and organizational capabilities to effectively fulfill this responsibility.

“We all agree on the main objectives such as improving the work conditions of the WPs, enhancing their social inclusion, and building a sustainable waste management. The problem is not with the objectives; however, there seems to be some issues on the municipality side. One of them is the lack of inadequate human resource in charge of designing appropriate co-operative strategies [ . . . ] They (municipality) are also worried about the feasibility of the investment they are supposed to make. Although we tell them about the possible financial support from International NGOs and other organizations specifically designed for co-operatives as a way of lowering the financial burden of the municipalities, they do not seem to be interested”.

(ADV)

The exclusion of a key actor, i.e., sorters, from both the national-level official recognition process and the co-production initiatives by municipalities appears to significantly hinder the overall effectiveness of co-production designs. The current co-production efforts overlook the vital contributions of sorters in establishing a sustainable recycling system by associating scrap shops with criminal activities and treating them as nuisances to be eliminated through urban renewal projects. The current governor of İzmir emphasized the urgent need to close down scrap shops due to their involvement in the illicit acquisition of materials (Ak 2022). Consequently, this approach undermines the anticipated benefits in terms of providing decent working conditions for IRWs as a whole.

“As long as there are new urban renewal projects, nobody will be able to keep their storage places in their neighbourhoods. Therefore, people will be forced to leave their homes.”

(CL 2)

Both the experts and sorters are well-informed about the importance of the specific skills and tacit knowledge of the sorters in terms of creating a sustainable recycling ecosystem.

“I am personally worried about their ignorance of the unique role played by the small scrap shop owners who possess the specific skills about how to sort out the recyclable waste in a very efficient way.”

(ADV)

“When sorting out the recyclable waste, one must be very precise. Each different metal/valuable content, such as copper, iron, aluminium, or cards from computers, needs to be singled out one by one. Otherwise, you cannot sell them to recycling enterprises. If you just melt them as a whole, a lot of valuable components will be wasted as is done in most of the formal enterprises. Therefore, sorting out requires specific skills that can be acquired at least after 4–5 years of experience [ . . . ] We are the most adequate people for this job. We are also financially the most feasible candidates because we already have the skills.”

(SO 2)

The interviewees also emphasized the early acquisition of these skills in the community and highlighted the role played by intergenerational transfer mechanisms. Therefore,

keeping this core group of the IRWs in co-production design will also ensure the availability of these skills in the future.

“I have been doing this job for almost 30 years now. I started as a waste picker and I am now experienced in sorting out. I can easily sort out any waste because I feel confident about what type of material to find in the waste. My son is now learning the required skills while working with me. He is following in my footsteps. At least, he will have a profession. The future is unpredictable.”

(SO 3)

Finally, the recent national directive introduces a criminal record check as the initial requirement for completing the official recognition process. As a result, WPs will only be acknowledged and permitted to work if they successfully pass this stage. However, there is no official clarification regarding the specific details of the security check. This stage may inadvertently exclude a significant portion of the workforce, consisting of individuals who have been engaged in the sector for many years. As previously discussed, the IRWs primarily comprise marginalized groups, making them more susceptible to discrimination if the security-check stage of the official recognition process remains in its current format.

## 6. Discussion

Co-production is widely used as an alternative institutional arrangement to achieve efficient delivery of different public services, including the recycling of waste, in the Global South. Moreover, the engagement of the informal worker associations with the municipality in the co-production arrangements creates opportunities for these workers to experience significant gains regarding their income, job security, and social recognition by providing them with new channels to improve their influence over, participation in, and control of different stages of co-production. We identified three major findings based on our case study from İzmir that show important limitations of the expected benefits of co-production for IRWs working in urban waste recycling.

