

# **FIELD: a methodology for the analysis of local actors, incentives and information endowment in regulation of local public services**

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## **Abstract:**

In the field of the theory of regulation when problems of control, tuning and planning under incomplete information emerge, the lack of focus on the institutional and market peculiarities at local level still appears as a shortcoming. Moreover, alongside with a rich literature on industrial production costs of services, research and the policy-oriented debate on player incentives, information distribution, information shortage/asymmetry, information flows between politicians, regulators and service providers are still weak. Nonetheless, the identification of these peculiar features for services that are provided in the constraint of a local market – such as water provision and sanitation, urban waste management, local public transport - is a preliminary condition to the design of institutional mechanisms and individual incentive schemes for the implementation of an effective local regulatory framework, especially where this framework does not exist yet or it is very recent (like in developing countries and transition economies).

This paper intends to present the methodology and the preliminary results of a research focussing on the peculiar aspects of players' incentives and information endowment/exchange at local level for services that are provided in the constraint of a local system like urban waste and water and sanitation services. The research is based on a survey conducted through an ad-hoc matrix filled-in by local experts in three pilot capital cities from the Mediterranean and Southern-European area: Cairo in Egypt, Sofia in Bulgaria and Belgrade in Serbia. The matrix developed, once tested in the pilot cities, proved to be a useful and usable tool to describe the framework of players, incentives and relationships in the two sectors analyzed. The number of Countries analyzed and their limited representativeness in terms of geographical distribution does not allow to provide a relevant comparative analysis at this stage: nevertheless it identifies some trends and new patterns for in-depth analysis aimed at further research efforts that can enrich the current debate on local regulation.

**JEL Classification:** K23, L43, L51, L97

**Keywords:** economic regulation, local public services, incentives, institutions

*This paper is a revised and adapted version of the paper “Institutional mechanisms and individual incentive schemes as a key element for implementing regulatory frameworks: a comparative survey focusing on local regulation” presented at the Fourteenth Mediterranean Research Meeting, Mersin, Turkey 20 – 23 March 2013, organised by the Robert Schuman Centre for Advanced Studies at the European University Institute.*

## **1. Introduction**

### *1.1 The context of the research: actors and incentives in the local dimension*

In the field of the theory of regulation when problems of control, tuning and planning under incomplete information emerge, the focus on the institutional and market peculiarities at local level is still under preliminary scrutiny and struggles to find room in the academic and policy oriented research and education.

Indeed, the academic and policy-oriented research on the national regulation of natural gas, electricity, transport and telecommunications is a well-established stream since the literature advances in the '80s and the privatization, liberalization and regulation policies after the '90s.

At the beginning of the '80s, several contributions linked regulatory theory with game theory and information theory, in particular Baron and Myerson [1] and Sappington [2][3]. A seminal stream of work came from Weitzman [4] and Loeb and Magat [5]. Yet research has persisted in its focus on national regulation: as a consequence, the analysis of the peculiarities of the local dimension of regulation are far more weaker and a scientific and policy-oriented approach is missing.

Nonetheless, historically, the growing medium of regulation seems to have been in the municipalities. Concessions, franchising, licences and authorizations issued at local level have always been accompanied by mandatory provisions and rules on price, quantity, quality, accessibility, safety and so on. Scale economies, neighbour externalities and coordination needs are at the basis of regulatory take-over by central governments. Otherwise, municipalities have generally retained a regulatory role, which is played in ways that differ alongside institutional frameworks, level of development, and cultural features of local communities.

Local regulation is concerned with sectors in which market dimension is geographically limited by physical and technical factors: the main sectors involved are household urban waste, water and wastewater services, district heating, local public transports, green areas, sport pools and other urban services. Concerning the regulation of these services, the presence of “power-endowed” regulators is actually not so frequent. Indeed, while regulation for large network services (telecommunications, natural gas, electricity), at least in OECD Countries, is generally designed and implemented at national level with national agencies and independent authorities, at local level the regulatory framework for urban services is usually patchy, weak or not existent at all: nevertheless these services produce a not negligible quota of the national GDP and give a relevant contribution to people well-being. Of course the services cited above have very different characteristics, but the conditions of information asymmetries between public administrators and incumbents are common to all of them: the theory of

incentives and mechanism design, in the framework of game theory, can provide a common approach very useful when designing a regulatory framework.

Moreover, the debate on the trade-offs related to centralized or decentralized regulation of local services like water and sanitation services is still open, especially – but not only – in developing countries: while a centralized form of regulation appears to be the best response to limited capacity in these countries and might help avoiding collusion between the local regulator and the incumbents against the centralized administrations, at the same time decentralization may favour differentiation of policies in different regions, higher level of information endowment by local authorities and better enforcement thanks to the higher level of engagement and accountability of the local administrators [6].

Even in cases when the centralized solution is chosen, which is increasingly the case for water and wastewater services, a need of local regulation remains and it happens that centralized authorities coexist with regulatory activities at local level. An example is the Italian case, where regulation of water and wastewater services has been centralized in 2011 [7], shifting from a local and single-sector form of regulation to a national and multi-sector one (with energy); notwithstanding this regulatory overhaul the former local regulatory authorities (*Autorità d'Ambito Territoriale Ottimale*) still exist and exert some regulatory functions.

A final consideration about the local dimension in regulation is that it shows some specific and additional factors of weakness compared to regulation implemented at national level. These factors lie in the existence of “improper costs” for the regulatory activity at local level, being these improper costs able to distort the well-known model of a regulator maximizing social welfare/benefits [8]. As an example of improper costs borne by local regulators there are the psychological, human, professional costs associated with sanctioning (removing, fining, refusing accounting outcomes, ...) in a context of tight social networks and the possible loss of future income associated with hard present decisions against regulated firms and agents.

The improper osmosis among professional roles – which is an enlarged version of the well-known phenomenon of “revolving doors” – simply amplifies these improper costs: at local level the osmosis of people among roles (politics, regulation, business, consultancy, bureaucracy, lobbying and so on) seems, anecdotally, more frequent in comparison with the national level, posing a threat to the incentive structure lying behind regulatory work [8].

Other factors that can weaken the local regulation are as follows: first, the quality of human capital engaged in regulatory-like tasks can be significantly lower, in terms of competences and experience, than that of national governments and regulatory agencies. This is common to many situations and especially relevant in developing Countries [6][9][10]; second, the difficulty of separating public enterprises from the damaging consequences of the political cycle is particularly challenging at local level, also for the cited osmosis phenomenon and for the length of political/administrative appointments at local level. As a consequence investment and pricing decisions can be substantially distorted. Third, the incentive structure behind public functionaries, already weakened at local level for the cited osmosis problems, seems poorly designed in comparison with more endowed central government/agencies.

## *1.2 General goal of the paper and presentation of contents*

The rationale of the paper lies on a particular lack of policy oriented research on local regulation. Alongside with a rich literature on industrial production costs of services, players' incentives and information endowment seem neglected by the scientific and policy community. Adding this supplementary interpretation key to existing research on costs/services could be a fruitful effort and help to answer more general questions about local regulation constraints, instruments and goals.

In particular, the following research questions are considered highly relevant:

- a. what are the peculiar aspects of players' incentives and information endowment/exchange at local level for services that are provided in the constraint of a local market like water and sanitation services?
- b. which mechanisms can be designed to incentivize regulated actors to reveal private information in an incentive-compatible way?
- c. what is the dimension of the phenomenon of professional osmosis among different actors of the local regulatory environment, and what is the effect on regulation effectiveness?

In this context, the Turin School of Local Regulation has recently launched a research focussing on the first question (a). The research consists in the collection of data from different Countries in order to build an international comparative survey offering a description of the state of the art of the main players involved in the local regulatory agenda, their relationship, the incentive system that drives their choices and identifying some obstacles that this situation poses to the implementation of the regulatory agenda. The final objective is to collect hints to identify which mechanisms could be designed in order to remove those obstacle.

The paper focuses on the description of the methodology adopted (Section 2) and presents some preliminary results from three selected case studies from the Mediterranean and Southern-European area (Section 4). The analysis concentrates on two local services: water and wastewater cycle and household urban waste management. The number of Countries analyzed and their limited representativeness in terms of geographical distribution does not allow to provide a relevant comparative analysis at this stage but it allows however to identify some trends and some new patterns for in-depth analysis and further research (Section 5).

## **2. Methodology**

### *2.1 Developing the matrix*

Firstly, the experience gained by the Turin School of Local Regulation thanks to continuous training and capacity building activities in the domain of local regulation led to the identification of key points to be highlighted in the survey. Four factors seem crucial: relevant players' profile; their incentives; their information endowment; relations amongst these players. Moreover the obstacles that the situation described poses to the implementation of the regulatory agenda have been taken into account.

Secondly, on the base of key aspects to be considered, an analysis matrix has been developed, offering a well-defined set of answers with the aim of obtaining data that may be comparable amongst different Countries.

Here below we present the fields composing the final version of the matrix, with some comments on the reasons why such aspects are considered relevant in order to have a satisfactory overview of the institutional and incentive framework in different Countries. This scheme was used by Country correspondents to provide information about their Country. Some notes have also been included, highlighting any critical point connected to some specific questions, arising ex-post, on the basis of the answers provided by different correspondents involved.

The paper contains in attachment the model of the table circulated amongst correspondents to collect information.

### 2.1.1 Description of the state of the art of the main players involved in the local regulatory agenda, their relationship, the incentive system that drives their choices

Firstly, correspondents are asked to identify the most relevant players (those who have real influence) in the two sectors analyzed, according to the following categories: politicians, public officials, market actors (financial and non-financial, local or national or international), lobbies, consumer organizations, administrative tribunals, consumers / final users. It is possible, and this was the case, to identify more than one player for each category. In particular under the category of non-financial market actors many different players can be included: publicly-owned companies, private operators, public-private partnerships, NGOs technically supporting the service management.

Secondly, for each player identified correspondents are asked to spot the incentives that drive their choices, making a distinction between institutional incentives (directly linked to their mission or mentioned in their statutes or other institutional act) and shadow / improper incentives and scaling them according to their priority. The institutional incentives proposed are: efficiency in provision of the service, profit, market share, efficacy and quality, equity / redistribution / accessibility. The shadow incentives proposed are: electoral consensus, consensus, political control, religious control, ethnic control, bureaucracy (maintaining own budget), financial public budget constraints.

Third, relations between the players are identified. Both institutional relations (established by law) and real relations are taken into account. The following categories are proposed:

- Appointment: when a person or an institution is responsible for appointing a person to a specific role in another institution. When collecting the first data some extensive interpretation in terms of assignment was observed, that led to the inclusion of another relation “assignment”;
- Election;
- Lobby pressure;
- Strong political influence: political influence strictly speaking, that is to say toward politicians or the electorate. When collecting the first data some extensive interpretation in terms of assignment was observed in terms of market power or market influence. This led to the inclusion a new relation “market power” ;
- Corruption: it is worth noticing that in some cases this relation has been understood as bribery, some further specification is necessary in the future;

- Command and control;
- Regulation (under different forms: regulation of price, quantity, quality, accessibility, distributional aspects);
- Rule of law / judicial enforcement;
- Data request;
- Assignment: when a player assigns a service to an operator through e.g. concession, public tender, direct assignments;
- Market power: a company's ability to influence the market. This relation is likely to exist between two market actors;

In order to identify existing relations correspondents are asked to fill-in a matrix specifying if such relation exists between two players and if this is an outbound or inbound relation (if the player analyzed is the agent or the target of the action). Each category of relation was formulated so that players who register an “outbound” entry in a given relation exert some form of power toward the player who registers an “inbound” entry. Moreover, for some of these relations the degree of real enforcement is specified (command, control and data request).

Finally, the information endowment of each player is explored. In particular the following information endowment is taken into account: information on industrial costs of the service; information on investment costs; information on physical assets (length of network, buildings, geolocation, equipment, ...). An interesting hint from the first phase of data collection is the distinction between the ownership of the information (e.g. the service operator owns the information on industrial costs of the service) and the transfer of such information (e.g. when the regulator receives information from regulated companies).

