

CASE STUDY

ESSEN (DE) – FORTALEZA (BR)

IURC - LA



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Thematic Networks: Ecological Transition – Green Deal / Innovative, Sustainable & Carbon Neutral Ecosystems & Strategic Sectors

Thematic Cluster: Circular Economy & Waste Management

Cross-cutting challenge: Energy Transition – Climate Change

Topic keywords: waste management, circular economy, environmental education, recycling, green deal, climate change.

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ESSEN - FORTALEZA

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Incorporation of Essen's best practice on waste fee structure in Fortaleza's new legal framework for the creation of a waste collection tax.



Source: Municipality of Fortaleza

EXECUTIVE SUMMARY

Essen and Fortaleza (“Fortalessen”) are exchanging knowledge and best practices on circular economy and waste management, linked to the recycling and collection of special waste, legal frameworks, and waste fee structures, that promote zero-waste policies. They seek to lead this transformation through the design of communication and educational campaigns to increase recycling and reduce waste by fostering citizens’ engagement. In this context, Essen shared relevant policies and experiences on their waste fee structures with Fortaleza who have incorporated them in their new legal framework for the creation of a waste collection tax.

Essen is Germany's 10th city with the largest population and represents an important industrial, service, trade fair, congress, and university hub. Essen was named as **European Capital of Culture 2010** and **European Green Capital 2017**. The City’s long-term history as a coal and steel producer continues to shape its urban development future. The Krupp Belt is one of the largest conversion areas in Germany covering 230 hectares and it successfully showcases how the city has transformed its industrial heritage into new green and sustainable sectors. The experiences from Essen offer a blueprint for other municipalities that want to make positive change even when lack of funding presents a challenge. The city is a promoter and implementer of innovative circular economy initiatives.

Fortaleza, capital of the State of Ceará, is Brazil’s fifth largest city. It has 34 kilometres of coastline and is the closest Brazilian city to the European continent. It is also a city with many inequalities, reflected in the low Human Development Index of some of its neighbourhoods. To address these inequalities, the city is investing in sustainable public transport, improving the quality of life in the most vulnerable areas with urbanization and sanitation projects,



as well as the inclusion of waste pickers¹ in their waste management strategies. The city is also highly committed to improve its sustainability with innovative programmes for the creation of more green spaces and parks, as well as circular economy programmes. Fortaleza hosted the IURC Regional event “**Circular Economy & Waste Management: Towards more sustainable solutions for cities and regions**” on May 4-5, 2023, which brought together an international delegation of representatives from 15 European, North American and Latin America cities and regions. You can read more about the event [HERE](#) and watch the video [HERE](#).



¹ Waste pickers collect household or commercial/industrial waste. They may collect from private waste bins or dumpsters, along streets and waterways or on dumps and landfills. Some rummage in search of necessities; others collect and sell recyclables to middlemen or businesses. Some work in recycling warehouses or recycling plants owned by their cooperative associations. More information [here](#).

MAIN CHALLENGE AND SOLUTION

Fortaleza and Essen have focused on mechanisms to change citizens' behaviour and to build more engagement towards recycling and waste avoidance, as solid waste management is a challenge for both cities. Illegal dumping degrades public spaces and affects public health, as well as limits the possibility of recycling waste and promoting circular economy practices. Effective circular economy policies are thus necessary to ensure environmental and social sustainability.

“Fortaleza has the opportunity of becoming a reference in waste management for other Latin American cities”

– Victor Macedo, Vice President, CITINOVA

The management of urban solid waste is one of the greatest challenges for large Brazilian cities. Fortaleza is amongst the cities in Brazil that recycle the most, with a current rate of 6% while the average for Brazilian cities is of 3%, but it can still improve a lot. As a city with a population of 2.7 million people, it processes approximately 69 thousand tons of waste per month, resulting in around 830 thousand tons per year. This represents a production of 0.9 kg of waste per capita per day. It is also important to mention that in Brazil, 90% of recyclables are collected by waste pickers, which highlights the importance of including them fully into sustainable practices and future interventions. This presents a significant challenge for increasing recycling rates, reducing irregular waste disposal points and advancing social inclusion policies through waste management.



