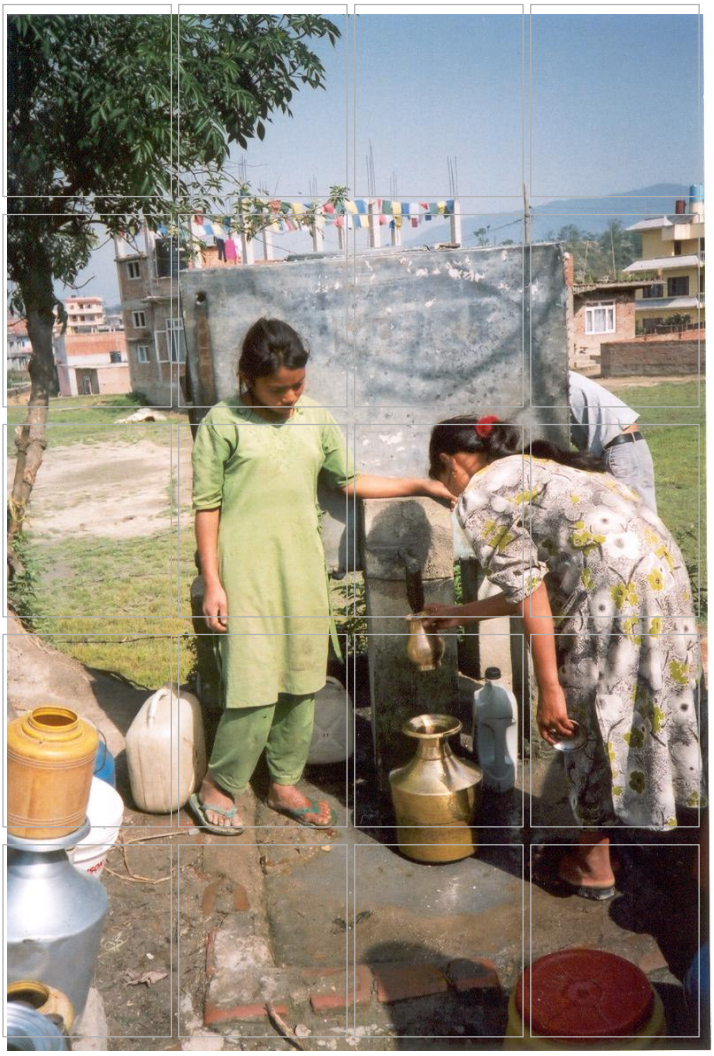

Final Report

Models of Aggregation for Water and Sanitation Provision

April 2004

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Models of Aggregation for Water and Sanitation Provision

April 2004

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Prepared by: ERM in association with
Stephen Meyers Associates and Hydroconseil

For and on behalf of
Environmental Resources Management

Approved by: _____

Signed: _____

Position: _____

Date: _____

CONTENTS

EXECUTIVE SUMMARY

OVERVIEW

This study investigates issues related to the aggregation of small and medium-sized towns for the provision of water supply and sanitation (WSS) services. "Aggregation" is defined as the grouping of several municipalities into a single administrative structure for the provision of a particular service. Such aggregated structures can vary widely, generally along three dimensions:

- ***Scale:** aggregated structures can group two neighboring municipalities, or several ones in a single region or across a broader territory;*
- ***Scope:** aggregated structures can provide a single service (for example, bulk water supply) or all services, from raw water abstraction to sewerage treatment. For each of these services, they may carry out certain functions only (such as procurement) or be responsible for all functions, from operations and maintenance to investment and financing;*
- ***Process:** municipalities may form aggregated structures voluntarily based on mutual interests or alternatively, a higher level of government, driven by the overall public interest, may impose the aggregation process.*

The main driver for aggregation is usually the potential to realize economies of scale by providing services to a larger customer base, and therefore, to render services more efficiently and at a lower cost. Despite the case for aggregation being relatively easy to construct, aggregation does not take place as often as one may think and it has a relatively high risk of failure because political will is lacking, or the potential benefits are not clearly understood, or the aggregation process is perceived as too complex.

CONTEXT AND METHODOLOGY FOR THE STUDY

This study analyses when WSS service aggregation may be considered as a way to improve service effectiveness and what are the main drivers and constraints for such processes. The study has been developed in the context of the World Bank "Town Water Supply and Sanitation Initiative", which seeks to identify innovative service models for water and sanitation services, particularly in towns.

The study was developed in three distinct phases. The first phase consisted of exploring issues relating to aggregation in a series of short notes and identifying examples of aggregated structures that could potentially be analyzed in more detail in the second phase. Seven case studies were researched in more details in the second phase, including aggregation processes in France, the Philippines, Hungary, Brazil, Italy, the Netherlands and England and Wales. The third phase of the study consisted of extracting the lessons learned from the case studies and the analysis conducted in the first phase into this final report. Taken together, the work will assist governments in reaching decisions about whether aggregation may be needed, and in which form, and to provide guidance on how aggregation processes can be run to increase the chances of a successful outcome.

CASE STUDIES

Seven case studies were carefully selected as representative of a) the great diversity of aggregation models to be found around the world and b) the three categories of aggregation processes that had been identified:

- *Voluntary, which means that local governments took the initiative to aggregate their water and sanitation services based on an analysis of the advantages and disadvantages of aggregation at their level, as in France and the Philippines;*
- *Carried out at the local level but with incentives provided by a higher level of government, as in Hungary and to a lesser extent, in Brazil; or*
- *Mandated by a higher level of government in spite of local resistance, as in Italy, the Netherlands (although implementation was left to the regions and was relatively slow) and England and Wales, the strongest mandated aggregation.*

The report presents the case studies main results and key features from each case study are also used throughout the text to illustrate particular issues in the aggregation process.

DRIVERS AND CONSTRAINTS TO AGGREGATION

Aggregation reforms are usually considered when there are perceived inefficiencies in the management of water supply and sanitation (WSS) services, either because service providers are too small to provide an efficient service or because they are too large but decentralizing to the lowest level of government is not appropriate or not deemed efficient. Such situations may have emerged as a result of factors outside of the WSS sector: for example, a fragmented WSS market may be the consequence of a broader process of decentralization of public services. The main factors driving the consideration of aggregation reforms include:

- *Increase efficiency through economies of scale;*
- *Enhanced professional capacity in larger scale of operation;*
- *Access to water resources and integrated water resource management;*
- *Broader decentralization processes;*
- *Access to finance and/or to private sector participation;*
- *Cost sharing between higher and lower cost service areas.*

The case for aggregation is usually relatively simply to construct based on the above. The potential constraints, perceived as disadvantages, are also sizeable, and in some cases may overcome the potential benefits. In particular municipal governments may resist aggregation, as they perceive it will reduce their powers and democratic accountability. Governments wanting to encourage aggregation should seek ways to alleviate such concerns.

ALTERNATIVE MODELS OF AGGREGATION

Different models of aggregation can be found throughout the world and their form depends on the prevailing legal framework for WSS services in each country and other factors, such as the general level of decentralization of public services, the social and political fabric, or investment requirements.

A mix of key characteristics identified in Table 1 below can define aggregation models. Inspection of the table shows that a wide range of possibilities exists. At one extreme aggregation might mean multiple municipalities joining together to purchase goods/services through a single, large, contract – rather than each municipality purchasing separately. At the other extreme municipalities might join together to form a single new entity that owns all the assets and provides WSS services to the participating municipalities.

Table 1 The Range of Options for Aggregation

Key Characteristic	*Range of Possibilities (with increasing aggregation)*
SCALE	
What can be the scale of the aggregated structure?	*A few neighboring towns* *Several towns, neighboring or at a distance* *All towns in a given region or river basin* *Most towns in the country ("national utility")*
SCOPE	
What services can be aggregated?	*Water production (bulk water sales)* *Whole water supply service* *Water supply and sanitation* *Water supply and energy* *… and others (solid waste, street lighting, heat…)*
What operating functions can be aggregated?	*Operations* *Management* *Procurement* *Investment* *Financing* *All functions, with merging of assets and staff*
PROCESS	
Should the aggregated structure be temporary or permanent?	• *Temporary, for a specific objective such as investment or access to private sector participation* • *Permanent, with practical limits on exit*
What process can be followed?	• *Voluntary* • *With incentives (financial, political, etc.)* • *Mandatory*

THE IMPLEMENTATION CHALLENGE OF AGGREGATION

A number of key issues need to be addressed when implementing aggregation. These include:

- *Defining the institutional form for the aggregated structures, both for service provision and oversight, depending on the willingness or ability of municipalities to transfer certain functions to the aggregated structure;*
- *Defining governance arrangements for the aggregated structures, especially methods for allocating voting rights in order to maintain a balance between representation and internal cohesion and limit political interference;*
- *Determining whether asset ownership should be transferred to the aggregated structure, for which type of assets and under which rules, including for water rights, which should be treated as important assets;*
- *Determining whether staff should be transferred and under which conditions;*

- *Establishing entry and exit conditions in order to encourage entry without destabilizing the existing grouping and to make exit possible but sufficiently difficult so that exit of key municipalities cannot jeopardize the whole grouping;*
- *Establishing whether tariff and service level harmonization should be introduced, and if so, in which ways and over which transition period.*

CONCLUSIONS

The study demonstrated that experience with aggregation is rich and abundant and that many policy lessons can be drawn from such experiences. Aggregation reforms are likely to become increasingly needed, for factors internal or external to the WSS sector. Policy guidance will be required to explain the potential benefits of aggregation and identify potential constraints. Aggregation of WSS services is well in place or on the rise in countries where the concept is well understood, such as in France, where groupings are created to meet large and rising investment requirements.

Aggregation provides opportunities for improved efficiency of service delivery through economies of scale and scope

In general the WSS sector faces increasing returns to scale and scope. Thus, larger systems will deliver services at a lower unit cost, all else being equal. These efficiency gains derive from a range of factors including sharing of overhead costs across a wider customer base and lower unit input costs through bulk purchases. Increased efficiency means lower costs to customers or better services for the same cost.

There is some uncertainty, however, as to the size of potential economies of scale from aggregation and the factors that drive such scale economies. Further research is required to investigate the impact of both the scale of the combined service area and the number of administrative entities being serviced. This would provide improved guidance on the issue, although the importance of local circumstances will always need to be emphasized.

Aggregation facilitates enhanced professional capacity in service providers

The delivery of water services requires a mix of routine and specialist skills. While routine skills might be available even in highly decentralized service provision, the more specialist skills will rarely be available. This is because highly decentralized systems will not have an ongoing demand for such skills, and nor will they have the financial resources to support the costs of such specialist skills. Larger, aggregated, service providers have the need for, and financial resources to support, specialist skills and thus will benefit from overall improvements in professional capacity.

Cost sharing through aggregation can mitigate the impact of high cost systems

Depending on the precise arrangements, aggregation can be used to mitigate the impact on customers of living in areas with high cost WSS systems. If all the costs within the aggregated service boundary are recovered equally across each cubic meter of water sold, then those customers living in higher cost areas will face lower charges

than if they had to pay for all the costs themselves. The extent of such cost sharing is a sensitive issue and may require central government intervention to be resolved.