### 2.1.2 Identification of the obstacles that a local system of relationships poses to the implementation of the regulatory agenda

A set of obstacles are proposed and correspondents are invited to select the three most relevant obstacles and scale them according to their relevance:

- challenges related to the rule of law
- corruption
- conflict of interests
- degree of regulatory independence
- lack of human capital and expertise
- political conflict
- ethnic conflict
- lack of political freedom
- poor quality and low accessibility of accountancy and statistical data.

## 2.2 *Information gathering and processing*

After the definition of the fields of the analysis, a group of experts have been involved to collect information from Countries in the Mediterranean area and South-Eastern Europe. Amongst the participants to the LORENET network, coordinated by the Turin School of Local Regulation, experts

were selected and invited to contribute to filling-in the table with information about their Country. Three experts have been involved in the research so far.

Some minor revision has been carried out during the phase of data analysis in order to allow some comparison between cities analyzed, especially concerning the types of players involved, their incentives and their information endowment (e.g. renaming players according to uniform categories and grouping some players together).

### *2.3 Methodological limits of the approach*

While working on this survey, some methodological limits were acknowledged. Some of them were already pointed out at the beginning of the research, others emerged during the analysis of data collected. Indeed, the objective of this first stage of the research was to test the relevance of the matrix proposed and identify issues to be further explored.

The two main limits concern the type of questions which calls for a high degree of subjectivity in answers provided on one side and the difficulty to compare different situations due to an interpretative space left to questions / fields as set on the other side.

The first limit might be overcome by submitting the matrix to several actors, institutional and non-institutional ones and operating at different levels of governance, in order to obtain results which are the closest to the real situation. Nonetheless, this is not the mission of the Turin School of Local Regulation, which aims to open a debate and to offer an interpretation key and an instrument of analysis of local aspects of regulation instead.

Concerning the design of the fields of the matrix and the degree of personal interpretation the authors faced a trade-off between the need of comparing different situations (to this extent the level of personal interpretation should be very limited) and the added-value generated by the interpretation itself as it highlights country-based specificities and introduces new elements that were not considered in the initial design of the matrix. This is particularly important especially when dealing with developing countries and transition economies. A solution is an in-depth discussion of the results with the correspondents in order to clearly define what they meant when filling in a certain field, to uniform data as much as possible and to collect hints for the matrix improvement.

### **3. The scope of the research: the Cities analyzed**

The two local public services treated in the research are the water and wastewater service (WWS) and the household urban waste service. Both these services present technical and physical characteristic that require local management and operation. By the way, they present also some different features:

- sunk investments requested for the water and wastewater service are generally much higher than those in urban waste management sector, especially when waste is not treated but solely disposed, as it is the case in many developing countries
- tap water provision can be considered a private good, being rival and excludable; waste collection and disposal is more similar to a public good, producing positive externalities toward the entire community and not only for the single user (which is also true for

wastewater treatment services) and leading more easily to free riding phenomena. This situation makes the collection of fees directly from householders for urban waste management more difficult than the collection of payment for water as there is a different perception of personal benefits originating from the two services [11] [12].

The analysis has involved three cities so far: one city from Northern Africa (Cairo) and two cities from South-Eastern Europe (Belgrade and Cairo). All the three cities are located in non-OECD Countries. Two of them are located in upper-middle income economies (Bulgaria and Serbia) according to the classification of the World Bank [13], while Cairo (Egypt) is located in a lower-middle-income economy. Belgrade is located in a Country (Serbia) in transition from centrally planned to market economy, according to the classification of the United Nations [14].

Concerning Egypt, it is important to specify that the analysis is related to the situation before the social uprising of 2013, following the destitution of Morsi's government.

### 3.1 Sofia

#### 3.1.1 National institutional and regulatory context

Bulgaria is a Republic with a unicameral parliamentary form of government. The President, elected directly by the voters for a period of five years, is the head of State. Following consultations with the Parliament, the President appoints the Prime Minister who nominates the Council of Ministers later elected by the National Assembly. The National Assembly, made up 240 members elected for a term of four years, is vested with the legislative power. The Judiciary is independent. Justice is administered by the Supreme Court of Cassation, the Supreme Administrative Court, courts of appeal, regional courts, courts-martial and district courts [15].

Bulgaria is divided in 28 regions (*oblasti*) and 264 municipalities (*obshtina*). Regions are governed by a regional governor appointed by the Council of Ministers. Mayors of municipalities are elected for a term of four years. In small villages mayors are elected by the municipal council while municipalities with more than 350 residents directly elect their executive authority [16].

Concerning the economic regulatory framework of local services, the sector of water supply and sanitation is regulated by a national body, the State Energy and Water Regulatory Commission (SEWRC/DKEVR) [17] while in the urban waste sector municipalities regulate waste services prices for both public and private companies. The municipalities are responsible for price-setting of all price components (which form the waste tax), according to a budget presented by the service company [18] [19].

#### 3.1.2 Key players identified

The Bulgarian correspondent identified 9 key players in the WWS sector and 8 key players in the waste sector. The Central Government, the Municipality of Sofia, political parties and service users / consumers are common to both sectors. In addition, the following players are mentioned for the WWS sector:

- The State Energy and Water Regulatory Commission
- The concessionaire of water and wastewater activities (Sofiyska Voda)

- The French company owning the majority of shares (77.1%) in Sofiyska Voda (Veolia Water)
- International Financial Institutions
- Consumers organizations

and for the waste sector:

- The Ministry of Environment and Water as manager of EU Funds
- Waste collection companies. The providers of the service are private companies, they have respective zones of the city for which they are responsible (concession).
- Waste recycling companies, that is to say business-associations of fast moving consumer goods (FMCG) traders, responsible for collection of recyclable materials in parallel with solid waste collection companies (in the same territory)
- Waste disposal operators.

## 3.2 Cairo

### 3.2.1 National institutional and regulatory context

Egypt is a republic with a semi-presidential system of government. The new Constitution dates from December 2012. The executive is headed by the President of the Republic elected by direct secret ballot for a four years term [20]. The President appoints the Prime Minister who forms the Cabinet.

The legislative branch, the Representatives' People's Assembly, is composed by 444 directly elected members and up to 10 members appointed by the President. Parliamentary elections are expected in spring 2013. At the moment the legislative power has been given to the Shura Council, the consultative council that proposes laws and regulations to the People's Assembly, made up 180 members elected and 90 members appointed.

The constitution states that the Judiciary shall be independent. The Judiciary consists of Courts of the First Degree (*Mahkmat El Daragah El Aoulah*), the Courts of Appeal (*Mahkmat El Esti'anaf*), the Court of Cassation (*Mahkmat El Naqd*) and other courts with specialized jurisdiction [21].

The State is divided into five administrative local units with judicial persons: governorates, provinces (*Markaz*), cities, districts (*hai*) and villages (*shieakhah*) [20].

The President has the authority to establish governorates, the Prime minister has the authority to establish *Markaz (kisms)*, cities, and districts and governors can establish villages [22]. The authority that establishes the local administrative unit usually appoints the chief of the local unit. Every local unit elects a Local Council by direct, secret ballot for a term of four years [20].

Concerning the economic regulatory framework of local services, the sector of water supply and sanitation is regulated by a national body established in 2006, the Egyptian Water Regulatory Agency (EWRA), while in the urban waste sector municipalities are responsible for tariff setting.

### 3.2.2 Key players identified

The Egyptian correspondent identified 10 key players in the WWS sector and 11 key players in the waste sector. The Central Government, the Local Government, the formal private sector, international financial institutions and donors (public and private), Non-Governmental Organizations providing

technical and financial support to other players and service users / consumers are common to both sectors. In addition, the following players are mentioned for the WWS sector:

- The Egyptian Water Regulatory Agency
- The Ministry of Environment, in charge of issues related to pollution and regulation of sewage impacts
- The Ministry of Health, in charge of water quality control
- The Holding Company for Water and Wastewater, central public company established to operate the whole water and wastewater cycle directly or through affiliate companies

and for the waste sector:

- Traditional garbage collectors
- Middlemen and intermediary buyers/dealers, connecting small collectors to wholesalers
- Wholesale merchants, actually controlling the collected waste market
- Consumer Organizations
- Waste recycling companies managing waste recycling plants.

It is worth noticing here the peculiarity of Cairo concerning some specific players, and in particular NGOs (both in the WWS and waste sector) and the informal sector. Indeed, they play a very important role, even if it has not been recognized by municipal and national governments [22].

Concerning in particular the traditional garbage collectors, a large scale innovative and efficient waste recovery, reuse and recycling operation in Cairo is run by the *Zabbaleen*, a group of over 50,000 people traditionally involved in the business of waste collection and processing. They recover and/or recycle between 70% and 80% of all collected plastics, metals, glass, paper and other components of the waste stream. In addition, they produce fertilizer in the process of organic waste composting and raise pigs which are fed on garbage on a commercial scale [22]. The informal collection system is also more efficient than the formal one because it operates in absence of corruption which hurts on the contrary the governmental system.

The relations between the informal sector and official institutions and market operators are crucial. Generally speaking in developing countries the informal sector often has few links with the formal sector and misunderstanding, competition and even hostility commonly characterize the relationships between them. Experience shows that it can be highly counterproductive to establish new formal waste recycling systems or to design regulatory agenda without taking into account informal systems that already exist [11] [23].

### 3.3 Belgrade

#### 3.3.1 National institutional and regulatory context

Serbia is a parliamentary republic. The President of the Republic, elected on direct elections by secret ballot, is the head of the state. The president proposes to the National Assembly a candidate for the Prime Minister, the head of the government who heads a cabinet of minister nominated by the prime minister and confirmed by the National Assembly.

Legislative power is exercised by the National Assembly, composed of 250 deputies elected on direct elections by secret ballot [24].

The Judiciary is independent from both executive and legislative power. The court system includes local courts, the Constitutional Court and the Supreme Court of Cassation.

Serbia is divided into 29 district (*okruzi*), regional centres of State authority, and in local self-government units: municipalities (*opštine*) and cities (*gradovi*) with the City of Belgrade having a special status. At the local level, citizens directly elect assembly councilors by secret vote. The Constitution also recognizes two autonomous provinces, Vojvodina and Kosovo and Metohija, that in 2008 unilaterally declared their independence [25].

Concerning the economic regulatory framework of local services, for the sector of water supply and sanitation the Government of the Republic of Serbia sets the “reference price” for water and for wastewater, which is the basis for tariff-setting by local authorities/municipalities. In the urban waste sector the Municipalities are in charge of regulating investments, tariffs and profits and revenues.

### 3.3.2 Key players identified

The Serbian correspondent identified 11 key players in the WWS sector and 8 key players in the waste sector. The Central Government, the Local Government, private entities or potential PPPs, public enterprises, international financial institutions and donors (public and private) and service end users / consumers are common to both sectors. Regarding private operators in the water sector, it is important to specify that the new Law on PPPs and concession [25] opens the way for such modalities of provision. However the Law on Municipal Services [26] is not clear on whether PPPs and concessions can be applied to water services. therefore the inclusion of this player is theoretical as no PPP experience has been registered in the water sector in Belgrade so far.

In addition, the following players are mentioned for the WWS sector:

- The Ministry of Agriculture, Forestry and Water Management
- The Directorate of Water of the Ministry of Agriculture, Forestry and Water Management
- The Water Council, a consultative body established by the Directorate of Water of the Ministry of Agriculture, Forestry and Water Management
- The National Conference on Water, a consultative body established by the Government
- Foreign investors.

and for the waste sector:

- The Autonomous Province Vojvodina
- The Ministerial Agency for Protection of Environment.