As such it was very relevant for the City of Essen to share their extensive experience regarding their legal framework and mechanisms for the creation of a waste fee structure. The municipality has a dense network of laws and regulations that are necessary to overcome difficulties regarding the practical implementation and control of waste fee structures. During technical workshops, the exchange of information, and bilateral study visits, the technical and policy teams from Fortaleza learned about **how to adapt this structure** to their local context.

In 2020, the new Legal Framework for Basic Sanitation, approved by the Brazilian National Congress, made Solid Waste Service fees mandatory at the municipal level. After the approval of the New Federal Legal Framework for Sanitation (July 2020), the Municipality of Fortaleza began an analysis process to adapt this new national legal framework to the

local context, by designing and evaluating different scenarios for the implementation of the fee. This new policy was subsequently adopted by the City of Fortaleza through the "Fortaleza Clean City" Programme in December 2021.

The next year, studies were concluded, and in December 2022, the law was approved, along with another one detailing the City Hall's new solid waste management programme called "Mais Fortaleza" (More Fortaleza). Consequently, the implementation of the fee for the collection of solid began in May 2023.



Source: Municipality of Fortaleza

Essen introduced waste fees in 1969 which are regularly monitored and adjusted. The municipality charges a flat fee for municipal services (garbage collection, bulky waste collection, recycling centre, etc.) and a special fee for additional services. The fee charged depends on the size and number of residual waste bins and the frequency of collection, encouraging citizens to reduce their waste consumption. Also for a nominal fee, citizens can order a brown bin for organic waste and blue and yellow bins for paper and plastic respectively, both free of charge. This system seeks to give incentives for citizens to increase their recycling. There is also a law from the German government that seeks to achieve 50% in recycling for household waste, especially through actions to increase organic waste recycling. The city of Essen is currently recycling 45% of household waste produced. Legal initiative are therefore important, but the greatest challenge is to educate and motivate citizens into taking action.

Illegal disposal of waste is also considered in the fee calculation, enabling citizens to measure the impact of individual behaviour on the community. To achieve general acceptance of the waste tax amongst citizens, Essen strives to operate with transparency and therefore shares publicly information on how the waste collection fees are calculated. The information is available online.

RESULTS AND IMPACT

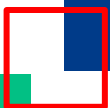
As a result of the learnings from Essen and the support from the municipality, Fortaleza successfully implemented its first waste fee structure in 2023. It adapted some of Essen's best practices to its local context. For example, basing collection fees on the amount of waste produced by household, even if very efficient, can encounter difficulties in its implementation in Latin American cities by indirectly encouraging illegal waste disposal to avoid paying the fee. Fortaleza evaluated this option for its own waste fee structure, however, the municipality considered that the city is at an early stage and thus would first require to raise more awareness amongst citizens about the relevance of sorting waste and controlling their levels of waste production. In addition, the federal mandate already provided 4 different options for cities to calculate the fee.



“Both cities agree that they should raise awareness about the urgency to reduce waste production and thus to reduce collection fees over time.”

– **Kirsten Helle**, Head of Emission Control Authority, Essen Environmental Department

To calculate the waste collection fee, various billing methodologies were analysed according to national recommendations and references, that included options based on water consumption, frequency of household waste collection, built area of properties, and property tax value, amongst others.



The winning methodologies defines a base fee, calculated by dividing operation costs for the management of urban solid waste by the total built area of the 800,000 properties in the city, according to the real estate data of the municipality. The amount to be paid by each taxpayer therefore corresponds to the **base fee multiplied by the built area of the property**.



