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## **TRANSITION TOWARDS CIRCULAR ECONOMY - IS MONOPOLY IN WASTE MANAGEMENT A SOLUTION?**

### **Abstract:**

Circular economy is a considerably new concept, that has appeared on the economic horizon during the last decade and it seems that it will revolutionary change the existing business as usual model. Although, if analysing the key concepts of circular economy one can come to a conclusion that there is nothing radically new about it. The finite amount of resources among with scarcity and progressing increase of global population have lead to comprehension that material and product re-use, repair and resource saving need to be enhanced in a urgent pace.

One industry extensively covered by circular economy elements is waste management. Across Europe it varies significantly, from countries focusing on recycling and recovery, disposing already below 5% of household waste to the countries, which are still lagging behind and just introducing best available Technologies and currently still relying heavily on disposal (over 40%). Within the present research the authors would like to analyse the benefits and drawbacks of one of solutions - implementing long-term monopoly via Public-Private partnership. The research is based on statistical data analysis, benchmarking and expert methods, it uses mostly secondary data.

The authors have concluded that unfortunately no one-size-fits-all solution is possible in this field, although decision-makers can evaluate best practices and develop a solution that can be applicable to a certain city or region, taking into consideration it's specifics.

### **Keywords:**

circular economy, public-private partnership, waste management

**JEL Classification:** H41, Q56, R11

## Introduction

It is becoming more and more obvious that circular economy concept is something that is here to stay in the long-term and it is no more a fancy word or just a synonym for sustainable development or waste management called in a different manner. In recent years, the term “circular economy” has gained much attention. Moreover, it has been supported by European Union, issuing not only Circular Economy Action Plan, but bringing it way forward, by adopting changes in a range of waste-related Directives, developing brand new Directive on the reduction of the impact of certain plastic products on the environment, issuing European Union (EU) Strategy for Plastics in the Circular Economy, Report on Critical Raw Materials and the circular economy, etc. (European Commission, 2019).

The concept of circular economy conceives of a production and consumption system with minimal losses of materials and energy through extensive reuse, recycling, and recovery (Ellen Mac Arthur Foundation, 2013; EEA, 2014). According to the EU, the circular economy is supposed to boost global competitiveness, foster sustainable economic growth and generate new jobs (European Commission, 2018).

Sound and efficient waste management systems are an essential building block of a circular economy. To modernise waste management systems in the Union and to consolidate the European model as one of the most effective in the world, a revised waste legislative framework entered into force in July 2018. This includes:

- new ambitious yet realistic recycling rates<sup>1</sup>;
- simplification and harmonisation of definitions and calculation methods and clarified legal status for recycled materials and by-products;
- reinforced rules and new obligations on separate collection (bio-waste, textiles and hazardous waste produced by households, construction and demolition waste);
- minimum requirements for Extended Producer Responsibility;
- strengthened waste prevention and waste management measures, including for marine litter, food waste, and products containing critical raw materials (European Commission, 2019).

The circular economy aims to fundamentally change how we think about waste: treating it as a resource rather than something we just want to get rid of. Environmental organizations argue that the circular economy bears the potential for us to live resource efficient while enjoying a “low-carbon prosperity”. A clean production and sustainable consumption contributes to saving the planet. The world’s leading multinational companies in the waste management sector are also very enthusiastic about the circular economy but for very different reasons. In the circular economy the companies can profit twice from the same material: for disposing it and for selling it as a resource to producers (Weghmann, 2017).

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<sup>1</sup> The revised waste legislation requires that by 2030, 70% of all packaging waste and, by 2035, 65% of municipal waste should be recycled, while reducing landfilling of municipal waste to 10%. A 5-year time extension is granted to Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Romania, Slovakia and Bulgaria.

### Waste management – a field for public or private companies?

According to the Report on the implementation of EU waste legislation, one of the recommendations developed by the experts, is to cascade national recycling targets down to the municipal level with responsibility for waste collection systems, and ensure that there are consequences for municipalities that fail to meet targets. (EC, 2018).

As in every Member State it is mainly the municipality, which chooses, what type of company would operate in its territory, the authors consider it of importance to analyse the division among private and public companies, operating in the field. In Germany a further trend towards public ownership can be observed in recent years as more and more local authorities municipalized their waste collection services. In Poland, Romania, Spain, Sweden and the United Kingdom outsourcing the collection and transport of municipal waste to a private provider is far more common (Wegmann, 2017).

Table 1. Share of services provided by type of provider in the selected Member States.