## 4. Presentation of preliminary results

### 4.1 Players, incentives, relations

In the next pages some preliminary results about the players identified in the three cities analyzed, on the incentives that drive their decisions and on the types of relations that link them are provided. The presentation has been divided into two parts: one related to the WWS sector (4.1.1) and one to the urban waste sector (4.1.2). Some minor working has been done by the authors at this stage in order to allow some comparison amongst the cities. In particular, some players have been grouped under a single entry (e.g. when correspondents identified some Ministries as key players they have been

integrated into the “Central Government” definition) and others have been renamed in order to obtain uniform definitions.

Considering that the structure of section 4.1.2 mirrors section 4.1.1 structure, explanations on the methodology and the calculations used to compose tables and graphics are provided in section 4.1.1 and can be entirely applied to section 4.1.2.

#### 4.1.1 Water and wastewater cycle

Table 1 summarizes the key players identified in the three cities analyzed. Grey cells mean that that type of player is a relevant one in the city.

**Table 1.** Relevant Players involved in WWS service identified

Categories	Players	Sofia	Cairo	Belgrade
Politicians and public officials	Central government	X	X	X
	Water Council			X
	National Conference on Water			X
	National Regulatory Authority	X	X	
	Local government / municipality	X	X	X
	Political Parties	X		
Market actors (non-financial)	Publicly-owned operators		X	X
	Private operators		X	X
	Mixed publicly-privately owned operators	X		
	International / foreign operators	X		X
	NGOs providing technical and financial support		X	
Market actors (financial)	International financial institutions and international donors	X	X	X
Consumer organizations	Consumer Organizations	X		X
Final users	Consumers	X	X	X

Central Government, local government, international financial institutions (IFIs) and donors and, naturally, consumers are key players identified in all cities analyzed. With reference to IFIs and donors, according to statistics provided by the OECD [36], in 2009-2010 7% of total annual average international aid was represented by aid commitments to water and sanitation, amounted to USD 8.3 billion. In this framework, in 2010 Egypt was the seventh recipient in aid to water and sanitation with USD 228.84million.

A national regulatory agency is present in Bulgaria and Egypt but not in Serbia. On the side of market operators, a peculiarity of the situation in Cairo is the presence of Non-Governmental Organizations as market actors while at institutional level a peculiarity of the Serbian situation is the existence of a Water Council and of a National Conference on Water with a consultative role.

Table 2 shows the players' information endowment in terms of information on: industrial costs, investments costs and physical assets.

**Table 2.** WWS service: players' information endowment

Categories	Players	Sofia	Cairo	Belgrade
Politicians and public officials	Central government	None	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Water Council (consultative body established by the Ministry)			None
	National Regulatory Authority	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets	
	Local government / municipality	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Political Parties	None		
Market actors (non-financial)	Publicly-owned operators		Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Private operators		Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Mixed publicly-privately owned operators	Industrial costs Investment costs Physical assets		
	International / foreign operators	Industrial costs Investment costs Physical assets		Industrial costs Investment costs Physical assets
	NGOs providing technical and financial support		None	
	National Conference on Water			None
Market actors (financial)	International financial institutions and international donors	None	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
Consumer organizations	Consumer Organizations	None		None
	National Conference on Water			None
Final users	Consumers	None	None	None

The table shows that Sofia is the sole case where the local government does not have information on industrial costs of the service, which can be explained by the fact that 77.1 % of the share of SofiyskaVoda are owned by Veolia Water.

Table 3 illustrates the incentives that lead players' decisions. As described in section 2.1.1, correspondents have been asked to select them from a menu list and to rank them according to their relevance.

**Table 3.** WWS service: players' incentives

<b>Players</b>	<b>Sofia</b>	<b>Cairo</b>	<b>Belgrade</b>
Central government	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> <li>• Public budget constraints</li> </ul>	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> <li>• Public budget constraints</li> <li>• Consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Equity / redistrib./ access.</li> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Electoral consensus</li> <li>• Political control</li> <li>• Public budget constraints</li> </ul>
Water Council (consultative body established by the Ministry)			<ul style="list-style-type: none"> <li>• Consensus</li> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Equity / redistrib./ access.</li> <li>• Political control</li> </ul>
National Conference on Water			<ul style="list-style-type: none"> <li>• Consensus</li> <li>• Equity / redistrib./ access.</li> <li>• Efficacy and quality</li> <li>• Political control</li> </ul>
National Regulatory Authority	<ul style="list-style-type: none"> <li>• Equity / redistrib./ access.</li> <li>• Political control</li> <li>• Bureaucracy</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistrib./ access.</li> <li>• Public budget constraints</li> <li>• Bureaucracy</li> <li>• Consensus</li> </ul>	
Local government / municipality	<ul style="list-style-type: none"> <li>• Electoral consensus</li> <li>• Public budget constraints</li> <li>• Efficacy and quality</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Equity / redistrib./ access.</li> <li>• Public budget constraints</li> <li>• Consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Equity / redistrib./ access.</li> <li>• Electoral consensus</li> <li>• Bureaucracy</li> <li>• Public budget constraints</li> <li>• Profit</li> </ul>
Political Parties	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> </ul>		
Publicly-owned operators		<ul style="list-style-type: none"> <li>• Bureaucracy</li> <li>• Efficiency</li> <li>• Political control</li> <li>• Profit</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Profit</li> <li>• Market share</li> <li>• Efficacy and quality</li> <li>• Political control</li> <li>• Public budget constraints</li> </ul>
Private operators		<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> </ul>	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> <li>• Efficacy and quality</li> </ul>
Mixed publicly-privately owned operators	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> </ul>		
International / foreign operators	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> </ul>		<ul style="list-style-type: none"> <li>• Market share</li> <li>• Profit</li> <li>• Efficiency</li> <li>• Efficacy and quality</li> </ul>
NGOs providing technical and financial support		<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Electoral consensus</li> </ul>	
International financial institutions and international donors	<ul style="list-style-type: none"> <li>• Profit</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistrib./ access.</li> <li>• Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Consensus</li> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Equity / redistrib./ access.</li> <li>• Political control</li> </ul>
Consumer Organizations	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Equity / redistrib./ access.</li> </ul>		<ul style="list-style-type: none"> <li>• Equity / redistrib./ access.</li> <li>• Efficacy and quality</li> <li>• Consensus</li> <li>• Electoral consensus</li> </ul>
Consumers	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Equity / redistrib./ access.</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistrib./ access.</li> </ul>	<ul style="list-style-type: none"> <li>• Equity / redistrib./ access.</li> <li>• Efficacy and quality</li> <li>• Consensus</li> <li>• Electoral consensus</li> </ul>

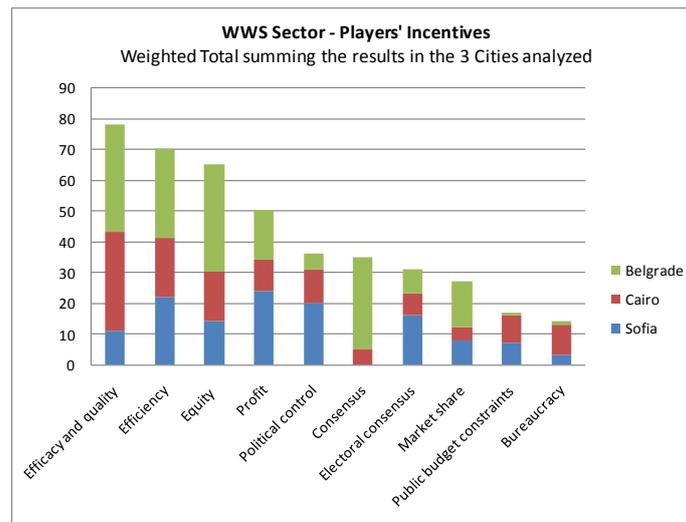
Although keeping in mind that the identification of these incentives is highly dependent on personal views of the correspondents, some interesting elements emerge. We concentrate on two of them:

- “equity, redistribution and accessibility” has been quoted as first incentive of the Bulgarian national regulatory agency and as second incentive of the Egyptian regulatory agency. This aspect should deserve some deeper analysis and recalls the trade-off between technical efficiency and accessibility/affordability issues already mentioned in Paragraph 1.1.2;

- Profit is quoted as the sole incentive of international financial institutions in Sofia: this is explained by the fact that the European Bank for Reconstruction and Development was an equity owner in the PPP in Sofiyska Voda, the major concession water project in the capital of Bulgaria and therefore generating revenues from shareholding was one of the objectives besides supporting the development of PPPs in Bulgaria.

Then, the frequency of each incentive in the three cities analyzed has been calculated through a weighted sum of cited incentives according to their position in the correspondents’ ranking. In detail, a weight of 8 has been assigned to 1<sup>st</sup> position, 4 to the 2<sup>nd</sup> position, 3 to the 3<sup>rd</sup> position, 2 to the 4<sup>th</sup> position, 1 to the 5<sup>th</sup> position, 0 to positions from the 6<sup>th</sup> onwards (very rare cases). Figure 1 shows the weighted frequency of players’ incentives in the three cities analyzed (sum of all players).

**Figure 1.** WWS sector: weighted frequency of players’ incentives in the cities analyzed



In Sofia the three most frequent incentives are respectively profit, efficiency in provision of the service and political control. In Cairo efficacy and quality is the most frequent incentive, with efficiency in provision of the service lagging behind and equity at the third place. In Belgrade efficacy and quality and equity are both at the first place in the ranking, followed by consensus and efficiency in provision of the service. Summing the results of all the cities analyzed efficacy and quality, efficiency in provision of the service and equity are the most frequent incentives identified.

After analyzing players’ information endowment and incentives, the relationships amongst the different players have been identified. In order to identify existing relations correspondents were asked to fill-in a matrix specifying if a certain relation (from a menu list – see section 2.1.1) exists between two players and if this is an outbound or inbound relation (if the player analyzed is the subject or the object of the action).

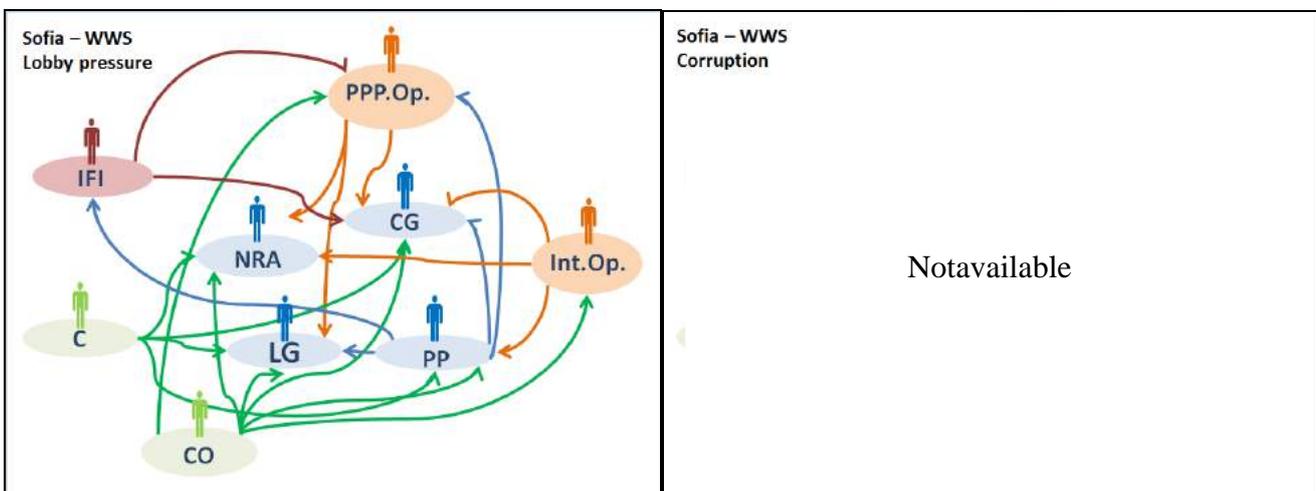
Table 4 recalls the list of Players arisen in the three cities analyzed and assign an acronym to each player.