The collection of the fee also took into consideration citizen's incomes to provide exemptions for the most vulnerable sectors, that consequently do not have to pay the fee to receive the service. Based on the existing 5 property categories in the city (low-end, normal, high-end, luxury, commercial, and others), those falling under the "low-end" or "normal" categories are automatically exempted from the fee. Properties with a taxable value below R\$ 85,000.00 (US\$ 17,000.00) and citizens registered in government social programmes are also exempted from the fee. Taking all these exemptions into account, approximately 60 to 70% of the city's residents will not pay the Fortaleza solid waste management fee. This decision was made based on a directive from the Mayor to exempt the most vulnerable citizens and through different amendments to the law made by members of the municipal council to exclude certain sectors (such as churches) from paying the fee.

Citizens were informed about the fee through the Municipality's media channels and through the local press. Additionally, each individual received a printed mail notification about the fee or its exemption. Transparent communication with the population and the distribution of printed mails to citizens was inspired by Essen's experience.

The average monthly value of the fee is R\$36,00 (US\$7.20). Around 40% of payers will pay the minimum amount of R\$21,50 (US\$4.30) per month, while approximately 2,8% of payers will pay the maximum amount of R\$133,23 (US\$26.64) per month. The amount recollected through the fee is expected to reach R\$150 millions per year (US\$ 30 millions), however as 2023 will be the first year of implementation, the default rate is expected to be high. This represents about 43% of the total costs of the waste recollection service.

The funds collected through the fee will be used exclusively for actions related to urban solid waste management, through the implementation of the **new urban solid waste policy "Mais Fortaleza" focused on increasing recycling and promoting circular economy** . The programme involves the implementation of new infrastructure and technology, new models of selective waste collection and waste logistics, strategies to raise awareness and environmental education, as well as actions aimed at social inclusion and income generation for waste pickers and their associations.

These include the **creation of more eco-points** (public infrastructure and containers to dispose recyclable and special waste), and the **expansion of the Reciclo programme** (providing waste pickers with a formal employment and an electric tricycle to collect and sort recyclable waste). It is also worth mentioning that citizens will receive discounts on their waste fee when disposing waste in eco-points and/or when participating in the Reciclo programme.

The new collection fee is thus part of a wider set of interventions linked to the sustainable management of solid waste in the city, that will benefit all citizens. The main objective is to increase by 50% the rate of recycled waste by 2030.



As a result of this collaboration and successful experience, Fortaleza and Essen have co-created guidelines for the implementation of waste fee structures that can be adapted and replicated in other Latin American cities. You can find a summary of the guidelines:



1 Legal framework



- Federal or National legal frameworks: integrated into local frameworks
- Legal Requirements and frameworks to guide municipal actions

2 Data collection & Monitoring



- Collecting data to evaluate performance
- Monitoring data to improve strategies over time
- Transparently share data with citizens

3 Infrastructure & Innovation



- Innovative programmes encouraging recycling
- Technology & digitalisation to improve efficiency of waste collection
- Programmes to repair electronic devices and promotes reuse

4 Fee calculation



- Social inclusion and exemptions for more vulnerable communities.
- Incentives to encourage recycling and reducing waste production
- Special taxes CO2 emissions
- Laws for fee calculation

5 Fee application



- Operation costs.
- Promote good management of operations to keep the fee low
- Complementary environmental programmes

6 Concessions & Management



- Different concessions for different waste collected
- Establish operational rules
- Ensure social inclusion of vulnerable groups by providing jobs

7 Education & citizen's engagement



- Informative flyers & campaigns to explain citizens how to sort waste.
- Events & activities to raise awareness
- Special programmes for children to promote behaviour change

8 Mechanisms to reduce waste



- Provide different household containers for recyclable materials.
- Financial incentives for recycling waste
- Special waste collection points close to residential areas

9 Illegal waste disposal



- Mechanisms (fines) to ensure adequate waste disposal.
- Integrate costs linked to illegal waste disposal into waste recollection fee
- Report illegal waste disposal