Country	Public, %	Private, %	Mixed, %
Germany	50	45	5
Italy	27	55	18
Latvia	68	29	2
Romania	53,7	46,3	0
Spain	80	20	0
Sweden	71/10 <sup>1</sup>	25/90 <sup>1</sup>	4
United Kingdom	40/90 <sup>1</sup>	60/10	0

Source: adopted from Wegmann, 2017; EC, 2016

Both analysis of this table along with different studies reveal that no clear correlation between the extent of public and/or private participation and performance could be established (European Commission, 2017).

Currently there is no internationally accepted definition for Public-Private Partnership (PPP). PPP is defined as a way of procuring public infrastructure by involving the private companies in the financing, building, and operation of the asset (Cheung *et al.* 2012); contractual relationships governing long-term public acquisition and private-sector provision of public services; or a consequence of bringing private competition to a public monopoly (Zhang, Chen, 2013). It was based on the assumption that the private sector generally provides public goods more efficiently and at more reasonable prices than the public sector. This is presumably caused by the free-market mechanism, where the quality and cost of providing public goods is balanced at the

<sup>1</sup> Collection/ Treatment

optimal point arising from the free-market manner of operation which regulates supply and demand (Leitão, et.al., 2018).

The increased interest in PPPs can be attributed to:

- (1) improved performance of the public sector by employing innovative operation and maintenance methods;
- (2) reduced and stabilized costs of providing services by ensuring that work activities are performed by the most productive and cost effective means;
- (3) improved environmental protection by dedicating highly skilled personnel to ensure efficient operation and compliance with environmental requirements; and
- (4) access to private capital for infrastructure investment by broadening and deepening the supply of domestic and international capital (Kwakk et.al., 2009, Masoud, El-Fadel, 2002).

PPP's are considered to be one of the main models for the provision and management of public infrastructure all over the world aiming to meet the social needs of many countries (Badasyan, Riemann, 2020).

Through a PPP, governments contract with private companies to construct, operate, and maintain waste facilities. PPP transactions have been widely applied in the delivery of waste treatment and EFW facilities in the past decade. Most of the volume generated between 2005 and 2013 was from public projects tendered as PPP concessions: a total of 68 deals in the waste sector, worth \$17.3 billion (Mahmudova, 2014). Although, the majority of such deals were linked with construction of infrastructure, way less development of waste collection in the cities. Since the 1980s and 1990s many European countries underwent a process of privatisation of waste management services. At EU level, the adoption of procurement legislation has further affected direct public services and obliged public authorities to follow a procedural framework when carrying out privatization. Additionally, mounting pressure on public finances has led to the popularity of PPPs (Weghmann, 2017; EC, 2016). Despite the accounting benefits the number and value of PPPs in Europe have gone down. As such, while PPPs in other sectors, especially in transport, are going down PPPs in the environmental sector are going up (Weghmann, 2017).

Recently, several trends have been registered in management of the waste sector in the EU Member States, namely:

- Re-municipalisation: in recent years a shift towards the re-municipalisation of waste management services has gained momentum in states where the waste services had been previously privatized (Germany).
- Continued municipal control and management with some degree of privatisation: in particular in Sweden, Denmark, Finland, Austria, where the management of waste sector has traditionally been carried out by the public sector.
- Reinforced privatisation: in recent years in some Member States (Spain, Poland) an increased privatisation of the sector has been registered.
- Other trends, i.e. concentration (large companies acquiring smaller companies), selling of public shares (public companies sell their shares to face financial difficulties), absence of

investments in some regions of Italy (EPSU, 2012; Nordic Competition Authorities, 2016; EC, 2017).

There are several motives for why cities and regions decided to take back their waste services under public ownership. The need for flexibility and control over the delivery of services were the main reasons. Further reasons for the re-municipalisation processes were cost-benefit advantages, the aim to reduce public spending, the securing of jobs for local authorities and the expiry of contracts with private providers. In terms of the latter, it is very common for re-municipalisation processes to coincide with the expiry of contracts as the early termination of contracts with private providers can be very expensive (EC, 2016).