Central governments can assist, mandate or provide incentives for the aggregation process

The ideal aggregation process is voluntary i.e. where the participating municipalities fully understand the costs and benefits from aggregation and decide by themselves, that the benefits outweigh the costs. To support and encourage voluntary aggregation, central governments can provide guidance about potential forms for aggregated structures, basic rules for internal management, governance structures, tariff-setting arrangements or entry and exit rules. A specific element of such guidance could be the development of model legal frameworks for aggregation, or model Articles of Association for aggregated entities. This is the approach adopted in France through the passing of very specific legislation on models of aggregated structures. Another specific element could be the elaboration of a clear framework for evaluating the costs and benefits of a proposed aggregation. Such exercises have been conducted in a number of aggregation processes and have usually proved useful to clarify the issues.

In specific cases, central governments can seek to mandate aggregation if it does not take place voluntarily and the perceived benefits from aggregation are large. However, mandatory action can be seen as heavy handed in a decentralized environment – even though the aggregation process and associated benefits are likely to occur more rapidly than through the voluntary route.

If aggregation makes economic sense, central governments may be better advised to provide incentives in order to stimulate the aggregation process and convince municipalities to group. For example, financial incentives such as the provision of higher levels of funding to an aggregated structure may foster aggregation, as it did in Hungary.

Aggregation has implications for local democracy

In a fully decentralized system responsibility for delivery of WSS services will lie with the mayor and municipal government. Aggregation will, inevitably, see some of that control handed over to the body that oversees the aggregated entity. This may be seen as a barrier to aggregation by individual municipalities. The determination of clear and representative governance arrangements that accommodate the needs of the participants are therefore essential. At the same time, WSS services can become victims of local government interference through short term, politically motivated, decisions which are against the long term interests of consumers. Pooling oversight through an aggregated entity can reduce the potential for such interference and provide more stable service provision to customers.

Beyond the WSS sector, local governments are constantly debating about the relative merits of grouping together for service provision and proposed reforms in the WSS sector should take account of such broader processes. It may be that some more general aggregation of local public services may be underway, with the creation of metropolitan areas, for example. Aggregation of WSS services should be coordinated

and accompany such broader processes rather than clash with them or create confusion in the allocation of functions between various levels of government.

Aggregation can take many forms and is not static over time

As described in the report, aggregation can take many forms. An aggregated structure may incorporate a small number of towns or an entire region. It may be temporary or permanent; involve the aggregation of all WSS services, or only a subset of those; involve all functions or only a subset, such as securing financing for example. Every form of aggregation has its own characteristics and it is unlikely that a solution applied in one situation can be applied elsewhere without tailoring it to suit the needs of the specific situation to be addressed.

One form of aggregation can be used to test the cooperation of several municipalities before moving into deeper forms of aggregation, either in the WSS sector or in other areas of public service under municipal responsibilities. Clear entry and exit rules can provide such flexibility, although it is usually preferable to limit exit possibilities in order to not destabilize the existing aggregated structure.

In some instances, the creation of a single aggregated entity providing the services may be too difficult or too time consuming to establish. In such cases it may be easier to rely on aggregation "through the market". This occurs when a water company, either public or private, signs contracts to provide services in a number of towns and thus achieves the economies of scale from serving the larger area.

This study did not analyze aggregation through the market in detail, however, and the analysis of the pros and cons of this form of aggregation will be done within the broader framework of the Town Water Initiative.

Aggregation can take place without transfer of asset ownership

The issue of asset ownership is often very sensitive because it determines which level of government has ultimate control over service provision. Asset transfer also requires preparation of asset inventories and valuing assets, a difficult and cumbersome exercise which can in some cases stall the aggregation process. This issue should not be over-emphasized, however: it is possible to aggregate service provision without transferring asset ownership. In many cases, the transfer of asset ownership is effectively forbidden, as it is the case in Hungary for example, although this has not prevented aggregation from taking place.

But in all cases, it is important to clarify which institution owns the assets and whether an ownership transfer takes place with aggregation.

Aggregation can fail if benefits are not clearly understood and there is no adequate process in place to implement it: a due process and political will is key to the success of the aggregation initiative

The benefits of aggregation may not be fully perceived by local government representatives who place the short-term interests of their constituency before the long-term general interest. Political will and a due process are therefore necessary for

effective aggregation. As with any other reform process that creates winners and losers and short-term transaction costs, aggregation needs a champion, either in the form of a strong individual or an entire institution to drive the process through. Preferably, there would be one such "champion" in each of the organizations involved.

Given the high specificity of different aggregation processes, it appears that external assistance would almost always be required to assist municipalities in carrying out the process, especially in the case of small towns that tend to lack capacity. Such external assistance would also involve a role of facilitation, as an external person is sometimes better placed for facilitating a process that could otherwise become very localized and politicized. Representatives of the central government or local consultants can provide such assistance, but they would probably require training for doing so.

Aggregation of service provision often creates the requirement to reform mechanisms for oversight of the service provider

When services are provided at the local level, they are often overseen at the local level and local politicians usually approve tariffs. The aggregation of service provision inevitably raises the question of whether such oversight functions (e.g. monitoring/tariff setting) should still be carried out at the local level, or whether they should be carried out at the same level as the aggregated service provision. Whichever approach is selected it is important to note that an aggregated entity can harmonize tariff and service levels, but it can also maintain differentiated tariffs and service levels at the local level.

When linking aggregation and private sector participation, be careful to not over-emphasize the need for a larger revenue base to attract operators

Aggregation decisions may be formulated when introducing private sector participation (PSP) into the WSS sector. Implementing PSP and aggregation reform processes simultaneously is not necessarily beneficial, however. Aggregation decisions are fundamental decisions for the sector. Maximizing the efficiency of service provision should be the primary focus, as opposed to maximizing the attractiveness of the transaction. Any proposed aggregation should stand on its own and make technical, economic and political sense.

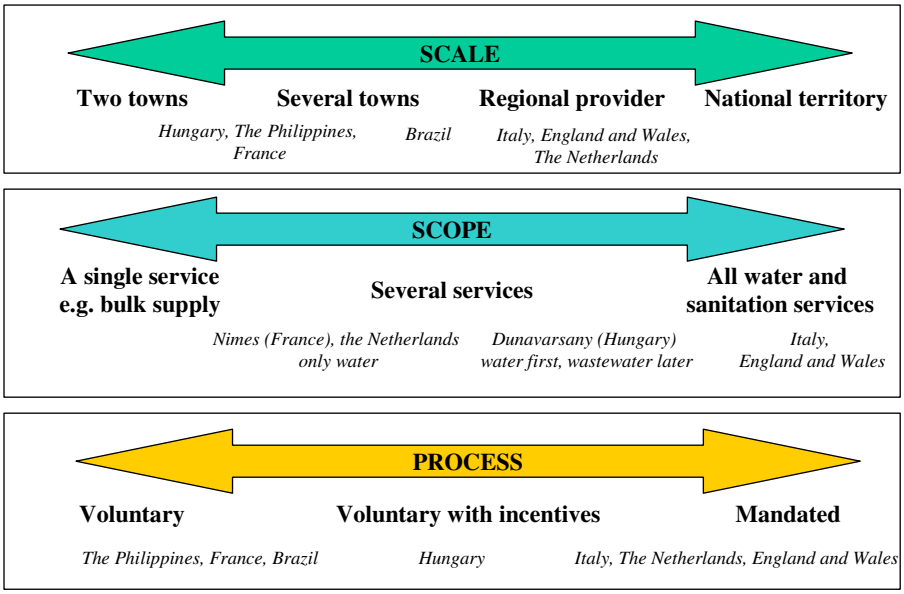
B1 INTRODUCTION

B1.1 OVERVIEW

This study investigates issues related to the aggregation of small and medium-sized towns for the provision of public services, with a particular focus on water and sanitation services. "Aggregation" is defined as the grouping of several municipalities into a single administrative structure for the provision of a particular service or function. Such aggregated structures can vary widely, generally along three dimensions, as shown in Figure 1.1 and described below. The countries identified on the figure refer to the case studies developed for this study.

- ***Scale:*** aggregated structures can group two neighboring municipalities, or several ones in a single region or across a broader territory;
- ***Scope:*** aggregated structures can provide a single service (for example, bulk water supply) or all water services, from raw water abstraction to sewerage treatment. For each of these services, they may carry out certain functions only (such as procurement) or be responsible for all functions, from operations and maintenance to investment and financing;
- ***Process:*** municipalities may form aggregated structures voluntarily based on mutual interests or alternatively, a higher level of government, driven by the overall public interest, may impose the aggregation process.

Figure 1.1 Dimensions of Aggregation Models



The main driver for aggregation is usually the potential to realize economies of scale by providing services to a larger customer base, and therefore, to render services more efficiently and at a lower cost.

But as the customer base becomes larger, the entity in charge of providing services runs the risk of becoming less accountable to its customers. This may be particularly problematic for water services, which are usually considered to be local services and often carry a significant stake in local politics. Hence, even though the case for aggregation is often relatively easy to construct, based on an analysis of the costs and benefits of alternative scales of service provision, aggregation processes do not take place as often as one may think, or when attempted, have a relatively high risk of failure, either because political will is lacking, or the potential benefits are not clearly understood, or the aggregation process is perceived as too complex.

This study therefore seeks to analyze when service aggregation may be considered as a way of improving service effectiveness and what are the main drivers and constraints for such processes. The analysis is based on a series of case studies of aggregation processes around the world where different models of aggregation have been introduced with various results. On this basis, the study seeks to draw out practical recommendations for evaluating the potential benefits of aggregation, selecting the most appropriate aggregation model and implementing aggregation in practice.

B1.2 STUDY BACKGROUND

The study has been developed in the context of the World Bank "Town Water Supply and Sanitation Initiative", which seeks to identify innovative service models for water and sanitation services, particularly in small towns. This initiative builds on the observation that a large (and growing) proportion of the population without access to adequate water and sanitation services is situated in small and medium-sized towns, and that meeting the Millennium Development Goals for water and sanitation (to reduce the number of people without access to such services by half by 2015) will require paying specific attention to increasing access to services in those areas.

Aggregation is seen as a potentially interesting route for improving service effectiveness in small towns via economies of scale and other associated benefits. This is not the only route for improving services, however: others include the introduction of community management or private sector participation into the running of services; the provision of professional support to small towns; or the creation (via the market) of service providers providing services in several municipalities through separate contracts. These other options have been explored in other components of the Town Water Supply and Sanitation Initiative, which analyses their relative merits in different sets of circumstances, and will therefore not be reviewed here.

B1.3 RESEARCH METHODS

The study was developed in three distinct phases. The first phase consisted of exploring issues relating to aggregation in a series of short notes and identifying examples of aggregated structures that could potentially be analyzed in more detail in the second phase.

Twenty-one such examples were used as a basis for the selection of the seven case studies that were researched in more detail in the next phase. Those interim outputs were discussed at an internal World Bank workshop in April 2003 in Washington, which was instrumental to select the case studies.

During the second phase, seven case studies were conducted, including aggregation processes in France, the Philippines, Hungary, Brazil, Italy, the Netherlands and England and Wales. The last two were desk-based based on existing literature; all other case studies involved a considerable amount of new research in each of the country concerned. The criteria for selecting those case studies are presented in Section 2 and they are summarized in Annex C.