One of the main findings of our paper is that the efforts of the municipality to design urban recycling processes according to co-production arrangements are not supported by the central government. [Gutberlet et al. \(2020\)](#), [Pegels et al. \(2020\)](#), and [Goodwin et al. \(2022\)](#), reporting in Brazil, Argentina, and Uruguay, respectively, show how the success of local co-production designs in urban waste recycling depends on legislative and fiscal support from central governments.

Although the recent directive issued by the Ministry of Environment, Urbanization, and Climate Change (MEUC) officially recognizes informal waste picking as a profession for the first time, the same directive does not identify the IRW co-operatives as stakeholders in urban waste recycling. While the same directive stipulates that the municipalities will be legally responsible for the IRWs in their areas, it does not commit any type of fiscal support for the municipalities in supporting the IRWs. Despite embracing goals such as economic empowerment and the social inclusion of the IRWs, the municipalities, on the one hand, have inadequate organizational capacity and limited fiscal capacity, yet, on the other hand, must assume legal responsibility for their recycling activities.

Financial support from the central government would significantly enhance the municipalities' fiscal capacity and enable them to provide the IRW co-operatives with the capital and equipment necessary to operate licensed recycling warehouses. Our in-depth interviews indicate that working in the licensed recycling warehouses as direct owners or partners with the municipality would significantly improve the incomes of IRWs. Accumulating and sorting the recyclable material in larger quantities plays a crucial role in ensuring higher and more stable incomes in the future by increasing the bargaining power of IRWs when directly selling the sorted-out materials to recycling factories as legitimate actors. The higher prices and resulting surpluses are expected to be paid back to IRWs in the form of cash payments, welfare contributions, or subsidized credit that are determined by IRWs according to their needs. The use of these extra funds also aims to compensate

IRWs for the lack of adequate official payments, since most IRWs are not registered in the social security system.

The district municipalities in İzmir could also utilize additional fiscal support from the central government to provide regular payments for the recycling services carried out by the IRWs. These additional payments would supplement the IRWs' income derived from selling the recycling materials, protecting them from the price fluctuations observed in most of the cases from Latin America. However, without substantial financial and capital support from the central government, the municipality's ability to involve IRWs in co-production arrangements through co-operatives, as well as co-operatives' engagement with more powerful stakeholders to gain their expected benefits, will be limited.

The second important finding of our paper is the exclusion of sorters, as owners of small scrap shops, from co-production arrangements. While there is a consensus on the official recognition of the WPs, both at the national and local level, as key stakeholders in urban recycling structures, the current efforts of the municipality to organize all types of IRWs in the co-production arrangement do not actually include all IRWs, as they leave sorters out of the co-production plans. On one hand, scrap shops are mostly associated with theft and other criminal activities, according to the reports and directives issued by the MECU. On the other hand, the same places are considered as a social nuisance in the urban landscape that needs to be displaced through urban renewal projects initiated by the municipalities.

All of the participants in our interviews emphasized the significance of the specific skills and tacit knowledge held by sorters in scrap shops, which result in higher quantity and quality of the collected recyclable material, in comparison to the private companies. The interviewees were also aware of the hazardous effects of performing sorting activities in the unregulated settings currently present in scrap shops. Therefore, the inclusion of sorters in co-production strategies as members of co-operatives, through which they can sort the recyclable materials in regulated settings provided by the licensed recycling warehouses, will significantly contribute to more sustainable recycling.

The problem of excluding the sorters, who are one of the key stakeholders in the co-production arrangement in the urban recycling structure, highlights a significant problem in both the design and implementation stages of co-production (Mitlin and Bartlett 2018; Moretto et al. 2018). The current form of the co-production in İzmir limits the role of IRWs to mere collaborative involvement in the delivery of a service already planned according to the priorities of policy makers. However, the involvement of all actors, including the sorters, at even the planning and designing stages of co-production will be crucial as it would reveal their specific knowledge of the recycling process and make their significant contribution to sustainable urban recycling more legitimate in the eyes of other powerful actors.