**Table 4.** List of acronyms used in Figures 2-4

Categories	Players	Acronym
Politicians and public officials	Central government	CG
	Water Council (consultative body established by the Ministry)	W.Counc.
	National Conference on Water	NCoW
	National Regulatory Authority	NRA
	Local government / municipality	LG
	Political Parties	PP
Market actors (non-financial)	Publicly-owned operators	Publ.Op.
	Private operators	Priv.Op.
	Mixed publicly-privately owned operators	PPP.Op.
	International / foreign operators	Int.Op.
	NGOs providing technical and financial support	NGO
Market actors (financial)	International financial institutions and donors (in the case of Belgrade they refer to domestic or foreign financial institutions)	IFI
Consumer organizations	Consumer Organizations	CO
Final users	Consumers	C

Figures 2 – 4 offer a graphic representation of some of the relationships identified amongst the players (lobby pressure, corruption, regulation, data request). Each player is colored according to its category (blue for politicians and public officials; orange for market actors; red for international financial institutions and donors, green for consumers and consumer organizations). The direction of the arrows indicates if we are describing an “outbound” or an “inbound” relationship. While for lobby pressure, corruption and regulation the color of the arrow correspond to the color of the player’s category, in the image related to data request the color indicates the degree of enforcement (red = low; yellow = medium; green = high). This last information is not available for Sofia.

**Figure 2.** WWS sector: graphic representation of some relationships amongst players in Sofia



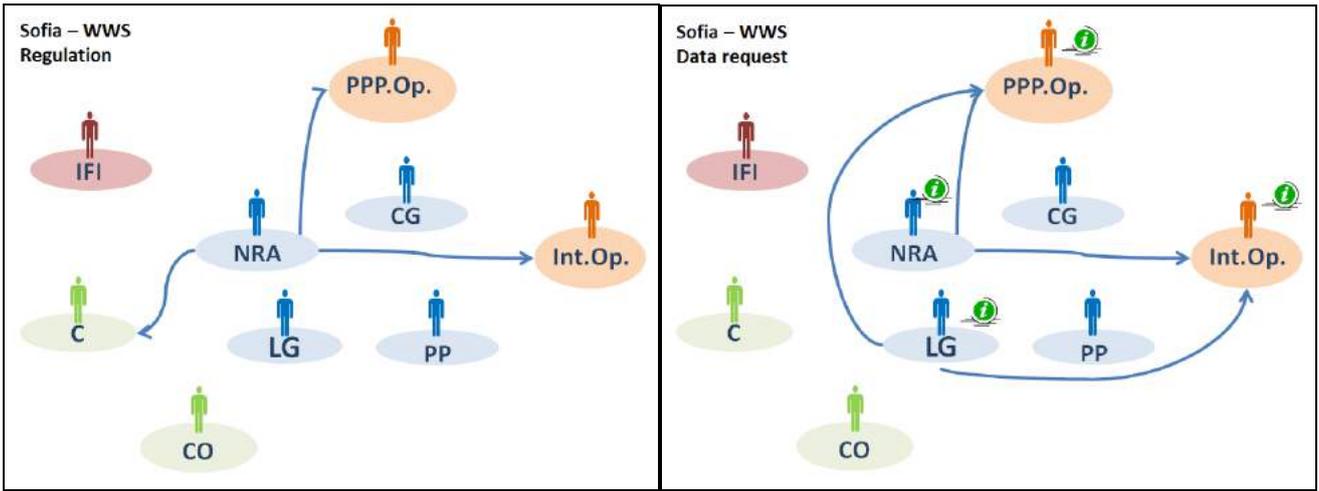
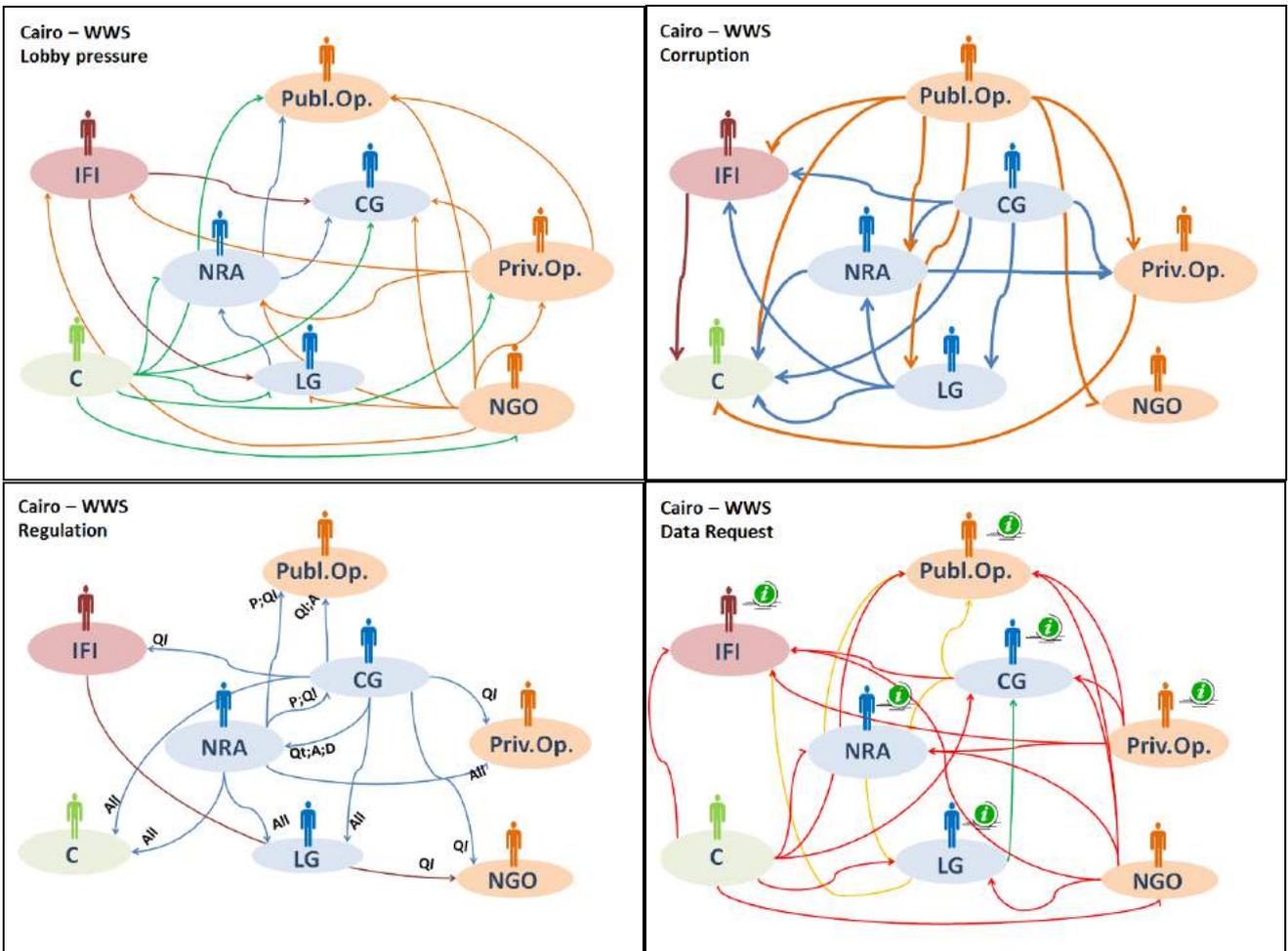
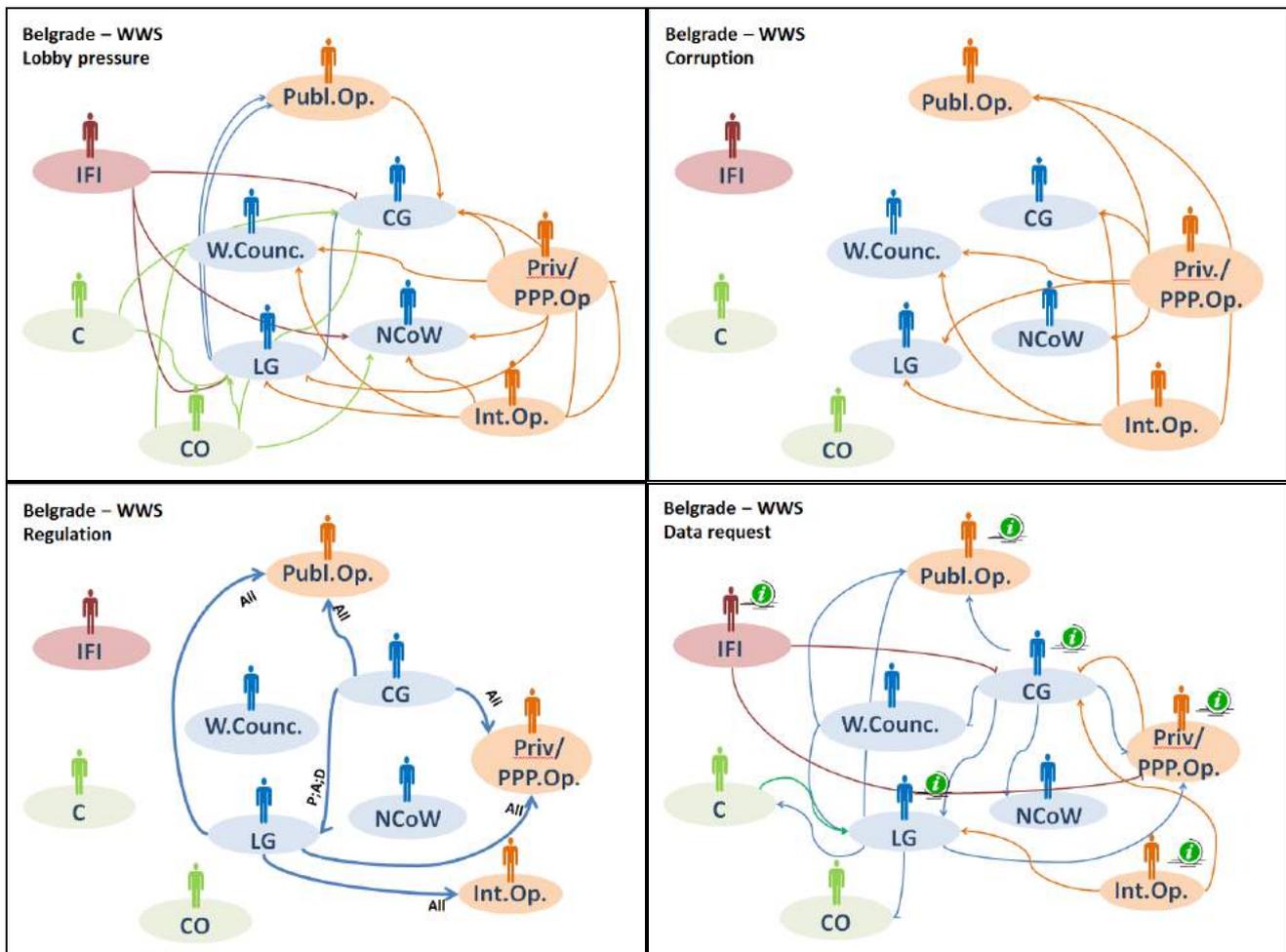


Figure 3. WWS sector: graphic representation of some relationships amongst players in Cairo



**Figure 4.** WWS sector: graphic representation of some relationships amongst players in Belgrade



With reference to lobby pressure, in all the cities analyzed we can underline lobby pressure made by international financial institutions toward the Central government and the local government and the service operator in the case of Sofia. Another peculiarity is the intense lobbying activity by consumers and consumer organizations that could be interpreted as a high level of activism by these groups.

Corruption in Sofia is not mentioned in the relations amongst the Players but it is identified later as an obstacle to the implementation of the regulatory agenda, especially in the waste sector. By the way its dynamics seem hard to be defined.