The third phase of the study consisted of extracting the lessons learned from the case studies and the analysis conducted in the first phase. Lessons are synthesized in this final report, in order to assist governments in reaching decisions about whether aggregation may be needed in a particular set of circumstances and in which form, and to provide guidance with how aggregation processes can be run to increase chances of success.

B1.4 STRUCTURE OF THIS REPORT

The rest of this Report is structured as follows:

- *Section 2* presents the methodology used for selecting the case studies used for this study and provides an introduction to those case studies;
- *Section 3* presents the circumstances in which aggregation can be considered and introduces the types of benefits that can be extracted and potential constraints;
- *Section 4* analyses the different dimensions of aggregation and highlights the great diversity of aggregation models along three main dimensions, scale, scope and process;
- *Section* 5 sets out the implementation challenge of aggregation, providing guidance on the practical issues that need to be considered for improving the chances of an aggregation process to succeed;
- *Section 6* outlines the conclusions and policy implications from the study.

A series of annexes develop those points in more details:

- *Annex A* contains a summary presentation of the potential drivers and constraints that can affect aggregation, and proposes methods for alleviating such constraints;

- *Annex B* proposes guidelines for the due process that could be followed to introduce aggregation with higher chances of success;
- *Annex C* contains summaries of the seven aggregation case studies.

Full versions of the case studies can be obtained upon request by contacting the Water Helpdesk (whelpdesk@worldbank.org).

B2 SUMMARY PRESENTATION OF CASE STUDIES

B2.1 AGGREGATION EXPERIENCES

Aggregation of water and sanitation service providers is relatively frequent throughout the world and yet, knowledge of aggregation processes is relatively difficult to access, because comparatively few publications have focused on this area so far. When aggregated structures exist, little is known about the process that led to their creation, the drivers and constraints encountered or the role of the different players in the process.

In order to base this study on actual experience, it was therefore deemed necessary to carry out a series of in-depth case studies of aggregation experiences around the world. The identification of such case studies started with the analysis of twenty-one aggregation experiences, about which published data was readily available, shown below classified by region:

Table 2.1 Aggregation Experiences reviewed in the first phase of the study

Country	Main characteristic
Western Europe	
France	A long tradition of water service aggregation for small towns, within a well-defined legal framework establishing a "syndicate" model
Italy	The formation of regional utilities, with a mix of mandated and voluntary process, has been slowed down by political resistance and local interests
England and Wales	The formation of regional utilities on river basin boundaries was carried out relatively quickly in a mandated way by the Central Government
Scotland	A national utility was created in two steps for cross-subsidization purposes
Eastern and Central Europe	
Estonia	A temporary grouping of 17 rural towns to access finance for improvements
Hungary	Aggregation linked to private sector participation for a medium town and neighboring areas
Bulgaria	A private sector participation contract for 3 medium towns was abandoned
Africa	
Mozambique	Clustering for access to private sector participation in 5 dispersed towns
South Africa	Innovative contractual forms (BoTT) lead to temporary grouping in order to prepare small towns for providing services following decentralization
Mali	A Central Government structure provides audit and advisory services to small rural towns throughout the national territory
Morocco	A national bulk water supplier (ONEP) expanding into retail activities
Senegal	A national utility (SDE) providing water services in the main urban areas
Cote d'Ivoire	A national utility (SODECI) providing water services in the main urban areas
Gabon	A national utility (SEEG) providing water and electricity services mostly everywhere (any centre above 1000 inhabitants)
Latin America	
Colombia	A case of commercial aggregation after disaggregation of a regional utility
Argentina	Aggregation for private sector participation in Buenos Aires Province
Brazil	Concession contracts between State Water Companies and municipalities
Guyana	The recent creation of a national utility (GWI) from two separate providers
Asia	
India	Clustering for access to private sector participation in Karnataka
Philippines	Aggregation in Metro Manila and in Water Districts (rural areas)
Indonesia	Creation of river basin agencies for managing water resources.

B2.2 CASE STUDIES SELECTION METHOD

On the basis of the long-list above and consultation with World Bank task managers carried out during the April 2003 workshop, the seven case studies were carefully selected to be representative of the great diversity of aggregation models and processes that can be observed around the world. Due to the importance of political factors in aggregation processes, it was found that the most useful way to differentiate alternative aggregation models so as to inform policy-making was to focus on the process followed for aggregation. Aggregation processes were therefore placed in three categories, depending on whether the process was:

- Voluntary, which means that local governments took the initiative to aggregate their water and sanitation services based on an analysis of the advantages and disadvantages of aggregation at their level;
- Carried out at the local level but with incentives provided by a higher level of government, such as financial incentives; or
- Mandated by a higher level of government.

Key features of the case studies according to this classification are shown in Table 2.1 below, which also shows the specific examples that were analyzed in more depth in each country. Some of the case studies are relatively difficult to allocate to such categories because the degree of central government intervention differed according to the stage of the aggregation process. For example, in Brazil, financial incentives were provided during the PLANASA era for a forced "aggregation by the market", i.e. to obtain that municipalities would sign concession contracts with State Water Companies. The lack of powerful incentives in the more recent aggregation processes, attempted by State government to avoid the fragmentation of the sector, has meant the relative failure of several of these attempts (as in Mato Grosso).

Table 2.2. Main Characteristics of Aggregation Case Studies Selected

Process	Country	Characteristics	Specific examples
Voluntary: driven by local governments			
	France	• High level of decentralization and municipal responsibilities for water • Long experience in the formation of aggregated structures for public services • Process is largely voluntary • Legal framework defines aggregation forms and rules for aggregation • Representative of central government can mandate inclusion of certain towns	Nîmes Metropole, Bas-Rhin
	Philippines	• Aggregation is voluntary and tends to be temporary • Private sector participation has often been a key driver for aggregation • Water rights have created obstacles	Laguna Water District, Laguna LGU, Partido

Process	Country	Characteristics	Specific examples
With incentives provided by a higher level of government			
	Hungary	• Decentralization of formerly aggregated entities during communist period and creation of new entities for expanding service in rural areas • Financial incentives for aggregated entities, with favorable lending terms from Central Government	Dunavarsany, DRV
	Brazil	• Financial incentives (access to finance) provided during Planasa era for creation of State Water Companies • Following decentralization of Planasa structures, re-aggregation process failed when incentives proved insufficient (as in Mato Grosso) • Similar re-aggregation process was deemed more successful when linked to private sector participation (as in Dos Lagos)	Planasa, Mato Grosso, Dos Lagos
Mandated by an upper level of government, based on public interest arguments			
	Italy	• Central law (Galli) mandated aggregation • Implementation was left to local governments (voluntary) and was much slower than anticipated	Lazzio region
	Netherlands	• Voluntary aggregation of water supply companies was limited • Provincial authorities were given powers to introduce binding reorganization plans, but in the event of resistance, process was slow	Friesland Province, South Holland Province
	England and Wales	• Central government created regional water service providers based on river basin boundaries • Process was quick (9 months)	Nation-wide

B2.3 SUMMARY OF SELECTED CASE STUDIES

The main features of the case studies are summarized below. A more extensive summary is presented in Annex C and copies of the full case studies can be provided upon request.

B2.3.1 France

In France, water and sanitation services have been a local government responsibility since the 1789 Revolution. There are a total of 36,000 "communes" in the country, which results in a fragmented context for the provision of water and sanitation services. A considerable amount of aggregation of water and sanitation services has taken place in France over more than a century, resulting in the creation of around 18,000 aggregated structures, most of which provide water and sanitation services. Existing laws establish clear models for aggregation, with accepted rules on governance structures, entry and exit rules, tariff setting or asset transfers.

Municipalities can choose to aggregate from a wide range of models, ranging from a traditional single-function syndicate (such as the Syndicat des Eaux du Bas-Rhin, created in 1939, presented in the case study) to more extensive aggregated structures, providing a broader range of public services with the ability to levy local taxes (such as the mixed rural and urban community of Nîmes metropole, created in 2002, presented in the case study). Although aggregation is voluntary, the central Government representative, the Prefect, can intervene to force a municipality to join the grouping, in order to preserve territorial continuity.

B2.3.2 Philippines

Aggregation is not new to the Philippines: water services were provided by a national utility until 1973. The 1973 Provincial Water Utilities Act devolved responsibility for water and sanitation services to local government units (LGUs) and created the Local Water Utilities Administration (LWUA), which can authorize the creation of Water Districts and provides them with technical and financial assistance. Water districts can be formed by two or more contiguous cities, towns, or provinces (generally in urban areas). To date, there are around 440 active Water Districts grouping 694 out of 1,600 cities and towns in the Philippines, and serving a population of roughly 15 million, or 18.5 percent of the Filipino population.

Aggregation in the Philippines is guided by several pieces of legislation that support both voluntary and mandated groupings of water services. Voluntary processes have met with a number of difficulties, however. The transfer of water rights emerged as an issue, due to a lack of clarity in the allocation of rights according to the law. This generated conflict in the Laguna LGU grouping (reviewed in the case study), and stalled the process of reform. In another example (Laguna Water District), the grouping was not successful because a municipality dominating the grouping failed to convince the other members that it was defending the interests of the grouping as a whole, rather than its own, and political rift ensued. A specific structure, providing many public services including water and sanitation, was created through a centrally mandated process in the Partido region to foster economic development and has met with more success.

B2.3.3 Brazil

In Brazil, although water and sanitation services are in theory a municipal responsibility, a number of State water companies were created in the 1970s in order to accelerate the pace of investment to develop access to services. A Government program, PLANASA, provided financial incentives to municipalities to sign concession contracts with the State water companies. There is now a drive towards service decentralization, and many municipalities are seeking to regain control over their services. As the concession contracts with State Water Companies did not assign asset ownership clearly, however, disputes between State and local governments are frequent. In several instances when decentralization was introduced, the

State government tried to get municipalities to aggregate simultaneously, so as to retain some scale economies and to increase interest from potential private sector investors. This process failed in some instances (as in Mato Grosso), but it is being attempted with greater hopes of success elsewhere (as in Santa Catarina) or has already been implemented elsewhere (as in Dos Lagos region in the Rio de Janeiro state). These examples are reviewed in the case study.

B2.3.4 Hungary

Water and sanitation services became the responsibility of municipalities following the end of communism in 1989. State assets were transferred to municipalities but without sufficient funds to expand and maintain those assets. The need for rapid upgrades to the system to meet the timetable for accession to the European Community led the central government to provide financial incentives for aggregation of water and sanitation services, in the form of higher grants provided to municipalities applying for financial assistance as a group rather than in isolation.

The legal framework for aggregation is ill defined and the law specifically prohibits the transfer of asset ownership to aggregated structures. Aggregation has taken place nevertheless when a municipality has been able to take the lead and to assume most of the costs of the process, as in Dunavarsany, reviewed in the case study. Aggregation in the water sector led to a transfer of skills and knowledge from more experienced, larger municipalities to lesser-experienced, smaller municipalities. It also increased municipal cooperation for other public services and regional development.

B2.3.5 Italy

In Italy, the 1994 Galli Law mandated the initiation of a process of aggregation of water and sanitation services across the national territory. The Law specified that all existing water service suppliers should be consolidated into water sector management areas based on hydrographical sub-basins ("Optimum Territorial Areas", referred to as ATOs), to be defined by the 20 Regional governments within 6 months together with the details of implementation within their area of jurisdiction. ATO Authorities were to be established, and they needed to prepare "Water Resource Plans" for the management, rehabilitation, expansion and operation of the services in the ATO. The Galli Law also provided for central government support through technical, financial, and contractual advice.