In the following table the authors have gathered benefits and drawbacks of the establishment of PPP:

Table 2. Benefits and drawbacks of a PPP

Benefits	Drawbacks
Feasibility	
Implementing a project is more economically feasible than the classic public procurement, which is reflected either by smaller investment to achieve the same quality of services or gaining higher quality with the same investment.	It creates high costs of establishing the partnership and greater financing costs, which are generally higher than the costs of public borrowing.
Modernization and development	
PPPs allow for a more extensive use of modern technologies and equipment, improving the quality of the project and/or lowering the maintenance and management costs.	Use of modern technologies is reflected mainly in higher profits of the private sector rather than lowering the cost for the public sectors and the users.
Financing	
PPPs provide access to private sources of financing projects in public interest.	Financing costs of private sector borrowings are generally higher than the financing costs of public sector borrowings.
Supervision/Transparency	
The public partner retains a supervisory function over the project, thus eliminating internal conflicts that arise when the public partner is simultaneously the provider and the controller.	Public partner often fails to perform his duties in the controlling phase due to the shortage of staff or insufficient knowledge.
Consumer orientation	
As the public partner is the municipality, it is inhabitant-oriented and must develop a PPP	A consumer should have the possibility to choose the provider, while in the scope of the

which would respect and secure the needs of the inhabitants/consumers.	provision of public goods this is not possible.
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Source: adopted from Ferk and Ferk., 2018

## Methodology

This study is focused on the assessment of the risks, associated with PPPs. The research is based on statistical data analysis and benchmarking. The authors have developed a risk value and factor matrix in order to visualise the potential impacts from establishment of a PPP. This matrix has been developed based on expert method, i.e. expert risk gravity evaluation and application of this matrix to the assessed risk factors. The experts for this research have been chosen from the Latvian waste management industry as well as from governmental institutions.

## Case studies of waste management in some European Union capitals

Below the authors have gathered some examples of EU capitals, which do not have private companies managing waste collection in the cities.

City	Type of company	Description
Berlin	Public limited company	In Berlin the waste management is commissioned to one public limited company, 100% owned by the city of Berlin. The company operates since 1994 and it's main responsibilities are: waste collection, waste treatment, street cleaning, snow removal and gritting. When fulfilling the responsibilities of public administration, Berlin Stadtreinigung is financing its services through service fees. The generation of profits is strictly ruled out.
Budapest	State-owned company	The state established a co-ordinating organization for carrying out the waste management public task of the state - NHKV Plc
Ljubljana	Public limited company	The waste collection system in Ljubljana and nine surrounding municipalities is managed by the publicly held (100%) company Snaga (EC, 2015). An integrated waste management system combines waste collection, transport, treatment and disposal into a practical waste management system that aims to provide environmental sustainability. This is achieved by combining a range of treatment options including waste prevention and reduction, reuse, recycling, and composting. Snaga handles waste for nearly 400,000 residents of the Municipality of Ljubljana, as well as ten bordering municipalities. The company was founded in 1890 and since 1994 it is a limited liability company.
Prague	Number of private companies	Prague is divided into several collection areas in which household waste is treated by one responsible company.
Vienna	Municipal company	Municipal department 48 is part of the environmental division of the City of Vienna administration. The company carries out waste management, street cleaning and possesses a vehicle fleet.

Source: by authors

Public authorities carry the main responsibility for the municipal waste management. The services are either delivered directly through the municipal departments or through municipally owned waste management companies, or indirectly through outsourcing to private providers

### **Case study – waste management in Riga city**

Since mid 2000's there were five to six waste management companies, operating in the city. The main problems were:

- Lack of reporting to the city council;
- Lack of division of the administrative territory into operating areas;
- Lack of 100% client coverage;
- Cherry picking;
- Increase of noise, air pollution, traffic;
- Price dumping.

In 2017 Riga City Council issued a decree in support of establishment of a PPP. It was foreseen that the PPP would operate for 20 years, the public partner of the entity would be Riga city's and neighbouring Stopini municipality's owned landfill. The PPP project foresaw following activities:

- Unified flat price for all inhabitants;
- Implementation of unified modern client service;
- Change of waste container fleet;
- Increased waste collection route efficiency, thus decreasing pollution;
- Establishment of sorted waste collection points;
- Introduction of sorted biowaste collection system;
- Establishment of underground containers in the Old part of Riga city;
- Establishment of sorted waste collection areas;
- Change of waste truck fleet;
- Equipment of waste containers with radio-frequency identification system;
- Etc.

During 2019, a public procurement took place and private partner was chosen and the procedure of PPP establishing was initiated. Although due to intervention of Competition Council and it's decision to suspend the PPP procedure, currently the city of Riga has an emergency situation with respect to waste management and the City Council was given a task by the Ministry of Environmental Protection and Regional Development, to find a solution for the established situation. So far it seems that the City Council will hold a public procurement to choose one or several private companies that would operate in particular waste management zones of the city for the time period of 7 years.

Considering the described case of Riga city, the authors would like to assess and critically analyse the potential risks that establishment of PPP could bring to the society, in case the Competition Council would not intervene in this particular situation.