In Cairo the direction of arrows related to corruption indicates a tendency towards bribery exerted by public authorities (including the national regulatory authority) and the number of arrows registered describes a complex phenomenon involving also international financial institutions and final customers (who seem not to be involved in Belgrade). In Belgrade justification to the presence of corruption relations may be that the Law on PPPs and Concessions failed to establish a control structure providing a legal certainty and due control process, leaving space for corruption to emerge at local level, as municipalities have significant powers regarding their own public utility enterprises. Corruption may also be visible at the central level.

Concerning regulation, the situation in the three countries analyzed is very different. Sofia seems to be the city where the regulatory framework is more linear, with the National Regulatory Agency in charge of all regulatory tasks. In Cairo the situation appears very complex with some overlapping

responsibilities especially between the National regulatory agency and the central government, that might be explained by the fact that the Regulatory agency is a recent institution (created in 2006). In Belgrade the Central government is in charge of setting the reference price, but municipalities still have some power in determining the span of the price. Quality and quantity are not directly monitored by the Government, but by the Directorate for Water, through the Ministry of Agriculture, Forestry and Water Management. It has also powers in regulating accessibility through a general policy and may influence municipalities and the Autonomous Province of Vojvodina.

Regarding data request, in Sofia the service operators are the owners of information and shall transfer such information to the National regulatory agency and the local government. In Cairo and Belgrade data request relations are much more complex, which in theory might result in more transparency in the sector, but the high frequency of red arrows in Cairo (no data available for Belgrade) means that the degree of enforcement in obtaining such data is very low.

In a second stage of the analysis, the overall amount of “outbound” and “inbound” relations registered for each player in the three cities was calculated. Considering that for graphical representation reasons some grouping were made, types of relations have been given a different weight (Table 5).

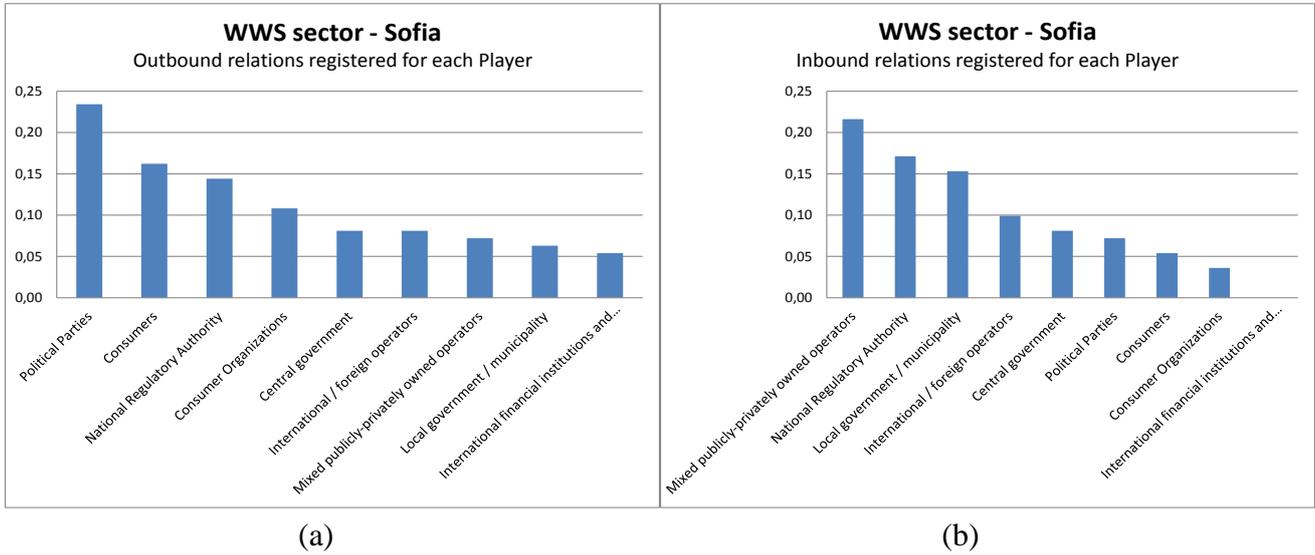
**Table 5.** Weight given to each type of relationship

Original list of relations	New grouping	Weight
Election	Election	1
Lobby pressure	Lobby pressure	1
Strong political influence	Strong political influence	1
Corruption	Corruption	1
Regulation of price	Regulation	0,2
Regulation of quantity		0,2
Regulation of quality		0,2
Regulation of accessibility		0,2
Regulation of distributional aspects		0,2
Rule of law / judicial enforcement	Rule of law / judicial enforcement	1
Command	Command & Control	0,5
Control		0,5
Data request	Data request	1
Assignment	Assignment	1
Market power	Market power	1

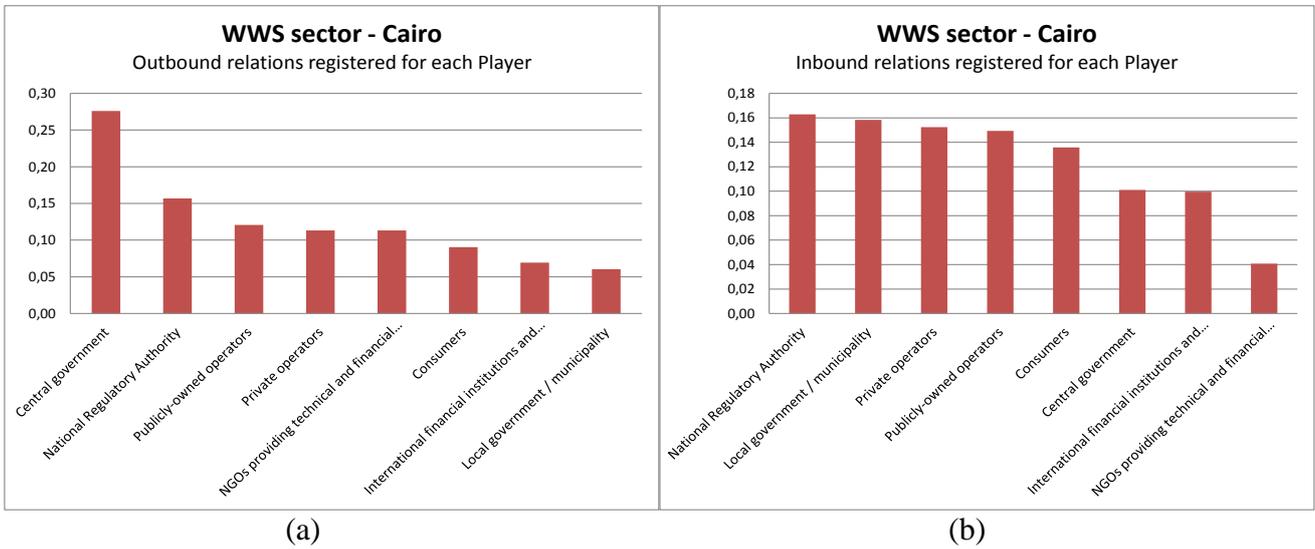
Figures 5 – 7 represent the total of outbound and inbound relations registered for each player in the cities analyzed. Instead of using the overall amounts, an index has been calculated dividing the sum of outbound relations registered for a single player by the total sum of outbound relations registered in that city (Outbound relations ratio). The same procedure has been adopted for inbound relations (Inbound relations ratio). This in order to make data more comparable amongst the cities themselves. Indeed, big differences in the overall amount of inbound and outbound relations have been noticed between different countries (ranging from 41 in the waste sector in Sofia to 252 in the waste sector in

Cairo). These differences are likely to be linked, at least in part, to personal views of the local situation, therefore it has been decided to take such index as reference instead of original amounts.

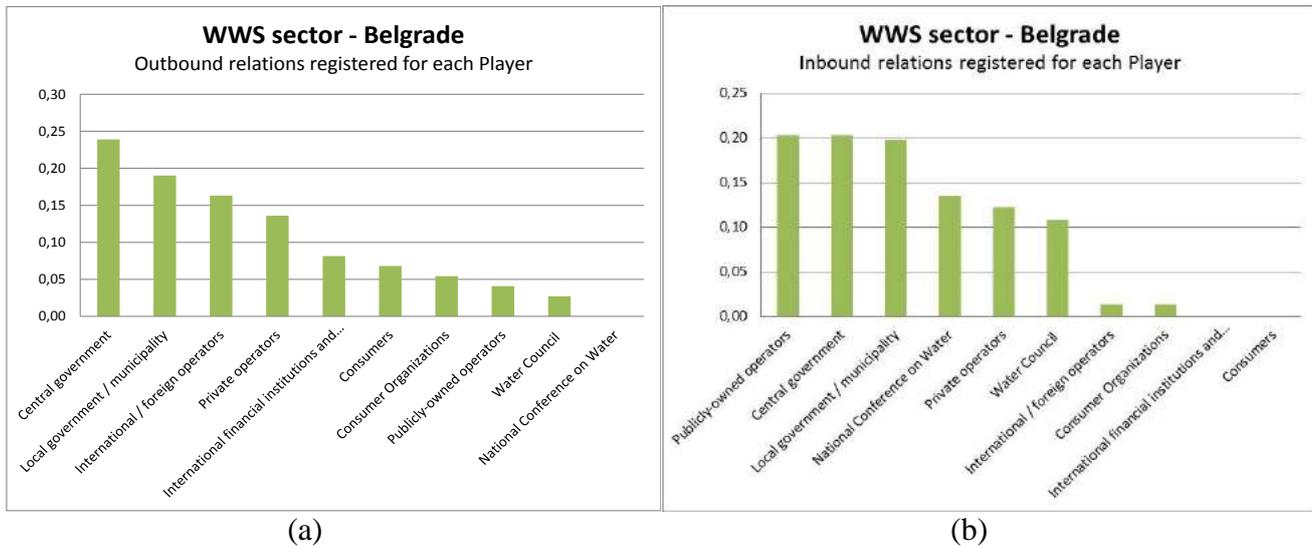
**Figure 5.** WWS sector: outbound (a) and inbound (b) relations registered for each player in Sofia(Outbound / Inbound Relations Ratio Index)



**Figure 6.** WWS sector: outbound (a) and inbound (b) relations registered for each player in Cairo (Outbound / Inbound Relations Ratio Index)



**Figure 7.** WWS sector: outbound (a) and inbound (b) relations registered for each player in Belgrade(Outbound / Inbound Relations Ratio Index)



Concentrating on the outbound relations, some observations are presented here:

- in Sofia consumers register a quite high index of outbound relations (0.16), much higher than in Cairo and Belgrade. This data may suggest more activism by Bulgarian consumers and consumers organizations (scoring 0.11);

- the National Regulatory Authority in Sofia and Cairo register very similar scores, being positioned in the top list of players (and the same happens when analyzing inbound relations);

- local government in Sofia and in Cairo have a quite low score (0.6 in both cases) while in Belgrade it is at the second place after the Central Government with 0.19. This situation might be explained first by the presence of a National regulatory agency in the two Countries, and second by the minority shares held by the Municipality in the water utility in the case of Sofia and by the administrative nature of local governments in Egypt in the case of Cairo. On the other side, the Central government is the Player registering the highest scores in outbound relations both in Belgrade (0.24) and in Cairo (0.27) lagging behind at the fifth place in Sofia (0.8);

- market operators, especially private operators and foreign investors, tend to exert a high number of outbound relations in Belgrade, while standing in the middle of the ranking in Sofia and Cairo;

- international financial institutions are always below 0.10, standing in the lower part of the graphs. Concerning inbound relations, we can observe in addition that service providers, in particular publicly-owned or mixed private-public operators registered quite high scores in all the three cities analyzed.

#### 4.1.2 Household urban waste sector

Table 6 summarizes the key players identified in the three cities analyzed. Grey cells mean that that type of player is a relevant one in the city.