The Regions defined 91 ATOs covering the whole country. In the nearly ten years since the Galli Law, 83 ATOs have established authorities to manage an integrated water service, but only in 25 of them, service delivery was delegated to specialized companies that are regulated locally. The delays can be attributed to strong local political resistance to aggregate, and objections by influential vested interests, particularly private operators who, prior to the Galli Law, managed roughly 5% of Italy's water and wastewater services.

Although aggregation was mandated at a national level, a critical issue is the regulatory weakness at national level with no enforcement powers nor mechanisms for monitoring non-compliance with the law.

B2.3.6 The Netherlands

Institutions for water management, wastewater treatment and drinking water supply developed separately in the Netherlands. Water boards (*waterschappen)*, a Dutch institution since the 13th century, are in charge of inter-communal water management, and are separate from water supply companies in charge of drinking water supply. Both types of institutions have undergone a substantial amount of aggregation.

The number of drinking water companies went from 180 in 1965 down to 24 to date. A 1957 Water Supply Act initiated the voluntary aggregation of drinking water supply companies. Concerns about demand growth and quality control led to the introduction of an amendment to that Act in 1975, to give powers to provincial authorities to prepare binding reorganization plans and lead the process. The main criteria for determining the size of the aggregated water companies was that each supply company should have at least 100,000 connections to produce potable water on a larger and more efficient scale, as well as appropriate management and a laboratory for quality control. Companies that had not aggregated voluntarily were not keen to do so, as they did not perceive any financial benefits from the process, or felt that there were substantial organizational and cultural barriers. Overall, the aggregation process was not easy, because the new law stipulated that the owner of a water supply company to be taken over had to be compensated for the loss of future profits, warranting a thorough investigation of technical systems. In some cases the aggregation process took over a decade.

B2.3.7 England and Wales

The 1973 Water Act mandated the aggregation of water and sanitation services in England and Wales, which was effectively implemented on 1st April 1974. As a result, 200 public water supply undertakers and almost 1,400 public sewerage authorities were consolidated into ten Regional Water Authorities (RWAs), with boundaries based mainly upon river catchments, whilst private water undertakers continued to serve approximately 25% of the population. The RWAs were established to carry out Integrated River Basin Management (IRBM) activities and provide water and sanitation services.

The creation of adequate structures to carry out IRBM prevented a local "selfish" approach to pollution control, and water poor areas were able to gain improved access to water resources and to stand-by facilities in the event of emergencies. The new structures allowed the RWAs to realize economies of scale and to increase the size of investments. However, as the RWAs were simultaneously required to meet water and effluent quality standards and to monitor their own compliance with those standards, the Act created a "poacher and gamekeeper" conflict of interest. Also, it was widely considered

that insufficient time had been given for consultation in the reform process. The creation of larger structures created a break in accountability between local authorities and customers.

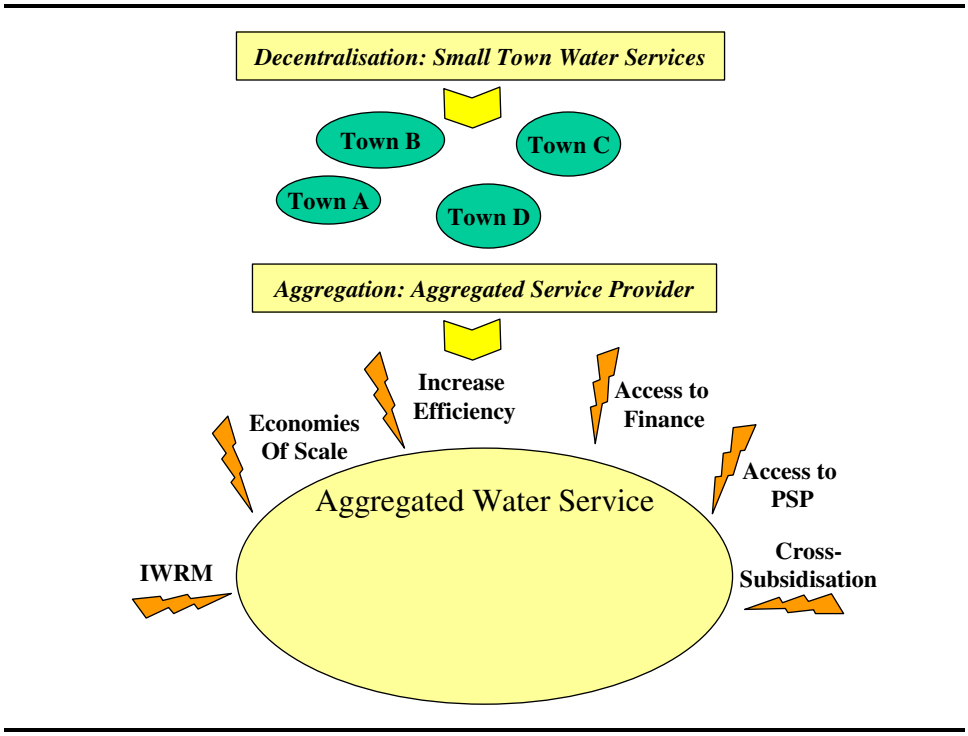
Aggregation can be considered in a number of circumstances as a way to improve the efficiency of water and sanitation services. When it has been successfully introduced, it has often yielded a number of significant benefits. Countries that are looking to aggregate can learn from these experiences and consider aggregation as a useful set of reforms to improve sector performance.

This section presents the set of circumstances in which aggregation can be considered and reviews the main advantages and drawbacks of aggregation that are likely to occur during such processes.

B3.1 MAIN DRIVERS FOR AGGREGATION

Aggregation reforms are usually considered when there are perceived inefficiencies in the management of water and sanitation services, either because service providers are too small to provide an efficient service or because they are too large, but decentralizing to the lowest level of government is not appropriate or not deemed efficient. Such situations may have emerged as a result of factors outside of the water sector: for example, a fragmented water service market may be the consequence of a broader process of decentralization of public services. The main factors driving the consideration of aggregation reforms are represented in Figure 3.1 and are discussed in more details below.

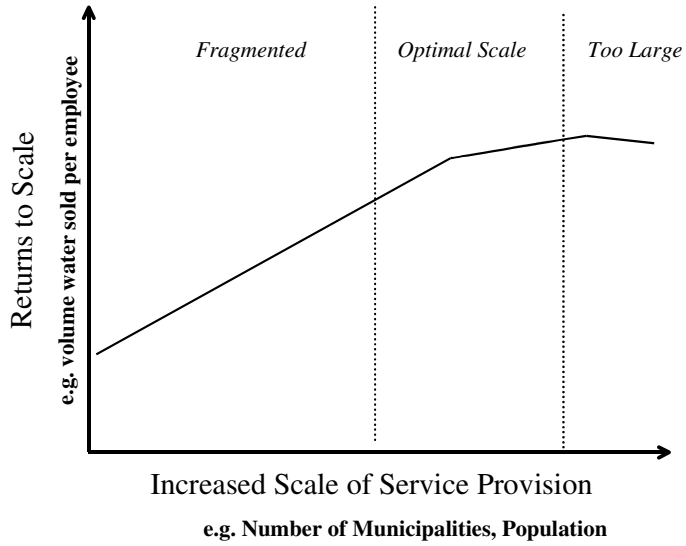
Figure 3.1 Main driving factors for aggregation



B3.1.1 Increase efficiency through economies of scale

The main factor driving aggregation is the need to improve efficiency of service provision: small town water services are often inefficient because they are too small to access certain services or cannot realize the full benefit of the infrastructure they have at their disposal. The major motivator for aggregation is therefore to generate economies of scale, in order to share total production costs over a larger demand base and reduce the unit costs of production. Economies of scale can be realized at all stages of the production process, due to efficient production processes and increased bargaining power for purchasing key inputs. However, studies have shown that economies of scale tend to tail off above a certain point, as shown in the Figure 3.2 below.

Figure 3.2 Returns to Scale and Scale of Service Provision



From the point of view of operating water services, it would therefore important to identify the "optimal size" of service provision. Such an exercise is a difficult one, however, as results would largely depend on the specific circumstances of each water service and many factors can impact on the relative efficiency of different services, such as employment rules, access to international markets, topographical conditions, water availability, etc.

Although there is evidence of economies of scale, it has often been difficult to quantify them precisely or to identify at which point economies of scale start tailing off because of inefficient production size, as recent research summarized in Box 3.1 below demonstrates. This study showed that a relatively consistent scale factor is around 0.8, which means that a doubling in output would lead to a 80% increase in costs. Most importantly, and in agreement with other studies previously carried out, it showed that evidence of economies of scale is much stronger for smaller utilities (serving less than 125,000 people) than for larger ones, for which economies start tailing off.

Box 3.1 Economies of scale: quantitative evidence

A recent study investigated the costs (operation & maintenance) of water services as a function of utility size using five data sets from Africa, Indonesia, Peru, the United States and Vietnam, and a simple regression model. Utility size was measured against: population; population served; connections; length of network; volumes of water produced; and volumes of water sold.

Summarized study results are shown in the Table below, where the coefficient shown indicate the percentage change in costs for a 1 percent increase in output, measured either on the basis of the volume of water produced or the number of connections. For example, according to this data, a doubling of volume water produced in a small utility (less than 125,000 people served) in Africa leads to a mere 63% increase in costs, which indicates strong returns to scale as opposed to the same estimate for large utilities in Africa, where signs of diseconomies of scale are apparent (a doubling in volume of water produced leads to more than double the costs). The number in bracket below indicates the standard error for each measure.

Output Measure		**Africa**	**Indonesia**	**Peru**	**USA**	**Vietnam**
Volume water Produced	Small	0.632	0.810	0.759	0.859	0.746
(Million m^3/yr)		*(0.460)*	*(0.261)*	*(0.119)*	*(0.053)*	*(0.120)*
	Large	1.183	0.893	0.997	0.966	0.753
		(0.543)	*(0.283)*	*(0.158)*	*(0.094)*	*(0.217)*
Number of Connections	Small	0.527	0.496	1.051	0.984	0.725
		(0.357)	*(0.277)*	*(0.102)*	*(0.057)*	*(0.121)*
	Large	0.992	1.133	1.091	1.04	0.975
		(0.407)	*(0.307)*	*(0.130)*	*(0.105)*	*(0.261)*

Overall, the study showed that grouping water service providers delivers economies of scale, particularly at the lower size of the range. Evidence of economies of scale was most consistent across datasets when measuring utility size with volume of water produced. When measured against number of connections, some countries show very strong economies of scale, but the results are more varied. This suggests that the optimal size of a utility may be more sensitive to customer characteristics (e.g. residential vs. non-residential) than to size as measured by volume of water produced. At larger sizes, these returns start to decline or become flat.