KEY FIGURES : Waste management

7.2 kg
of residual waste
per day per capity in Essen,
(600,000 inhabitants)

0.85 kg
of residual waste
per day per capity in
Fortaleza, (2.7m inhabitants)

6%
of waste
recycled in
Fortaleza

45%
of waste
recycled in
Essen

The main challenge for Fortaleza concerns the necessary change in citizen's behaviour. The population of Fortaleza has been used to receive services for solid waste management without paying a specific fee for several decades, creating a culture of non-commitment to waste management, which is now undergoing innovations and changes. During this process, part of the population does not understand the new collection of a waste fee, which also generates political misinterpretations.



In this regard, Essen and Fortaleza are also actively collaborating on designing programmes to raise awareness amongst citizens about the importance of adequately sorting and recycling waste, especially amongst children. In this regard, both cities are also working in parallel on different projects, including the creation of a joint draft for an initiative in schools to raise awareness of zero waste amongst citizens.

The cities also have exchanged knowledge on the recycling of electronic waste, the construction of micro-parks and tiny forests, as well as the digitalisation of waste management initiatives. The collaboration started during IURC will continue beyond the life of the programme, as the cities will keep working together towards common goals of sustainability, circular economy, and social inclusion, which would lead to the signature of a Memorandum of Agreement in the long term.

They coined the name “Fortalessen” for their collaboration, as a symbol of how working together made them stronger.



LESSONS LEARNED

Even though both cities have different contexts, they have common objectives.

Essen has learned from Fortaleza's experiences and practices to include vulnerable groups, as well as from different technologies and infrastructure solutions that can be replicated in different contexts.

Essen recommends cities looking to adopt a fee structure to focus on the transparent presentation of fee calculation in an open and comprehensive manner for citizens. They also suggest that environmental education should be continuous and start at school to reach a larger portion of the population and raise awareness from a young age. In this regard, it is important to involve a wide range of stakeholders and institutions. Waste management goals should be continuously updated and consolidated.

Solid Waste Service fees should be linked to programmes targeted to change citizens' behaviours: **engagement initiatives, innovative and technological infrastructure, income generation and social inclusion mechanisms, as well as environmental initiatives.** Through the exchange of experiences with Essen, Fortaleza decided to implement more disposal points for recyclable waste near households, and will work to remunerate citizens disposing waste in selective waste collection infrastructure.

Fortaleza learned from Essen that it is important to ensure legal status of the initiatives by defining them in federal laws or decrees, while fully involving public management. Well-designed laws and regulations are essential to the success of public policies at the local level. Agencies responsible for solid waste policies should also be aligned with technology and innovation development to promote pilot projects and initiatives.

THE IURC PROGRAMME

The International Urban and Regional Cooperation (IURC) programme enables cities in different global regions to link up and share solutions to common problems. It is part of a long-term strategy by the European Union to foster sustainable urban development in cooperation with the public and private sectors, as well as representatives of research and innovation, community groups and citizens. Through engaging in IURC, cities will have the chance to share and exchange knowledge with their international counterparts, building a greener, more prosperous future.

The IURC programme is an opportunity for local governments to learn from each other, set ambitious targets, forge lasting partnerships, test new solutions, and boost their city's international profile. Its activities will support the achievement of policy objectives as well as major international agreements on urban development and climate change, such as the EU Urban Agenda, the UN Sustainable Development Goals, and the Paris Agreement.

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Links to related outputs:

Guidelines: <https://www.iurc.eu/library/solid-waste-collection-fee-guidelines-experiences-from-essen-fortaleza/>

Takeaways factsheets:

- Experiences with **Solid Waste Fee** in Essen and Fortaleza: Important & transferable lessons
- Webinar. **Right to Green**: Building parks through Community Engagement. Case Studies from Barranquilla, Essen, and Fortaleza.

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