As risks should be carried by those that manage them best. The key aspect to PPPs is thus identifying and sharing the risks between private and public partners (OECD, 2012).

Table 3. Risk assessment

Risk source	Risk description
Uncontrolled increase of waste collection fee	The example of the PPP, which was planned to be established in 2019 revealed a very unpleasant trend – one of the first changes that would have been for the society – increase of waste collection cost. Preliminary assumptions showed that the increase could be from 40% up to 90% for the inhabitants. Which is considered to be totally socially unacceptable, especially within the preconditions of monopoly and lack of alternatives.
Undertaking of dominant position (EC, 2012; Competition Council, 2019)	According to Art. 102 of the Treaty, abuse of dominant position may consist in: a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions; (b) limiting production, markets or technical development to the prejudice of consumers;
Decrease of waste collection service quality	In the case of a PPP for 20 years, there is a chance that the quality of waste collection service may decrease but, the consumer will not have a possibility to switch to other waste management company as the market will be restricted.
Lack of alternative Private partners	In case during the 20 year time period the Public partner would wish to seek for alternative Private partner, there would be practically no alternatives, as entry to the relevant market for at least 20 years would be denied and an effective competitive structure in the long term would be jeopardized.
No guarantee of better value for money	Eurostat does not carry out a value for money assessment of PPPs. PPP proposals are normally compared with some 'public sector comparator' but most assessments are flawed. There has not been a systematic assessment of value for money nor of benefits from tax revenues, with many PPP owners based in tax havens (EPSU, 2011).
Lack of complete transparency	Private companies insist that many aspects of PPPs are kept secret, including the contracts themselves. Transparency on the full costs and benefits of PFI



	projects to both the public and private sectors has been obscured by departments and investors hiding behind commercial confidentiality (UK Public Accounts Committee, 2011; EPSU, 2011).
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Source: by authors

Table 4. Risk assessment matrix

		Likelihood of harm				
Risk severity	Mark	1	2	3	4	5
	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Source: by authors

Application of the matrix provides results, presented in the figure below.

Figure 1: Risk calculation (by authors)



Source: by authors

Risk ranking stands for: 1 – Urgent action to be taken; 2 – High priority; 3 – Medium priority.

When analyzing the results of matrix application, identified risks are classified to be above medium priority. It is important to pay attention to both environmental and economic aspects of the PPP in order to avoid or minimize the risks that can occur within establishment of a PPP.

Table 6. Risk minimization measures

Risk	Action required to minimise the risk
Uncontrolled increase of waste collection fee	Strict provision of planned infrastructure, software and hardware investments alongside with allowed fee increase per year
Undertaking of dominant position	Independent critical assessment of all possible scenarios and, in case opting for PPP – a sound and subjective ground for this decision with value for money.
Decrease of waste collection service quality	Strict provisions in the PPP implementation documentation. Establish a clear, predictable and legitimate institutional framework supported by competent and well-resourced authorities. Establishment of independent governing body over the PPP
Lack of alternative Private partners	Objective assessment of all the pros and cons of the PPP and
No guarantee of better value for money	Strict provisions in the PPP implementation documentation, including sanctions for not fulfilling the quality requirements
Lack of complete transparency	Strict provisions in the PPP implementation documentation. Establish a clear, predictable and legitimate institutional framework supported by competent and well-resourced authorities. Establishment of independent governing body over the PPP

Source: (by authors)

## Conclusions

According to OECD, 2012, PPPs should only be undertaken if they represent value for money and are affordable. In case of Riga city the main reason of failure according to authors, was the lack of substantiated evidence of the benefits of PPP over any other management scenario, along with lack of communication with public and governmental institutions. It is of vital importance, when considering the PPP option, for the government to compare the cost of public investment and government provision of services with the cost of services provided by a PPP (Hall, 2015). When analysing international experience, the authors come to a conclusion that in many cases the cost of capital is cheaper without a PPP and the private sector is not more efficient in operation, as the public sector has the advantage of greater flexibility.

Within the framework of circular economy, the authors stress that the role of public sector, in particular municipalities, has to increase – as in waste sector there is a huge potential for development as well as for creation of new green jobs.

The authors see it obvious that the public and private sector together will need to assume much more responsibility for waste generation and disposal. Special attention will be required for product design, dismantling design and more sophisticated waste separation. In case a well-

grounded, transparent and well-structured PPP is established, it can result in significant improvements in efficiency and quality of solid waste management. In further research the authors plan to assess more in-depth economic aspects of PPP vs public waste management companies in order to develop a set of criterias for the municipalities to apply in order to chode one or another development model.

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