The study, based on previous evidence, suggested that loss of economies of scale above a certain point could also be attributed to an expansion in the range of services offered by larger utilities. Because the study did not investigate costs as a function of both the number of communities and the number of people served, the potential for achieving scale through aggregation versus simply serving a larger, contiguous area were not clearly demonstrated. Other studies have found evidence of economies of scale in the water industry especially for smaller utilities, such as Kim and Clark (1998) with US utilities; Garcia and Thomas (2001) in France; Mizutani and Urakami (2001) in Japan; and Kim and Lee (1998) in Korea.

Source: Nicola Tynan, "Returns to Scale in Water Systems in Developing Countries: Some Econometric Evidence", August 2003.

In almost all cases of aggregation under review, an improvement in efficiency through economies of scale was a primary driver for the aggregation process.

B3.1.2 Aggregation and water resource management

Aggregation may be pursued when the national (or regional) government seeks to implement Integrated Water Resources Management, whether to effectively allocate resources, to address environmental considerations, or to improve the efficiency of water resources management.

For example, in England and Wales, high projected demand growth rates and perceived pollution problems led to a Central Government-led reorganization of water resources management, with the aggregation of over 200 water supply companies and 1,400 sewerage authorities into ten regional water authorities (RWAs). Those authorities were simultaneously in charge of integrated water resource management (with the granting of abstraction and discharge licenses, drainage or flood control activities) and water and wastewater service provision. The new water authorities coverage areas were determined on the basis of river basin boundaries.

Integrated water resource management often drives aggregation at a relatively localized level: for example, to improve collection, treatment and disposal of wastewater, aggregated wastewater service providers can adopt a more comprehensive and better suited approach than isolated ones. However, it is rare and by no means necessary to create service providers on the basis of river basin boundaries as water resource management and service provision functions are better separated (in the case of England and Wales, RWAs created classic "poacher and gamekeeper" conflicts, and those functions were later split when private sector participation was introduced in water services in 1989).

B3.1.3 Aggregation and decentralization

Aggregation may paradoxically be a product of a broader process of decentralization of public service provision, which is often applied to water and sanitation services. It is indeed a commonly held view that water services should be decentralized to the lowest political level, normally taken to be the municipal level, to make them more responsive to the needs of the local population. However, experience has shown that the blanket application of this principle is unsatisfactory, as most small and medium sized towns lack the capacity to provide beyond a very basic level of public services. Increasingly, observers of water sector reform around the world report that decentralization in the water sector may not yield all of its expected benefits without stronger governance skills at the local level, and small town service providers would therefore turn to aggregation to overcome these problems.

In some cases, aggregation may be the choice of small towns that have acquired increased powers and responsibilities as a result of decentralization, and choose to aggregate in order to be able to carry out those responsibilities adequately. For example, in France, responsibility for water and sanitation services belongs to the country's 36,000 municipalities, the majority of which are very small. Increased decentralization resulted in more functions and responsibilities (with corresponding financial resources) being transferred to local governments. These are beyond what many small municipalities can reasonably provide and as such, municipalities have increasingly turned to aggregation as a means to provide those services.

In other cases, aggregation may be mandated by a higher level of government when a regional or national service provider is being broken up into smaller

providers in order to create providers of an appropriate scale and avoid fragmentation. The chances of success of such processes are more limited. For example, in Brazil, State governments tried repeatedly to foster the creation of aggregated providers in the context of the break-up of State Water Companies, which had traditionally provided services across State territories. These attempts met with mixed results, and it is only when strongly linked to providing access to private sector participation (as in Dos Lagos) and the agreement between municipalities and the State government was clearly formalized that such aggregation processes were successful.

Some decentralization experts fear that this kind of aggregation constitutes a step back in the course of decentralization and local empowerment. Aggregation does lead to a loss of direct control by municipalities (or rather a sharing of control with other municipalities), and can introduce a distance between end consumers and those responsible for providing services to them. However, in certain cases, aggregation may also strengthen local communities. For example, in Dunavarsany, Hungary, the aggregated entity was comprised of different sized towns with varying degrees of administrative, financial, and technical capability. The largest municipality in the grouping, Dunavarsany, took the lead, and assumed responsibility for the entity (e.g., it applied for the grant, managed the funding, and provided administration). Throughout and as a result of the process, other municipalities were trained and made aware of key issues relating to management and built their capacity for other similar projects.

B3.1.4 Aggregation and access to finance

Governments, donors or private financiers may also be reluctant to provide financing for small entities, and accessing long-term finance can therefore act as a main driver for aggregation. The combination of large investment requirements with relatively low cost-recovery levels in the water sector mean that accessing long-term finance is a crucial element for water sector development. But providing long-term finance can be a complex and risky exercise for financiers, be they central governments, international donors or commercial lenders. It is often more efficient to provide a larger long-term loan to a single entity rather than small loans to a higher number of entities. If the single loan is subscribed by several entities, they can implicitly guarantee each other in the event of default. Therefore, rules for accessing finance imposed by financiers can be a driver for the aggregation process.

For example, in Hungary, large-scale capital investments are needed to meet EU environmental directives, especially for wastewater treatment. The Government has determined a minimal size of loans and is giving a bonus for municipalities applying as a group versus individual municipalities. Governments can also use financing as an explicit incentive for aggregation. In Brazil during the PLANASA era, for example, local governments were compelled to delegate service provision to State Water Companies through concession arrangements in order to receive subsidies and funding.

B3.1.5 Aggregation and private sector participation

Aggregation may be considered in the context of introducing private sector participation. Aggregating well-performing utilities with less successful entities may be done by central governments to prevent 'cherry picking' by private operators (that is, the deliberate provision of services only in the most attractive and profitable areas to serve) and increase investments to areas that otherwise would be undesirable. Aggregation may also involve creating a large entity out of many smaller entities because such small entities would be unable to attract private investment by themselves because of their size and it is perceived that only a larger demand base would attract a private operator.

Some aggregation processes have failed because they were too narrowly focused on maximizing the potential for private sector participation and ignored other important factors influencing water services. For example, private sector participation has acted as an important driver in the creation of Water Districts in the Philippines, although other factors (such as unequal access to water resources) have limited the success of such processes.

In other cases, aggregation may not be directly linked to the introduction of private sector participation but can lay the basis for its later successful introduction. For example, although this was not the original intention, the creation of Regional Water Authorities on the basis of river basin boundaries in England and Wales in the mid-1970s created an attractive demand base for the subsequent privatization of water and sanitation services in 1989.

B3.1.6 Aggregation and cost sharing

Aggregation gives the potential to share the costs of water services between those areas with higher costs and those with lower costs. Whether cost sharing takes place depends on whether tariffs and service levels are equalized throughout the service area of the aggregated entity (see Section 5). In some cases, cost sharing (effectively cross-subsidization between low and high cost service areas) may be seen as a constraint for aggregation: because low cost towns may resist aggregating with other towns that are more expensive to serve. However, in other cases, cost sharing has been presented as an explicit driver for aggregation. That was the case in Scotland, for example, where the creation of a single service provider was largely driven by the government's willingness to cross-subsidize the Highlands & Islands (which have very dispersed population and are expensive to serve) by other lower cost areas.

B3.2 WHAT ARE THE POTENTIAL BENEFITS AND CONSTRAINTS TO AGGREGATION?

The case for aggregation is usually relatively simply to construct on the basis of the main drivers for the process. The potential constraints, perceived as disadvantages, are also sizeable, and in some cases, may overcome the potential benefits. Because of such drawbacks, municipal governments may

resist aggregation as they perceive that it would lead to a reduction in their powers and reduce democratic accountability.
This is why the government entity looking to encourage aggregation should be aware of the potential constraints and seek ways to alleviate such constraints.

These are summarized in Table 3.1 below. Annex A presents a detailed analysis of the potential drivers for aggregation, the constraints and methods for alleviating such constraints. Annex B recommends a "due process" for implementing aggregation during which the main benefits and drawbacks would be thoroughly analyzed and placed in a cost-benefit framework.

Table 3.1 Potential benefits and disadvantages of aggregation

Administrative aggregation of municipal service providers	
Potential Drivers and Associated Benefits	**Potential Constraints and Disadvantages**
• Facilitates access to water resources in water-scarce areas • Allows economies of scale in designing works for neighboring towns • Allows economies of scale in procurement and support functions • Allows economies of scope in sharing overhead costs • Facilitates access to private finance and international donors • In the event of private sector participation, makes transaction more attractive for international operators, up to a certain point (attractiveness decreases if rural areas included) • Allows cost sharing between high and low cost service areas • Increased cooperation between municipalities can lead to cooperation for other public services • Fosters a more integrated approach to water resource management	• May result in a loss of control over water resources • Introduces distance with end-users and makes it more difficult to tailor services to meet their needs • May result in a loss of democratic accountability • Requires political will to aggregate at local level if water and sanitation services are a municipal responsibility • May limit the potential for direct competition, or comparative competition, between service providers • Introduces risk of resistance to cost sharing from those that "lose out" • Transaction costs are potentially high

In practice, many of the potential benefits may only emerge for a sub-set of the municipalities that form part of the aggregated structure (the winners from the aggregation process) whilst the potential disadvantages may be more strongly felt by another group of municipalities (the losers).

Different models of aggregation can be found throughout the world: in some cases, aggregated entities are the dominant form of service provision whilst in others, municipal service provision is still pretty much the norm. The case studies provide an extensive set of circumstances in which aggregation of water and sanitation services has taken place and give an idea of the diversity of models in existence. Models depend on the prevailing legal framework for water and sanitation services in each country and other factors, such as the general level of decentralization of public services, the social and political fabric, or investment requirements. The choice between aggregation models can be done on the basis of a set of key questions, as shown in Table 4.1, which provides more details about the dimensions shown in Figure 1.1 above.

Table 4.1 The Range of Options for Aggregation

Key Characteristic	Range of Possibilities (with increasing aggregation)
SCALE	
What can be the scale of the aggregated structure?	A few neighboring towns Several towns, neighboring or at a distance All towns in a given region or river basin Most towns in the country ("national utility")
SCOPE	
What services can be aggregated?	Water production (bulk water sales) Whole water service Water and sanitation Water and energy … and others (solid waste, street lighting, heat…)
What operating functions can be aggregated?	Operations Management Procurement Investment Financing All functions, with merging of assets and staff
PROCESS	
Should the aggregated structure be temporary or permanent?	• Temporary, for a specific objective such as investment or access to private sector participation • Permanent, with practical limits on exit
What process can be followed?	• Voluntary • With incentives (financial, political, etc.) • Mandatory

Governments looking to aggregate their water and sanitation services should consider these alternatives in order to identify the aggregation model that is best suited to their particular circumstances, depending on the pre-existing market structure, the type and number of existing providers, the population distribution over the territory to be supplied and ultimately, an analysis of the potential benefits and disadvantages of the proposed aggregation model.

B4.1 SCALE

In most cases, aggregated structures are formed by grouping a few neighboring towns. Alternatively, some groupings can incorporate a large number of municipalities, or may even cover all major urban centers in a country, even though there are at a distance from each other. Those different scales of aggregation are analyzed below.