**Table 6.** Relevant Players involved in urban waste management cycle identified

Categories	Players	Sofia	Cairo	Belgrade
Politicians and public officials	Central government	X	X	X
	Autonomous Province			X
	Local government / municipality	X	X	X
	Political Parties	X		
	Ministry of Environment and Water as manager of EU Funds	X		
Market actors (non-financial)	Private waste collection companies (formal sector)	X	X	X
	Publicly-owned waste operators			X
	Waste disposal operators	X		
	Waste recycling companies	X	X	
	NGOs that support the SWM system		X	
	Traditional garbage collectors		X	
	Middlemen and intermediary buyers/dealers		X	
Wholesale merchants		X		
Market actors (financial)	International financial institutions and donors (in the case of Belgrade they refer to domestic or foreign financial institutions)		X	X
Consumer organizations	Consumer Organizations		X	
Final users	Commercial waste generators and residents	X	X	X

As in the water sector, central Government, local government and consumers are key players identified in all cities analyzed. With reference to IFIs and donors, they do not play a relevant role in the waste sector in Sofia.

As far as market operators are concerned, private waste collection companies are key players in all the three cities, accompanied by publicly-owned waste operators in Belgrade. In Cairo many different market operators have been identified, presenting a more complex situation. As in the water sector NGOs are active as market operators. Besides “formal” actors the presence of traditional garbage collectors is a peculiarity of this city compared to the other analyzed (as already described in section 3.2.2).

Table 7 shows the players’ information endowment in terms of information on: industrial costs, investments costs and physical assets.

**Table 7.** Urban waste cycle: players' information endowment

Categories	Players	Sofia	Cairo	Belgrade
Politicians and public officials	Central government	None	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Autonomous Province			Industrial costs Investment costs Physical assets
	Local government / municipality	None	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Political Parties	None		
	Ministry of Environment and Water as manager of EU Funds	None		
Market actors (non-financial)	Private waste collection companies (formal sector)	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
	Publicly-owned waste operators			Industrial costs Investment costs Physical assets
	Waste disposal operators	Industrial costs Investment costs Physical assets		
	Waste recycling companies	Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets	
	NGOs that support the SWM system		Industrial costs Investment costs Physical assets	
	Traditional garbage collectors		None	
	Middlemen and intermediary buyers/dealers		None	
	Wholesale merchants		None	
Market actors (financial)	International financial institutions and donors (in the case of Belgrade they refer to domestic or foreign financial institutions)		Industrial costs Investment costs Physical assets	Industrial costs Investment costs Physical assets
Consumer organizations	Consumer Organizations		None	
Final users	Commercial waste generators and residents	None	None	None

What is relevant about this table is the total absence of information endowment among public players in Sofia. By the way, this is due to the fact that the Bulgarian correspondent answered according to the original ownership of such information and not to consequent transfer of information to other players. Therefore the absence of information shall be understood as the absence of own sources of information and the dependence on transfer of data from other Players. This provides hints for future deeper analysis of the aspects related to information endowment.

Table 8 illustrates the incentives that lead players' decisions. As described in section 2.1.1, correspondents have been asked to select them from a menu list and to rank them according to their relevance.

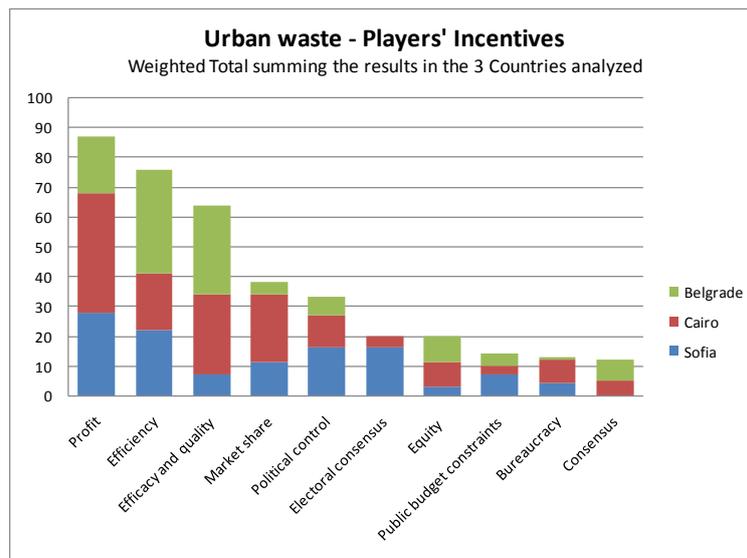
**Table 8.** Urban waste cycle: players' incentives

<b>Players</b>	<b>Sofia</b>	<b>Cairo</b>	<b>Belgrade</b>
Central government	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> <li>• Public budget constraints</li> </ul>	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> <li>• Public budget constraints</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Political control</li> <li>• Public budget constraints</li> <li>• Consensus</li> </ul>
Autonomous province			<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Political control</li> <li>• Consensus</li> <li>• Bureaucracy</li> <li>• Public budget constraints</li> </ul>
Local government / municipality	<ul style="list-style-type: none"> <li>• Electoral consensus</li> <li>• Public budget constraints</li> <li>• Efficacy and quality</li> </ul>	<ul style="list-style-type: none"> <li>• Bureaucracy</li> <li>• Efficiency.</li> <li>• Political control</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Equity/redistr./access.</li> <li>• Public budget constraints</li> <li>• Consensus</li> <li>• Ethnic control</li> </ul>
Political Parties	<ul style="list-style-type: none"> <li>• Political control</li> <li>• Electoral consensus</li> </ul>		
Ministry of Env. as manager of EU Funds	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Bureaucracy</li> </ul>		
Private waste collection companies (formal sector)	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Profit</li> <li>• Equity/redistr./access.</li> <li>• Market share</li> <li>• Public budget constraints</li> </ul>
Publicly-owned waste operators			<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> <li>• Efficacy and quality</li> </ul>
Waste disposal operators	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficiency</li> </ul>		
Waste recycling companies	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Profit</li> <li>• Market share</li> </ul>	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> <li>• Efficacy and quality</li> </ul>	
NGOs that support the SWM system		<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Efficiency</li> <li>• Market share</li> </ul>	
Traditional collectors		<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> </ul>	
Intermediary buyers/dealers		<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> </ul>	
Wholesale merchants		<ul style="list-style-type: none"> <li>• Profit</li> <li>• Market share</li> </ul>	
International financial institutions and donors (in Belgrade they refer to domestic or foreign financial institutions)		<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistr./ access.</li> <li>• Efficiency</li> <li>• Consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Profit</li> <li>• Efficiency</li> </ul>
Consumer Organizations		<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistr./ access.</li> <li>• Consensus</li> </ul>	
Commercial waste generators and residents	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Efficacy and quality</li> <li>• Equity / redistr./ access.</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Efficacy and quality</li> <li>• Equity / redistr./ access.</li> <li>• Consensus</li> </ul>

It may be worthy noticing here that despite “ethnic control” and “religious control” are in the list of potential incentives proposed in the survey, they have never been mentioned by correspondents. However literature demonstrates [23] that in some cases ethnic and religious aspects are strictly linked to the waste service provision, especially in Countries where informal market actors exist. According to Wilson [23], informal waste collection and recycling in developing countries has traditionally been practiced marginal groups like gypsies, rural migrants, immigrants and members of religious minorities. This is the case of Cairo, where the *Zabbaleen* informal recyclers belong to a Christian minority.

The frequency of each incentive in the three cities analyzed has been calculated through a weighted sum of cited incentives according to their position in the correspondents’ ranking (see section 4.1.1 for the details). Figure 8 shows the weighted frequency of players’ incentives in the three cities analyzed (sum of all players).

**Figure 8.** Waste sector: weighted frequency of players’ incentives in the cities analyzed



In Sofia the most frequent incentives are respectively profit, efficiency in provision of the service and electoral consensus / political control (exactly the same ranking as in the water sector). In Cairo profit and efficiency in provision of the services are at the first and second place (as in Sofia), followed by market share. In Belgrade the most frequent incentives are efficiency in provision of the services, efficacy and quality and profit. Summing the results of all the cities analyzed profit, efficiency in provision of the service and efficacy and quality are the most frequent incentives identified. It is interesting noting that equity is not ranked in the first positions while it was the third most frequent incentive in the water sector.

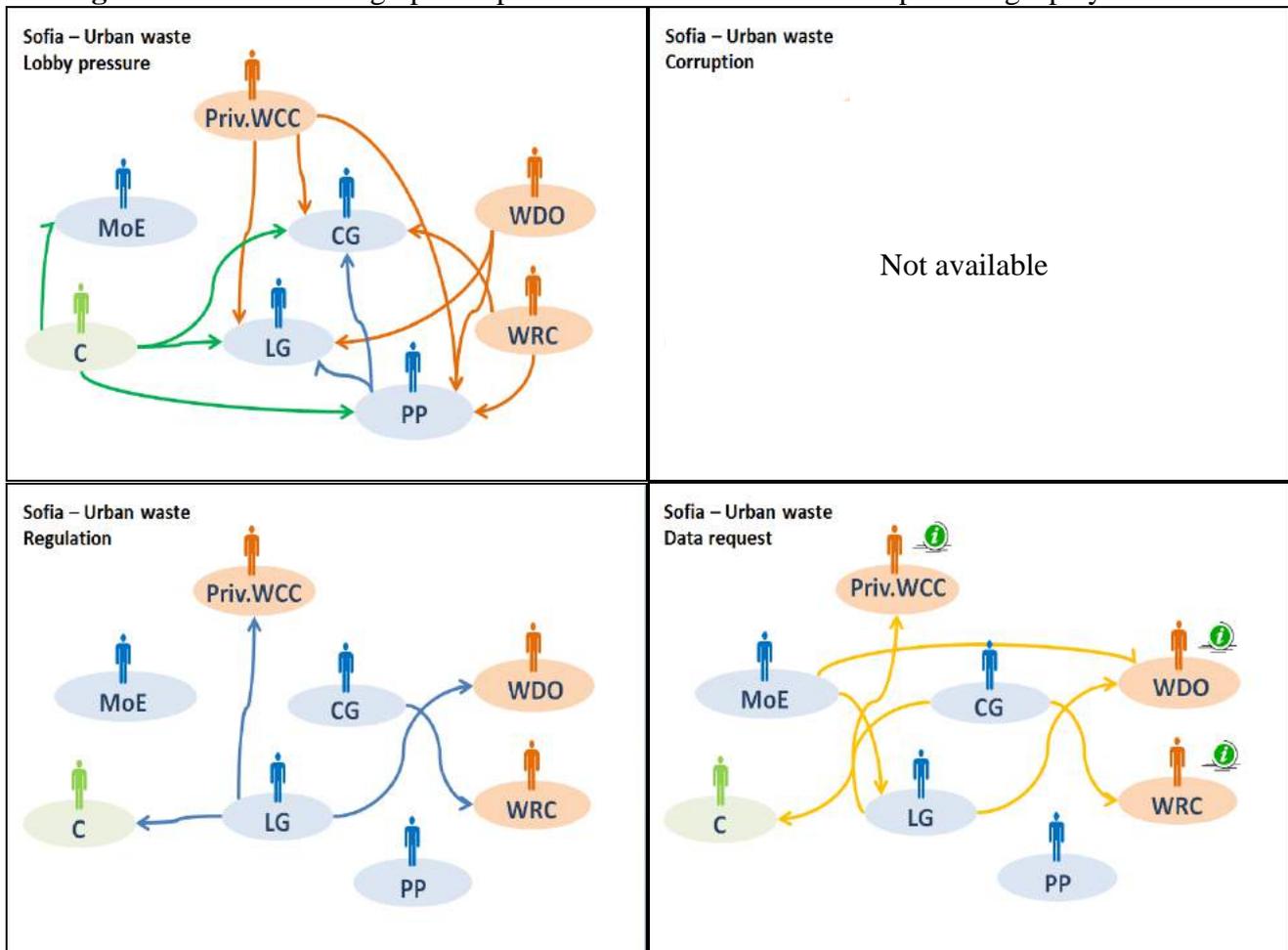
After analyzing players’ information endowment and incentives, the outbound and inbound. Table 9 recalls the list of Players arisen in the three cities analyzed and assign an acronym to each player.