The third major finding of the paper is the restricting impact of the security clause in the national directive issued by the MECU on the informal workers working in urban recycling, who mostly consist of marginalized segments of the urban population. The national directive issued by the MECU requires a security check with the local police force for each candidate without providing any specifics about the procedure. Only those candidates who pass the security check will be eligible for official recognition as WPs and be provided with the required ID, uniform, and other relevant tools by their local municipality.

Marginalized groups, such as the Romani, Kurds, and recent refugees from Syria, comprise the largest segment of the informal workers working in the recycling sector. Unfortunately, relatively high incidences of criminal records or the lack of permanent addresses among these groups are the primary reasons as to why some people are stuck in informal jobs in the first place. The same conditions are also likely to lower the probability of passing the security check and being officially recognized. This issue could possibly create a privileged minority of recognized WPs, while the majority would suffer from even worse harassment and face more difficulties when carrying out the same task in precarious conditions. The same situation could also lead to a new type of WP with no previous experience and relevant skills, who only secure this job by passing a security test due to

having a clean criminal record, even though this status is not related to the requirements of the tasks performed in the recycling sector. All of these expected outcomes are in conflict with the inclusion of the excluded groups being one of the key targets of co-production; this goal will not be achieved for most informal workers if the security check stage of the official recognition process remains in its current format.

## 7. Conclusions

The municipality's efforts to design urban recycling in a co-production framework by organizing IRWs into co-operatives and involving them as key stakeholders in a wider urban recycling structure are still in their early stages. Therefore, we rely on the expectations of key participants, rather than the complete analysis of the realized outcomes. We believe that keeping track of the initial stages of the co-production arrangement generates vital empirical evidence regarding the potential problems and constraints at the level of design that can have implications for the future stages of urban recycling in a co-production framework. In addition, our findings provide future studies with significant input when analysing the actual outcomes of co-production designs once these arrangements become operational in urban recycling structures. As a future direction, we plan to design focus groups and conduct surveys with a representative sample of marginalized groups, including the Romani, Kurdish, and refugee communities, engaged in informal activities in the urban waste recycling sector in order to form a more comprehensive picture of the co-production efforts made to create green jobs.

Given the contingencies made in the early stages, the municipality's co-production efforts in İzmir may be prone to co-option by the standard forms of employment in public-private partnerships. According to the national directive, after equipping themselves with uniforms and the basic equipment, WPs are obliged to sell their collected waste to the private recycling companies that are contracted out by the municipalities. As of writing this paper, some local municipalities had already started to equip WPs with security clearance with the uniforms and basic tools used by formal own-account workers without co-operative membership, along the lines of the national directive. As long as the workers are not organized into co-operatives, there might be no material benefits for the WPs other than being officially recognized, since they would be working in the same conditions as before without having any control over their position in the wider recycling sector. These forms of employment are likely to provide private recycling companies with low-cost labour inputs and reinforce the existing forms of standard employment in public-private partnerships.

Greening the jobs of informal workers in the urban waste recycling should not merely be considered as a favour designed to improve the precarious work conditions of WPs and sorters who are stuck at the bottom end of the workforce because of their limited skills and low educational attainment. On the contrary, the attempts to provide them with decent work conditions should be based on their essential tacit knowledge and the specific skills that they accumulate over time, despite being subjected to low incomes, poor working conditions, and social stigma. Technical skills, such as understanding how to sort the recyclable materials, cannot be easily emulated by capital-intensive technologies. Our findings based on the in-depth interviews also highlighted IRWs' analytical skills in terms of processing the different types of materials found in recyclable waste and assessing the market value of useful parts without using calculators. Finally, their communication skills can be used as a tool to effectively change the sorting behaviour of waste producers, such as households, by increasing the rate of sorting at source, as observed in pilot trials. The involvement of WPs and sorters at both the planning and managing stages of co-production design is crucial to acknowledging their contribution to creating a sustainable economy.

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