Group of municipalities

This is the most basic and probably most common model of aggregation, with a group of neighboring municipalities operating joined facilities for water and/or sanitation services. This model varies depending on the location and the size of the municipalities that are grouped together:

- Neighboring municipalities of relatively similar sizes may be aggregated. This may involve the aggregation of small towns and their surrounding rural areas in order to form a continuous service area for a single service provider. Such aggregation can cover up to an entire region. Syndicates in France provide a good example of such types of groupings;

- Neighboring municipalities of different sizes may also aggregate, particularly where a large city absorbs several smaller towns. In such cases, aggregation may take place in a number of other services for integrated urban development planning. This model took place in Metro Manila in the Philippines, where Metropolitan Waterworks and Sewerage Systems (MWSS) serves 10 million people in 27 cities and towns;

- Alternatively, municipalities of similar characteristics but physically detached from each other can be grouped together. For example, this can be the aggregation of small and medium towns with similar characteristics throughout the national territory or a particular region, as they require similar types of support services. This was attempted in Mozambique, with limited success, partly because the municipalities were far apart and had been aggregated mostly for accessing private sector participation.

Regional groupings

Water service providers may be responsible for providing services over an entire region, based on either administrative or river basin boundaries. Although the end result may be comparable to the municipal groupings described above, the process of aggregation may be different: regional groupings are more likely to result from a mandated aggregation process, with the national government "carving out" regional units for the provision of water and sanitation services, as was done in Italy or in England and Wales. In Italy, the Regions were responsible for defining the territory of the "Optimum Territorial Areas" (or ATOs), which usually coincided with the boundaries of the Provinces, over which water and sanitation services were to be aggregated.

The "national utility model"

A single service provider may also be responsible for providing water services across the national territory, although it is usually for services to urban population centers above a certain size. Many examples of such "national utilities" exist, and are particularly frequent in West Africa (SONES in Senegal, SODECI in Cote d'Ivoire, SEEG in Gabon or ONEA in Burkina Faso), North Africa (ONEP in Morocco) or other regions (NWSC in Nepal, SANAA in Honduras). There are fewer examples of recently formed national utilities, as in Guyana, with the recent merger of the company in charge of services in the capital city Georgetown and the company providing services in the rest of the country. In some cases, those national utilities may also provide electricity services, as is the case in Gabon or Mali.

National utilities have generally evolved through the gradual incorporation of urban centers, starting from the provision of services in the capital city to gradually include all major (or smaller) urban centers. This usually took place over several decades and may still be continuing. Recent reforms and decentralization processes have sought to "break up" such national utilities, with the formation of regional utilities or municipal service providers. Such reforms are based on the observation that, above a certain scale, economies of scale tend to tail off and corresponding benefits from economies of scale no longer offset the potential benefits from introducing competition. In addition, the larger utilities tended to not be very responsive to local needs. This "break up" was recently attempted in Ghana for example, with the planned creation of two utilities.

B4.2 SCOPE

B4.2.1 What services can be aggregated?

Aggregation can take place for a single component of water services (such as bulk water supply). For example, bulk supply services may be provided by a single provider under the control of a higher level of government, especially if they are linked to the strategic management of water resources and require large-scale works that could not be managed by a single municipality due to water scarcity. Such aggregated structures for bulk water supply exist for example in Morocco (ONEP), South Africa (Umgeni Water, Rand Water, etc.) or India (State water companies).

In addition, it is possible to aggregate only water services or water and sanitation together. Those services can also be aggregated with other types of public services managed at the local level, such as energy services (electricity, gas), waste management, primary health care services, primary education, environmental services, or cultural services (e.g. theatres). In fact, aggregation of one type of service is often used as a way to test the willingness and ability of municipalities to cooperate and can lead to the aggregation of additional services later. For example, in Hungary, a rural municipality, Dunavarsany and three of its neighbors formed a Water Association in 1990 to build and

operate a water system. Two additional municipalities joined in 2000, to form a Wastewater Association. This group of municipalities is considering creating a grouping for solid waste services. In France, water services triggered municipal aggregation in many areas, and new forms of aggregated structures are now being created to provide a very broad range of local public services.

B4.2.2 What functions can be aggregated?

Water and sanitation services comprise a series of operating functions. Aggregation can allow the sharing of one or more of those functions: not all of these functions necessarily need to be aggregated at once. Key operating functions that can potentially be aggregated are presented in Figure 4.2.

Figure 4.2 Key operating functions that can be aggregated

Operations	• Routine system operation • Maintenance • Quality control • Commercial functions • Customer billing • Customer relations
Management	• Financial and technical management • Strategic planning and capital works design • Human resources • Legal departments
Procurement	• Regular or specialised inputs • Goods and services (including carrying out of supervision of large works)
Investment	• Either for maintenance operations or new projects • Either for projects at the municipal level or shared projects (especially including large water resource or sewerage schemes that cannot be managed at the level of the single municipality
Financing	• For identifying and procuring financial sources

Any of these functions can be aggregated in isolation or within a group of aggregated functions. For example, by law, syndicates in France do not have to aggregate all operating functions and can choose to aggregate only the maintenance of waterworks for example. In the SDEA structure in the Bas-Rhin, municipalities must at least transfer maintenance functions and can pick and choose other functions to transfer to the regional syndicate.

B4.3 PROCESS

B4.3.1 Should the aggregated structure be permanent or temporary?

Aggregation can either be permanent or temporary.

Temporary aggregation refers to circumstances when municipalities decide to work together for reaching a particular objective and revert back to their individual operation once it has been reached. Temporary aggregation is usually based on carrying out a specific project that requires bringing in particular skills, or for which a certain scale must be reached.

It can be conducted as an experiment, to test the potential for deeper and more permanent aggregation. Temporary aggregation may take place in a number of instances:

- To prepare contractual arrangements for introducing private sector participation, as it is currently being attempted for procuring a management contractor in Karnataka (India), for example;
- To obtain a loan for investments and access funds that are only available above a certain threshold. This is often the case in Eastern and Central Europe, due to the rules governing access to European Union financing for asset development and improvement (as it was the case in Estonia);
- To carry out specific investments and build capacity at the local level before decentralization. This unique form of temporary aggregation was adopted in South Africa through "Build operate Train Transfer" contracts with private operators in the four poorest Provinces, in order to build the capacity of local governments to manage their water services.

More commonly, permanent aggregation is introduced through the creation of a specific entity that is going to operate the services in an aggregated manner, and when the aggregated entity builds physical assets that cannot be easily broken up between members. This permanence is generally enshrined in a legal instrument, such as legislation (for example, in England and Wales, the 1973 Water Act established the boundaries of the Regional Water Authorities; in the Philippines, the Partido Development Administration was also established by legislation) or the Agreement establishing the association.

B4.3.2 What type of process can be followed for implementing aggregation?

When local governments can see the benefits of aggregation at their level, they may choose to drive the aggregation process. In other cases, external intervention may be required because voluntary aggregation is not effective and municipalities do not seek to aggregate by themselves: this can be done through the provision of incentives for aggregation or through mandating.

Voluntary aggregation

Voluntary aggregation taking place with no external intervention is relatively uncommon, or has a low probability of success. Lasting examples include the formation of syndicates in France, although even in this case, the representatives of the central government (the prefect) can intervene to "force" one or several municipalities to join the process of aggregation. Similarly, in the Philippines, aggregation is largely voluntary but issues related to local interests or the unequal distribution of access to water resources have stalled some aggregation processes.

Incentives for aggregation

Central governments may provide incentives to facilitate the aggregation process, which can be either political or financial. For example, central

governments may provide subsidies only to aggregated providers, or provide the aggregated provider with more favorable terms than isolated applicants. Examples of the type of incentives used in the cases under review are presented in Table 4.2 below.

Table 4.2 ***Financial incentives provided by Central Government***

Case Study	Financial Incentives
Hungary	Central government grant funding can be raised by 10% if a grouped entity applies for the grant/ loan instead of a single municipality
Brazil	During the PLANASA era, only municipalities that had signed a concession agreement with a State Water Company were able to access subsidies and financial investments

Mandated aggregation

If incentives are not sufficient, or it is deemed that they would not work, central governments may resort to mandating aggregation. Mandated aggregation is often resorted to when national interests are deemed to be more important than local interests. This would, for example, lead to aggregation in order to facilitate sharing of costs or water resources from water rich or low cost areas to water poor or high cost areas. Mandated aggregation can overcome resistance at the local level to aggregate voluntarily or an inability to respond to incentives where capacity at the local level is too weak to effectively provide services.

In cases of mandated aggregation, a comprehensive set of supporting institutions, legislation, regulation and guidance on proceeding is generally needed for successful implementation. Without such support, local governments may not know how to proceed, or may have differing interpretations of national intentions; as a result, implementation flounders due to heightened local politics. Such was the case in Italy, where the implementation of the Galli law, which contained aggregation goals and objectives, was stalled due to the lack of support and guidance from the central government at the regional and local levels. Following a similar failure of voluntary aggregation in the Netherlands, the Government gave some specific powers to the Provincial governments to lead the reorganization of water services and to prepare binding reorganization plans. The legislation also granted the Central Government powers to draw up and enforce reorganization plans if the provincial government failed in this undertaking. Despite these new powers, local resistance was still strong and the process of reorganization took more than 10 years to complete in some instances, as in the province of South Holland.

Aggregation cases that have been totally mandated from the start of the process to the end are relatively rare, with England and Wales being the exception. At the time, England had a strong Central government and relatively weak local governments; deteriorating water services and mounting investment needs due to demand growth led to the successful reorganization of the water sector which was carried out in less than 3 years.

A number of key issues need to be addressed when implementing aggregation. These issues tend to be the same in all processes, although the responses and solutions tend to vary widely. This section discusses a number of such issues, such as the type of governance arrangements that can be used or the rules about entry and exit from the aggregated structure, and sets out ways in which those issues have been addressed in the case studies or in more general experience, as examples of potential solutions.

B5.1 FORMS OF AGGREGATED STRUCTURES

When considering aggregation, it is important to define the institutional form of the aggregated structure, as this would often determine the type of process that can be adopted and the distribution of responsibilities between the member municipalities and the aggregated structure itself. There is a wide range of possible aggregated structures, depending on whether aggregation is temporary or permanent, and on whether the municipalities wish to retain some responsibilities or transfer all functions to the aggregated structure.

It is necessary to consider the aggregation of two types of functions that are generally municipal responsibilities: service provision and oversight of service provision (which would broadly involve the monitoring of service quality and the approval of tariffs). Aggregation forms appropriate for each function are discussed below, although such functions may not always be clearly separated, especially when some public service providers are self-regulated.

B5.1.1 Structures for aggregated service provision

The simplest form of aggregated structure for service provision may be a loose association, headed by the lead municipality that effectively provides leadership and resources for the entity. This is the case, for example, in Dunavarsany (Hungary), where six municipalities created a Wastewater Association led by the largest municipality, Dunavarsany, which carries out all administrative activities on behalf of its members. Such loose associations may be an appropriate way of testing the willingness of municipalities to work together on specific services before establishing more integrated structures for those or other services. In that case, supervisory functions are more likely to be retained by the municipalities, as in that particular case.

A more strongly integrated and permanent structure may be created to provide water and sanitation services to the member municipalities, such as the "syndicate" model in France, a permanent structure with its own staff, which offers different combinations of services to different municipalities according to their requirements. For example, the SDEA syndicate in the East of France provides services to 453 member municipalities and employs 480 employees, most of whom are regional public servants.