**Table 9.** List of acronyms used in Figures 6-8

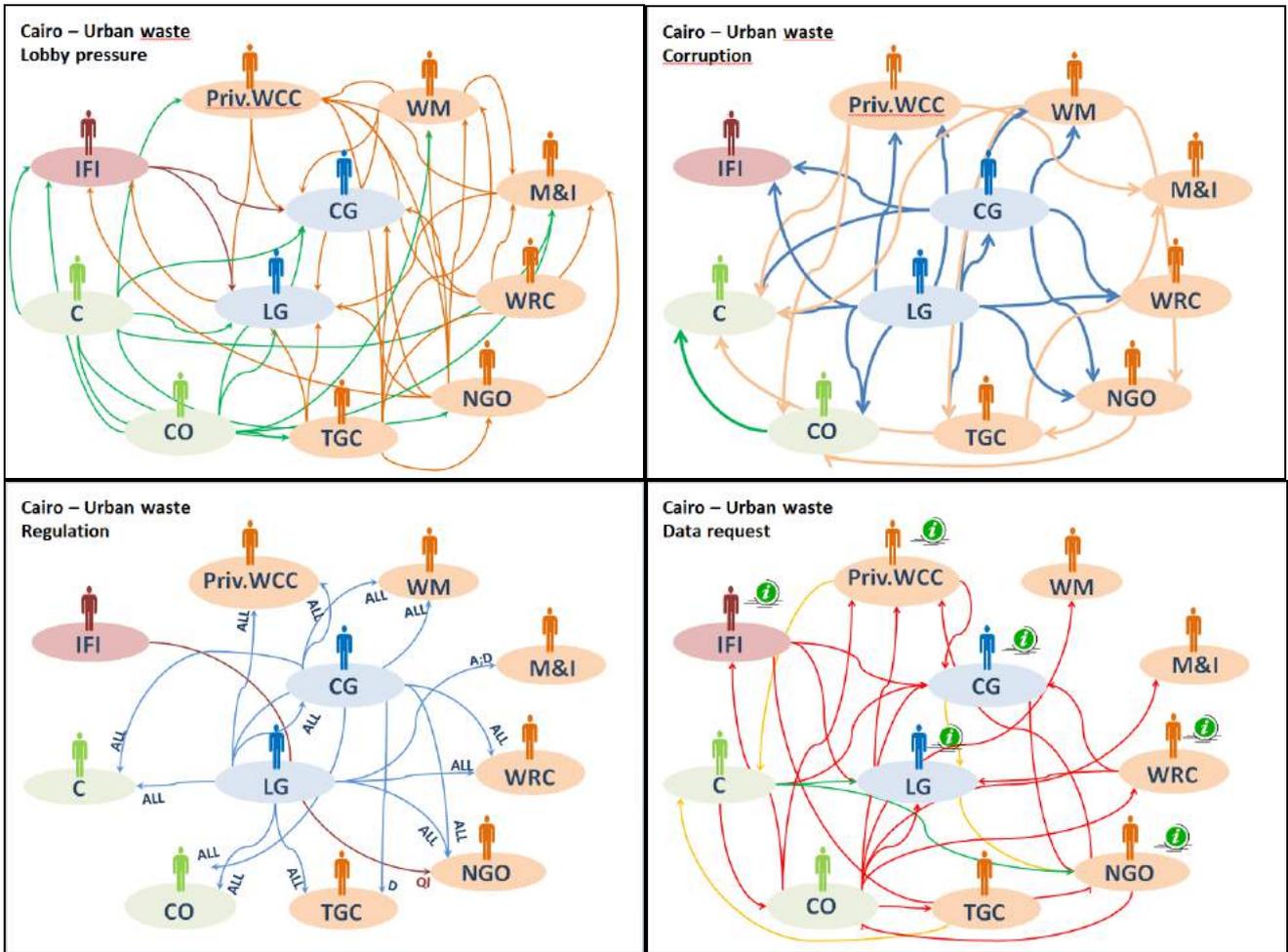
Categories	Players	Acronym
Politicians and public officials	Central government	CG
	Autonomous Province	AP
	Local government / municipality	LG
	Political Parties	PP
	Ministry of Environment and Water as manager of EU Funds	MoE
Market actors (non-financial)	Private waste collection companies (formal sector)	Priv.WCC
	Publicly-owned waste operators	Publ.WO
	Waste disposal operators	WDO
	Waste recycling companies	WRC
	NGOs that support the SWM system	NGO
	Traditional garbage collectors	TGC
	Middlemen and intermediary buyers/dealers	M&I
	Wholesale merchants	WM
Market actors (financial)	International financial institutions and donors (in the case of Belgrade they refer to domestic or foreign financial institutions)	IFI
Consumer organizations	Consumer Organizations	CO
Final users	Commercial waste generators and residents	C

Figures 9-11 offer a graphic representation of some of the relationships identified amongst the players (lobby pressure, corruption, regulation, data request). For the details on the colors and the directions of the arrows see section 4.1.1.

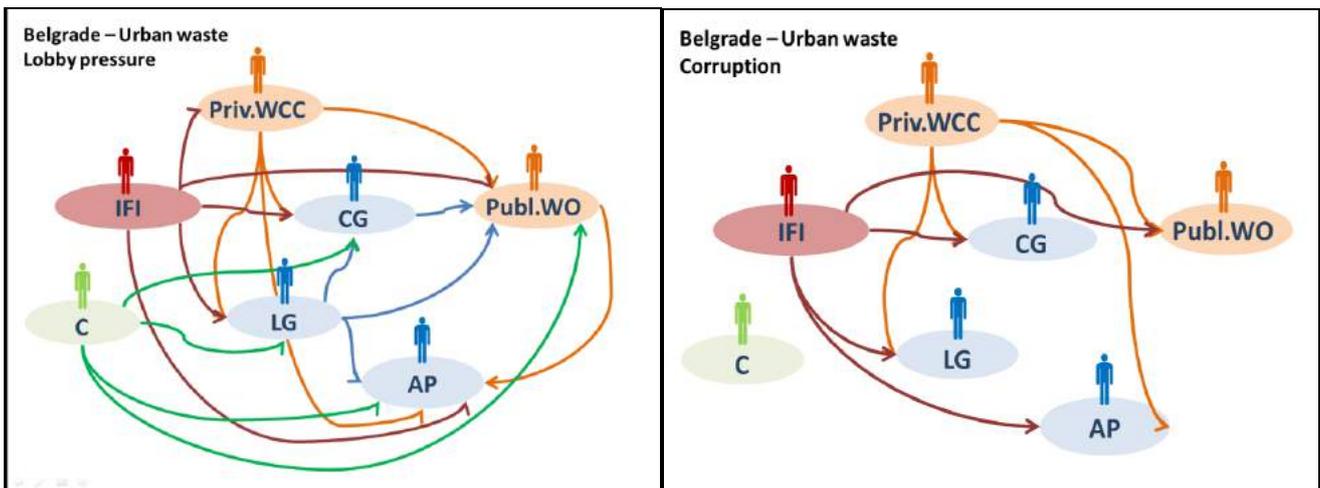
**Figure 9.** Waste sector: graphic representation of some relationships amongst players in Sofia

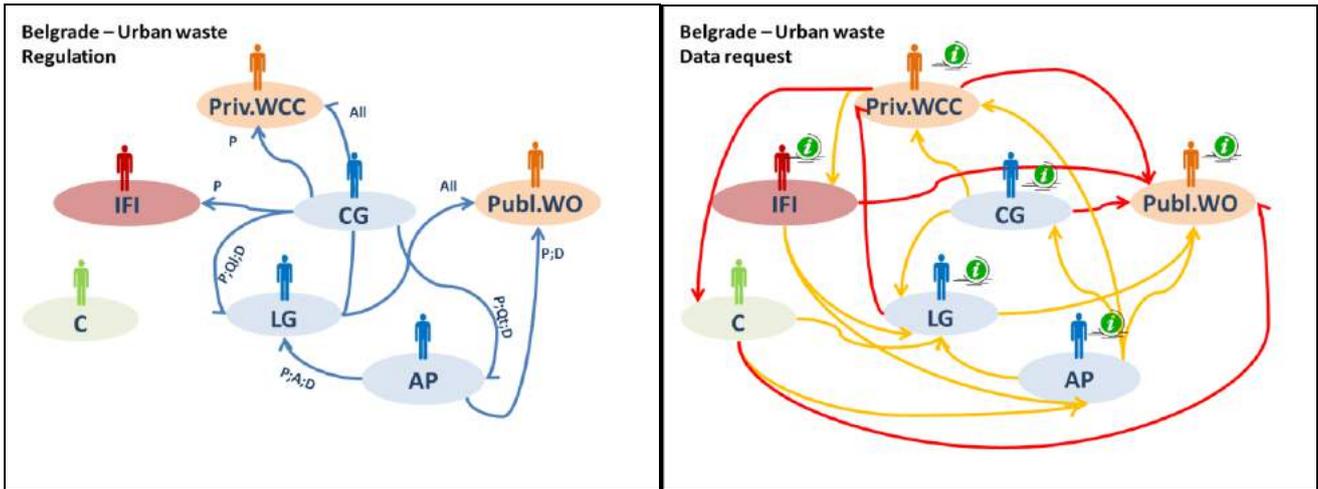


**Figure 10.** Waste sector: graphic representation of some relationships amongst players in Cairo



**Figure 11.** Waste sector: graphic representation of some relationships amongst players in Belgrade





When analyzing lobby pressure relations we can notice differences in complexity amongst the three cities, and in particular in comparison to Cairo. Indeed, Cairo seems registering a very high level of lobby pressure activities, which may be partially explained by the higher number of Players identified. Consumers and consumer organizations play a quite relevant role in this domain in all the three cities, as well as market operators. International financial institutions seem more active in Belgrade than in Cairo when exerting lobby pressure toward both public authorities and market operators.

When concentrating on corruption, the same remarks made for water are valid (absence of corruption relations in Sofia because it is difficult to determine its dynamics and very high tendency toward bribery in Cairo); in Belgrade corruption exerted by domestic or foreign financial institutions seems to play a quite significant role.

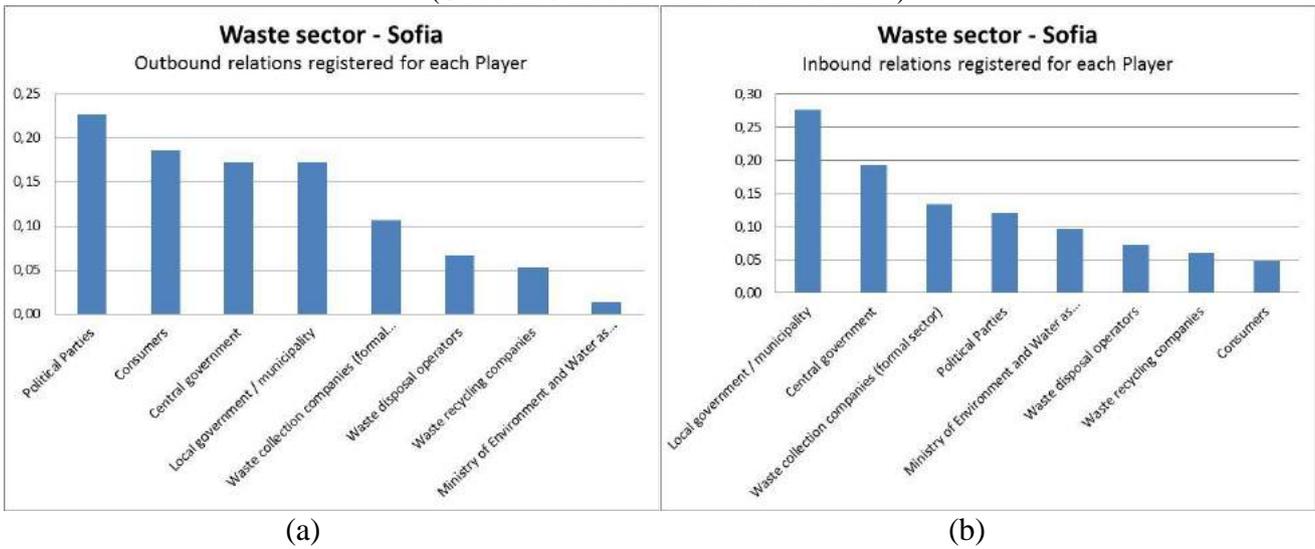
Concerning regulation, in Sofia the situation appears quite linear: the local government is in charge of regulating waste collection and disposal services, while the Central government is in charge of regulating waste recycling activities. In Cairo and in Belgrade regulatory responsibilities are shared by the Central and the local government.