The most integrated type of structure usually provides several public services in addition to water and sanitation services. An example is the Partido Development Administration in the Philippines, which provides water services but also manages communications, training services, port facilities, energy programs, tourism development, fish processing, health services, economic zones, local roads and railways for 10 municipalities in order to accelerate development through an integrated approach. Such entities often turn into a supra level of local government and have been criticized when they result in a reduction in local democracies. In France, for example, new groupings such as the Urban Communities (as in Nîmes-Metropole) provide a wide array of local services but citizens only indirectly elect their Board members, through their municipal representatives.

B5.1.2 Structures for oversight of aggregated service provider

Levels of government in charge of providing water and sanitation services are often in charge of overseeing them as well. The creation of an aggregated structure may or may not result in the simultaneous transfer of those oversight functions to an entity at the same level as the aggregated service provider. In the SDEA syndicate in France, for example, approval of tariffs was transferred to the body that oversees the syndicate. Some municipalities may refuse to transfer their oversight functions, because that supposes relinquishing an important part of their local prerogatives, and that may be a reason for them to refuse to aggregate.

The Galli Law clearly established this distinction in Italy. The law required that an ATO Authority be created for each ATO (Optimum Service Area), and be in charge of preparing "Water Resource Plans" for the management, rehabilitation, expansion and operation of the services in the ATO and of appointing one or several managers for the services to be provided within the ATO. The ATO Authority may therefore be supervising service providers operating at a smaller scale than the ATO.

Alternatively, oversight functions may be transferred to a structure at a higher level of government than the entity providing services. This can be done, for example, by transferring oversight functions to a regulatory body at the level of the Central Government. In England and Wales, for example, whereas the RWAs were both in charge of service provision and self-monitoring, a central regulatory body was created at privatization in 1989 in order to improve the effectiveness and independence of regulation.

B5.2 GOVERNANCE ARRANGEMENTS FOR AGGREGATED STRUCTURES

The level of local democracy in the aggregated structures will largely depend on the internal governance arrangements for those structures. Some municipalities may resist aggregation as they fear they would loose control over their water services, which have a significant impact on the daily life of their citizens and carry a lot of weight in local politics. Providing them with adequate representation on the Board of the aggregated structure can alleviate

such fears. On the other hand, a structure with no recognized leader or with fragmented modes of representation may be prone to conflicts and exposed to high risks of failure. For example, in the Laguna Water District in the Philippines, one town (Los Baños) dominated the Water District, which led to a perception within the smaller towns that aggregation was not in their best interests; as a result, those towns tried to exit the grouping and the goal to attract a private sector operator was not met. It is therefore important to define governance arrangements that balance the need to represent all member municipalities and avoid fragmentation and conflicts.

B5.2.1 Differences of interests within an aggregated structure

In most cases, the aggregating entities do not have exactly the same interest in the process. Entities with different characteristics and objectives should still be grouped by a sound and viable agreement. This requires that various interests be equitably represented in the agreement, and that those who lose some previous advantage through aggregation be adequately compensated.

Grouping entities with various size

When one of the members of an aggregation entity is much larger than the others (for example, when it represents more than 50% of the customer base), it is suitable to give that entity some special position in the grouping such as chairing the Board (see the case of Nîmes, France), or hosting the shared facilities and offices (see Dunavarsany, Hungary).

Grouping entities with and without access to water resources

When some of the members have specific water resource needs (e.g. access to new water resources), they may need to pay a fee (water rights) to the members providing these resources. Insufficient compensation can lead to difficulties (see the case of Laguna-LGU grouping in the Philippines).

Grouping entities with various unit operating costs and various financial viabilities

High difference in production costs should be reflected in tariffs. A uniform rate can lead to difficulties if some members feel that they could get a lower tariff by leaving the grouping. In certain cases, tariff harmonization may be preferable, as discussed in section 5.6.

B5.2.2 Methods for allocating share and voting rights within a grouping

One of the potential ways for representing entities with different powers and interests is to allocate voting rights on the representative structures of the aggregated entity in a fair and workable way. As it is not possible to overcome what can be fundamental differences between those entities, it is difficult to design a perfect rule for allocating voting rights when the entity is created, and which allows for evolution as new members enter the structure. For example, it becomes difficult to grant every entity within the grouping a vote when there are more than 50 members, as it would make it much more

difficult to formulate decisions. The relative merits of alternative methods for allocating voting rights are compared in Table 5.1. below.

Table 5.1 Comparative advantages of alternative methods for allocating voting rights

Method for allocating voting rights	Potential Advantages	Potential Drawbacks	Examples
According to the percentage of population in each entity	The most democratic rule	Small entities can be deprived from voting rights	This rule was adopted in England and Wales. This meant that some local governments did not have representatives in the new RWAs, as the Board of Directors could not function with so many members. This was one of the most contentious aspects of the reform.
According to the number of customers/ number of connections or the value of the assets	A sound economical basis	Varies from year to year	Such rules are seldom adopted because it would be more difficult to enforce and to monitor
One entity = one seat	The simplest rule	Can be unacceptable for larger entities	This rule was adopted in the SDEA in the Bas Rhin, with 450 representatives (for 453 municipalities) on the Assembly. Such Assembly only meets once a year for long-term decisions.
Specific powers for the dominating entity, if there is one	Necessary to gain confidence of the larger entity	Small entities have limited influence	In the Philippines, in areas where one of the entities is significantly larger than the others, a majority vote of 75% within the larger entity is sufficient for aggregation, so long as the smaller entities agree to it.
Mixture of the two solutions above	A more democratic rule with a minimal representation for small communities	May deter the more powerful municipalities from joining	In Nîmes Metropole (France), the system of seat attribution for the deliberative assembly assures a sharing of powers amongst the municipalities while limiting the influence of the main city, Nîmes. While Nîmes represents more than 40 % of the total population, it holds 32% of the seats in the Assembly.

Voting right allocation is a key factor in determining the level of responsiveness to local needs of the aggregated structure, and ultimately, its chance of success. For example, the SDEA in France is governed by an assembly of 450 representatives (one for every community over 3,000 inhabitants), which meets every year at General Assemblies to define key policies for the grouping, including tariff policies and elect the president of the syndicate. Such democratic representation is in sharp contrast with the set-up of the Regional Water Authorities (RWAs), which were created in England and Wales in 1974 following a rapid process of mandated aggregation. A Board of Directors governed the RWAs, with representatives from the central and the local governments (the latter having majority on the Board).

Two factors limited local accountability of Board members in the RWAs: even though the Board could choose its Chairperson, a Central Ministry appointed the Chief Executive of each RWA and not all local authorities could be represented on the Board.

B5.2.3 Limiting political interference

An entity managing infrastructures with a lifetime exceeding 30 years must be protected from short-term political uncertainties, and especially political tensions resulting from the political make-up of the members of the aggregated structure after each election. There are several ways to do that.

Establishing firm rules in the Articles of Association

The Articles of Association must contain rules to stabilize the grouping's governance and prevent abrupt and unforeseeable policy changes. They must define precise rules regarding depreciation, accounting, tariff policy, service quality, service extension policy so that these important issues could not be the object of overt political interference. The stability of these rules is vital to ensure service long-term service improvement. It would therefore be suitable that changes in these rules cannot be introduced without a strong majority of the board (e.g. two thirds of the voting rights and two thirds of the municipalities).

Developing a clear information strategy

In addition, politicians can use the aggregation rules and constraints as arguments to criticize their opponents during voting campaigns, which can undermine the whole aggregation process. To overcome these difficulties, a strong and clear information strategy for customers and community leaders is crucial for successful aggregation, and should be considered as a central role for the board of the new entity. The responsibility of the managing team of the entity is therefore to provide the Board with reliable and relevant data, that allows it to build a good customer information campaign.

B5.3 ASSET OWNERSHIP

One of the key decisions for defining the aggregation model is whether asset ownership should be transferred to the aggregated entity, or whether they should be retained by the member entities. The aggregation of some functions calls for the aggregation of assets, whereas others do not: for example, the aggregation of investment functions would generally require asset transfer, at least for new assets and potentially for existing assets. Prohibition against asset transfer (whether to private entities or to other municipalities) is often a barrier to aggregation of investment functions, as experienced in Brazil and Hungary, although aggregation of operating and management functions is still possible in those cases.

B5.3.1 Determining whether assets should be transferred to the aggregated entity

Investments, depreciation policy, and asset valuation are often very sensitive components of the aggregation process and of the financial management of the aggregated structure. For this reason, some municipalities prefer a relatively low level of aggregation, with no transfer of assets to the new entity. Several options of low-level aggregation (i.e. with no asset transfer) exist, as shown below.

Table 5.2 Aggregation options relative to asset transfer

Type of aggregation	Asset transfer?	Example
Aggregation in a new entity	Sharing most facilities	In England and Wales, all assets and liabilities were transferred to the new entities
Grouping	Use of some facilities is shared, but not ownership	In Dunavarsany (Hungary), the major assets remained owned by the lead municipality
	No shared facilities	In the SDEA syndicate in France, services are provided to 453 municipalities by the same structure but with few shared facilities
Clustering for a specific purpose	No shared assets or facilities	In Mali, 65 rural water service providers are served by the same accounting service provider (CCAEP)

The transfer of asset ownership is often recommended or carried out because it is perceived to allow deeper and more beneficial forms of aggregation, although it can also have significant drawbacks, as shown in Table 5.3.

Table 5.3 Potential advantages and drawbacks of aggregating assets

Potential advantages	Potential drawbacks
• Helps rationalize operation and take advantage of some potential economies of scale • Gives more stability to the aggregated structure as it makes it more difficult for one of the municipalities to exit	• If important assets are transferred, it is more complicated to accept new members (they must pay for some share of the assets to other members) and to let members leave the grouping (repayment is generally difficult). The grouping size is unlikely to vary.

B5.3.2 Determining which assets should be transferred

When aggregation is driven by a new investment (for example, in a shared wastewater treatment plant), it would be important to transfer ownership of the assets for which the entities formed an aggregated structure. But this is not an absolute rule. If such asset ownership transfer is not possible due to legal constraints, one entity may be the owner of the facility and sign a special service contract with the other entities. This solution was used in Dunavarsany (Hungary), where the main municipality owns the treatment plant used by the six municipalities in the grouping.

Whether or not other assets should be transferred largely depends on what they are used for, and whether they can be used jointly by several entities in the grouping or whether they are only relevant for one entity.

Table 5.4 Importance of asset transfer according to types of assets

Assets whose transfer to the new entity is the most critical	Assets whose transfer is less important
Assets that provide a service common to the various entities, such as: • Production assets (borehole, pumping station, treatment plant), when several entities group to exploit the same water resource • General storage facilities • Wastewater treatment plant, when several entities decide to jointly treat their waste water	Assets that concern only one entity, such as: • Water distribution network • Local storage facilities • Sewerage network

Regarding assets that are going to be developed in future, the guiding principles should be the same as for existing assets. The new entity should focus on investing in shared facilities (such as treatment plants) and avoid interfering with investments for services that it is not fully responsible for (such as distribution networks if distribution functions are not aggregated).