For data request what is more remarkable is the very complex situation in Cairo, with many potential information flows between the different players, in particular originated by consumer organizations, but with a very low level of enforcement in obtaining data requested.

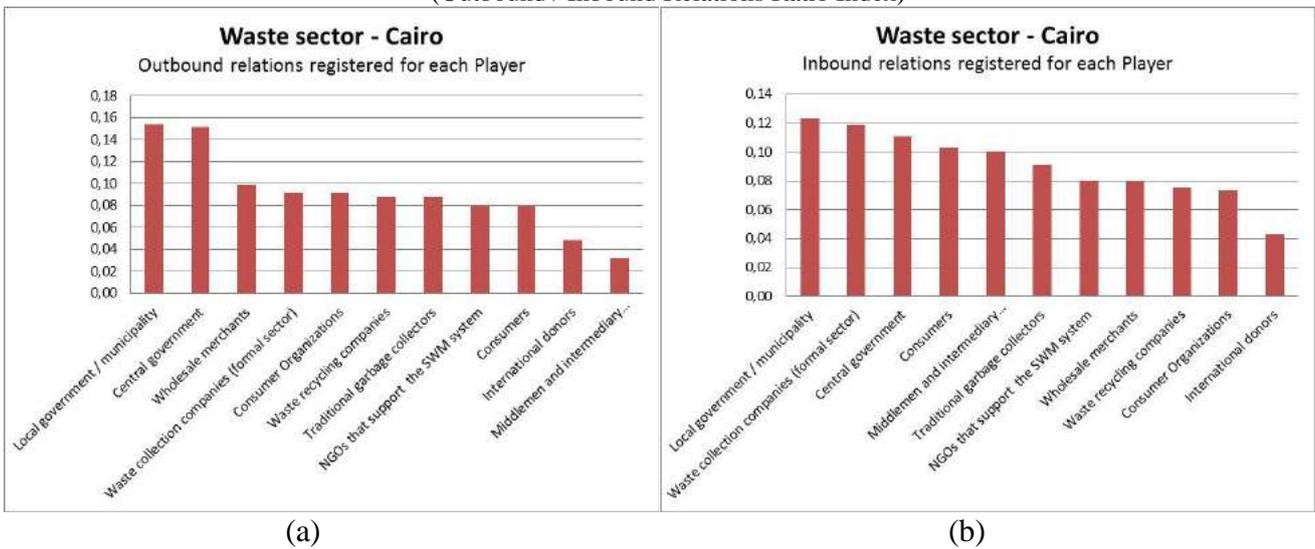
As for the WWS sector, in a second stage of the analysis, the overall amount of “outbound” and “inbound” relations registered for each player in the three cities was calculated. Considering that for graphical representation reasons some grouping was made, types of relations have been given a different weight (Table 5 in Section 4.1.1).

Figures 12 – 14 represent the total of outbound and inbound relations registered for each player in the cities analyzed using the Outbound / Inbound Relations Ratio Index (see section 4.1.1).

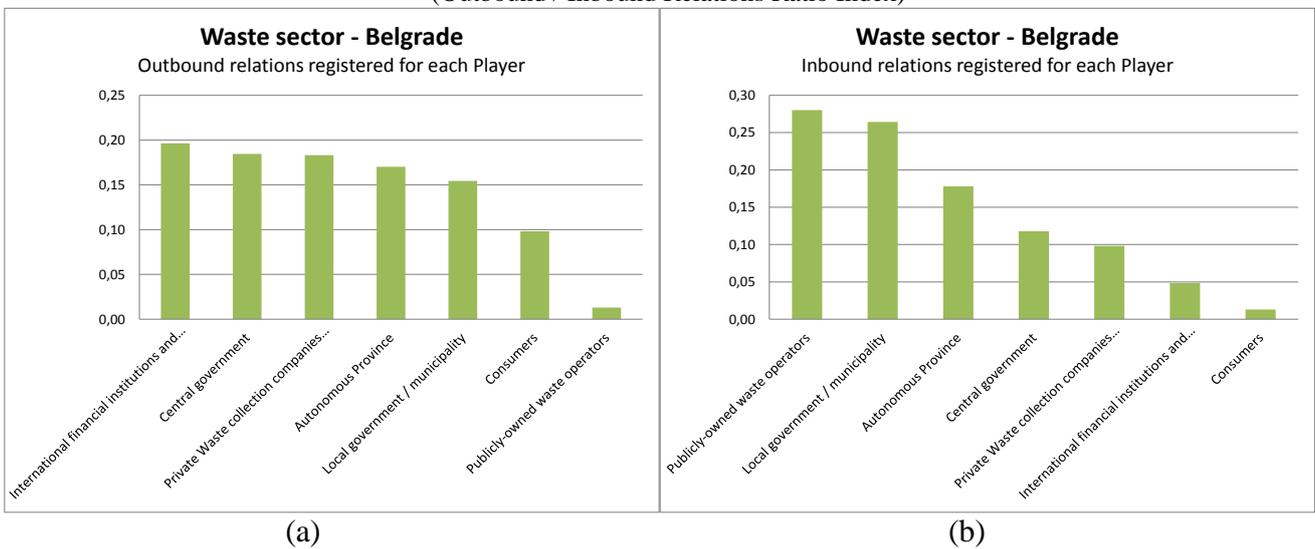
**Figure 12.** Waste sector: outbound (a) and inbound (b) relations registered for each player in Sofia (Outbound / Inbound Relations Ratio Index)



**Figure 13.** Waste sector: outbound (a) and inbound (b) relations registered for each player in Cairo (Outbound / Inbound Relations Ratio Index)



**Figure 14.** Waste sector: outbound (a) and inbound (b) relations registered for each player in Belgrade (Outbound / Inbound Relations Ratio Index)



Some differences with the water sector can be noticed, in particular the much higher scores registered in outbound relations by the local government in Sofia and in Cairo, which can be explained by the fact that there is no national regulatory agency for the waste sector and local governments play a more crucial role.

Some other interesting points observed are:

- the equilibrium in the scores registered by all market operators in Cairo, with traditional garbage collectors and NGOs in line with “formal” operators;
- the position in the very lowest ranking of publicly-owned waste operators in Belgrade when referring to outbound relations, turned into the top position in the inbound relations graph.

#### 4.2 Obstacles to the implementation of the regulatory agenda

In the survey correspondents have been asked what are the main obstacles that the situation of relations and incentives among the players identified poses to the implementation of the regulatory agenda in their Country. A list of potential obstacles was proposed (see Paragraph 2.1.2). Table 10 summarizes the collected answers.

**Table 10.** Main obstacles to the implementation of the regulatory agenda in the 3 Countries analyzed

Country	Sector	Obstacle 1	Obstacle 2	Obstacle 3
<b>Bulgaria</b>	Water	Degree of regulatory independence	Lack of human capital and expertise	Poor quality and low accessibility of accountancy and statistical data
	Waste	Degree of regulatory independence	Poor quality and low accessibility of accountancy and statistical data	Corruption
<b>Egypt</b>	Water	Degree of regulatory independence	Lack of human capital and expertise	Poor quality and low accessibility of accountancy and statistical data
	Waste	Challenges related to the rule of law	Degree of regulatory independence	Lack of human capital and expertise
<b>Serbia</b>	Water	Challenges related to the rule of law	Degree of regulatory independence	Corruption
	Waste	Challenges related to the rule of law	Conflicts of interest	Corruption

It is possible to observe that regulatory independence (both institutional and financial) is a frequent identified obstacle both where there are ad-hoc regulatory agencies (e.g. the case of Bulgaria in the water sector) and where regulatory tasks are charged mainly to municipalities. Challenges related to the rule of law appear to influence the implementation of the regulatory agenda as well: concerning the waste sector in Egypt, this is mainly due to the fact that Egypt does not have a solid waste management (SWM) law at the time being and the SWM legal framework is scattered in many pieces of legislation. In Serbia, in the water sector the Law on Communal Services [26] seems to limit the scope of the new Law on Public Private Partnership and Concessions [25]. On the other side, laws related to municipalities and their operation, and the Law on Public Enterprises [37] does not provide the appropriate framework for setting up the new forms of provision of water services. At the time being

municipalities are in charge of municipal enterprises, but if liberalized, the water sector might face uncertainties created by the Law on PPPs and Concessions. A similar situation is observed in the waste sector where the Law on Waste Management [38] is in line with the *EU Acquis*, however at municipal level the system of control is not coherent throughout the country. PPPs and concessions' new legal framework may therefore lead to inconsistencies at local level.

Lack of human capital and expertise are also identified as a weakness, especially in Bulgaria and in Egypt. In particular in the water sector in Bulgaria the current economic capacity of the State Energy and Water Regulatory Commission is considered to be lower than needed, as the Commission is mainly formed by technical experts (in the sectors of electricity, gas, heating, and water/wastewater). Finally, poor quality and low accessibility of accountancy and statistical data and corruption are also frequently quoted, even though not as first main obstacles.

## 5. Conclusions

The methodology designed and the matrix developed, once tested in the first three pilot capital cities, proved to be a useful and usable tool to describe the framework of local players in the water and sanitation sector, their incentives and relationships. The first results collected allow to enrich the debate on local constraints, instruments and goals of regulation and to provide some elements that, in future analysis, might support the design of institutional mechanisms and individual incentive schemes.

Though being in preliminary stage of the research, the work done so far suggests some trajectories for future development. First, the number of Countries analyzed and their limited representativeness in terms of geographical distribution does not allow to provide a relevant comparative analysis at this stage. Enlarging the geographical scope of the survey is therefore the first step of the next phase of the research. Second, an improvement of the matrix developed during this phase through some fine-tuning can be suggested, especially to limit different interpretation of some fields proposed and help collecting more uniform data. Finally, in order to overcome the high degree of subjectivity in information provided and to turn the methodology into a practical tool to be used in policy and regulatory reform processes contexts a method for a more structured data collection shall be built. One of the possible solutions identified is the submission of the refined matrix to several actors, institutional and non-institutional ones and operating at different levels of governance, in order to obtain results which are the closest to the real situation. This could be done in cooperation with national or international institutions. Once implemented a more structured methodology of data collection, the *Outbound / Inbound Relations Ratio Index* proposed as a purely descriptive tool in this preliminary stage could be improved and tested as an innovative instrument to measure the degree of influence and powerfulness exerted by different Players in different Countries and compare different situations. This might lead to the identification of the key players to be involved in any reform process and in the design of specific incentive mechanisms.

Moreover, the next steps of the research could be enriched with some specific analysis on the cited phenomenon of osmosis among professional roles in local regulation (politics, regulation, business, consultancy, bureaucracy, and so on) which seems, anecdotally, more frequent in comparison with the national level, posing a threat to the incentive structure lying behind regulatory work. This stream of

research appears very promising and may offer a further interpretation key to the three aspects analyzed so far, related to players' incentives, information endowment and relations.

### Acknowledgments

This research was conducted by the Turin School of Local Regulation in the framework of LORENET – Local Regulation Network project, co-funded by the Torino Chamber of commerce.

We are grateful to the correspondents who gave their contribution to the survey: Atanas Georgiev, Tatjana Jovanic, Mahmoud Sarhan.

We also thank the working group of the Turin School of Local Regulation for the support, in particular Daniele Russolillo, Fulvia Nada and Andrea Sbandati.

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