B5.3.3 Compensating transferred assets

Uncertainty about asset ownership and the allocation of responsibilities between the individual entities and the aggregated structure can be a frequent source of conflict. Therefore, a precise registration of the investments made on behalf of the grouping is very important and clear rules for compensating transferred assets should be defined. In the Netherlands, for example, the law that strengthened the power of the provinces for organizing aggregation stipulated that the owner of a water supply company to be taken over had to be compensated for the loss of future profits, which required a thorough investigation of technical systems, since take-over partners had to pay the net present value of the predicted costs and benefits for the next ten years. This somewhat complicated the process and generated delays in the process.

If no other rule exists, for every pre-existing asset that is transferred, an independent expert should evaluate the asset value at the aggregation date, and establish a detailed inventory and a depreciation schedule for future years. There are three main possible ways of compensating the individual entities for such asset transfer: through the granting of shares in the new entity, through direct reimbursement by other members or through the payment of a lease fee. The potential advantages and drawbacks of these solutions are reviewed below.

Table 5.5 Potential advantages and drawbacks of alternative compensation solutions

Compensation solution	Potential Advantages	Potential Drawbacks
Shares in the new entity	Nobody has anything to pay	The entity bringing more assets has more voting rights, even if it is small
Direct reimbursement	All debts are cleared at the agreement signature	Could absorb most of the cash available for some entities, limiting their capacity to invest in new facilities development
Lease fee	A good formula for assets which cannot be sold (e.g. water rights)	Potential difficulties if the leaseholder wants to leave

B5.3.4 Dealing with water rights as valuable assets

One of the most frequent factors leading to the formation of an aggregated structure is the need for one or more municipalities to access a new water resource or a potential discharge system for a wastewater treatment station. These municipalities would then seek to group their services with another municipality that has access to such a natural resource. In such a case, the water rights (or the rights to discharge effluents into a river or the sea) constitute one of the most significant contributions to the aggregated structure's assets and they must be valued appropriately.

Failure to recognize them as important assets may create difficulties, as those municipalities bringing access to water resources may feel that their contribution is inadequately acknowledged. This emerged as a significant issue in the Laguna-LGU grouping in the Philippines, where the perceived value of the water source due to environmental and demand constraints made one town unwilling to share water resources with the other entities in the grouping without compensation, and led to the failure of the grouping.

Water rights could be converted into shares of the new entity, or sold by the owner to the new entity. However, valuing water rights is difficult, because in many cases, a true market does not exist for these rights. In the absence of a market for water rights, two possibilities exist to compensate for their transfer:

- Water rights can be transferred to the new entity (and the municipality where the resource is located definitively gives them up and receives a financial compensation or some shares of the new entity);
- Water rights can be leased to the new entity, and paid for through an annual fee. In such case, it is very important to estimate the value of the fee over a long contract duration (10 years at a minimum, or preferably 20 years), so that the municipality owning the water rights is not tempted to exit the grouping prematurely.

B5.4 TRANSFER OF STAFF

During the aggregation process, employment issues can be very sensitive and can potentially lead to the failure of the whole process. It is therefore important to consider issues of staff transfer very carefully.

The transfer of the entire staff from the individual entities to the new aggregated structure is often not necessary, nor even desirable, given that:

- The creation of a new entity is an opportunity to recruit new executives, likely to support innovations;
- One of the main economies of scale to be achieved through aggregation is precisely a staff reduction, to reach a lower ratio of staff per connection;
- Employees of existing municipal providers are likely to be torn between their loyalty to the old and to the new employer; and
- The new management team needs a complete autonomy as regards to staff management issues.

However, the transfer of some part of this staff to the new entity is often desirable and even essential:

- For technical reasons: former employees are the people who know the network better; and memory of the skilled workers is essential to guarantee service continuity after the grouping;
- To manage broader labor issues: municipal employees have few job opportunities apart from the new entity, which will manage the water and sanitation services in their municipality;
- For political reasons: mayors are accountable to their citizens concerning jobs lost and gained during the grouping.

For these reasons, in most of cases, the aggregation process includes transferring some key staff to the new entity, often on a voluntary basis.

B5.5 ENTRY AND EXIT CONDITIONS

B5.5.1 Entry conditions

A desire by municipalities to join an existing aggregated entity is a sign of the success of the new entity – as was the case in the SDEA in France or in Dunavarsany in Hungary. Entry by new members can also reinforce economies of scale and increase the demand and revenue base for the grouping, as shown in Box 5.1. below.

Box 5.1 Incremental growth: the example of the SDEA syndicate in the East of France

SDEA (Syndicat des Eaux et de l'Assainissement du Département du Bas-Rhin) – France: Launched in 1939 by 55 municipalities to manage their water services, the Syndicate of water and sanitation services of Bas-Rhin (SDEA) has grown step by step and has now 453 member municipalities. In addition to this remarkable increase in membership, the scope of the structure has also grown since 1998. The number of employees has been multiplied by 20, while the volume of its activity in monetary terms has increased by a factor of 150. The syndicate provides services to approximately 655,000 inhabitants and operates in over 80% of the Bas-Rhin area.

As a result, entry should generally be encouraged, or at the minimum, the Articles of Association of the aggregated structure should not prevent it. Before allowing a new member to enter the grouping, it would be recommended to conduct a thorough analysis of the impact of such

incorporation on the existing grouping, and to ensure that the following conditions hold:

- The new member accepts the general conditions of the grouping without too many changes, as the transaction costs could become very high if it was necessary to re negotiate the agreement for each new entry; and
- The inclusion of the new member does not change significantly the grouping's financial viability.

Once the new entry is accepted, the financial impact of this incorporation should be carefully evaluated in order to determine the value of the assets that may be brought in by the new entity, any potential financial compensation for such assets upon entry and the number of shares or voting rights to be allocated to the new member.

B5.5.2 Exit conditions

Most aggregated structures make it difficult or costly for an existing member to leave. This is to discourage such exit, as it can have a serious impact on the grouping as a whole for the following reasons:

- If assets were merged upon entry, exit from an entity would require dividing shared assets. The valuation of old infrastructure can be difficult and constitutes a potential source of conflict;
- Shared facilities often comprise equipments which cannot be physically divided (such as pumping stations or treatment stations);
- Exit from a municipality may weaken the legitimacy of the grouping, which would be seen as not having been able to offer attractive conditions to its members, and it could be the prelude for a more general dismantling;
- Exit can reduce the grouping's customer basis and it can undermine its financial viability if the leaving partner is a large shareholder. As compensation, remaining members may be obliged to increase tariffs.

For these reasons, the Articles of Association of the aggregated structure should include a section about exit conditions and rules. In the absence of such rules, many municipalities may prefer to stay out of the grouping as they would want to have some clarity about what would happen if conditions changed, and whether they would be authorized to leave the grouping.
Such rules should establish rather severe exit conditions, such as:

- A minimal time between the time when the request to leave the grouping is formulated and the implementation of this separation (at least one year);
- The leaving entity should support transaction costs, as well as the costs of replacing shared facilities and infrastructure.

In the case of Dunavarsany in Hungary, exit rules make it very difficult to split the grouping. Members must reimburse the State for any investments made that could not be efficiently used following the split and for the grant element of the financing they received as a result of being part of a grouping.

B5.6 TARIFF AND SERVICE LEVEL HARMONIZATION

B5.6.1 Harmonization of service levels

One of the main objectives of aggregation is to improve service quality, as the constitution of a larger customer basis makes it possible to hire more qualified staff and may make it possible to improve operating processes. That does not mean that the service quality is immediately improved or brought to similar levels across the grouping. The various members usually start from very different situations and the grouping will always have to manage an intermediate phase, during which the service quality will remain unequal between the various members, even if a progressive convergence is implemented. Such a difference in quality usually justifies a difference in tariff rates (see below).

Standardization of the service level proposed to all customers constitutes however a significant objective. The grouping should be able to reach it after a few years (ten years as a maximum, preferably five years), as a lower level of service becomes unacceptable for some customers after some years and can make the grouping unstable.

B5.6.2 Tariff harmonization

Tariff harmonization can constitute a powerful unifying force for the aggregated entity, as all consumers in the service area receive the same service quality for the same price and they feel that they are customers of the same utility. It was immediately introduced in most Regional Water Authorities at the time of their creation were created in England and Wales in 1974, against the recommendations of the Jukes Committee (at the level of the Central Government), which had advocated a more gradual transition. When production costs are different between the various entities, tariff harmonization obliges some users to subsidize the service provided to others. This ability to cross-subsidize (i.e. share costs) can even act as a driver for aggregation, as it did in the case of Scotland.

However, cross-subsidization can generate strong resistance amongst municipalities that are losing out and can ruin the whole aggregation process. It may also induce a service operator to focus its attention on the areas that are less expensive to serve, at the expense of the more expensive ones, as a way to maximize its revenues. If tariff harmonization is preferred, service conditions for the operator should be defined in a way that minimizes the potential for giving preference to areas that are less costly to serve over more costly ones.

But such conditions may be difficult to set out or to enforce. This is a reason why many successful groupings do not engage in tariff harmonization, as in the following case studies:

- The SDEA (France) has not unified the tariffs between its members after 65 years of a successful existence and is not planning to do so;

- In Nîmes Metropole (France), the aggregated entity sets different tariffs for each municipality which are not very different from the tariffs that they were using before the grouping; and
- In the Dunavarsany wastewater association (Hungary), each local council sets its own tariff upon recommendation of the operating company.

Potential advantages and drawbacks of tariff harmonization are reviewed in Table 5.6. below.

Table 5.6 Potential advantages and drawbacks of tariff harmonization

Potential advantages	Potential drawbacks
It is a simple solution for a public utility (every customer gets access to the same level of service for the same price).	As with any harmonization, there are winners (those whose tariff decreases or increases slightly) and losers (those whose tariff increases much). Harmonization is particularly difficult to accept for losers if the tariff increase is not directly related to a significant service improvement.
It can simplify negotiations for periodic tariff setting.	It makes it difficult for a community that wants to introduce a service improvement (above the levels of service for the aggregated structure) and finance the improvement through a tariff increase.
It makes it possible to offset inequalities between communities in their access to natural water resources.	Cross-subsidies may be seen as unequal: communities who had invested much before the grouping (and where few new investments are necessary) will finance investments for communities that had neglected their water and sanitation facilities before the grouping.

Such tariff harmonization, even if it is deemed to be an important objective of the grouping, cannot be achieved quickly if initial conditions are too different. It can then be introduced step by step, along with a progressive improvement of the service and can be applied first to the tariff components relating to shared equipment (e.g. the treatment cost if the grouping use a shared treatment station).

As this study demonstrated, experience with aggregation is rich and abundant and many policy lessons can be drawn from such experiences. Aggregation reforms are likely to become increasingly needed, for factors internal or external to the water sector. Policy guidance will be required to explain the potential benefits of aggregation, warn about the potential constraints, and accompany such processes. Aggregation of water and sanitation services is well in place or on the rise in countries where the concept is well understood, such as in France, where groupings are created to meet large and rising investment requirements. This section summarizes the study main findings, based on the case studies and broader experiences, and outlines areas where additional research or support tools should be developed.

Aggregation provides opportunities for improved efficiency of service delivery through economies of scale and scope

In general the WSS sector faces increasing returns to scale and scope. Thus, larger systems will deliver services at a lower unit cost, all else being equal. These efficiency gains derive from a range of factors including sharing of overhead costs across a wider customer base and lower unit input costs through bulk purchases. Increased efficiency means lower costs to customers or better services for the same cost.

There is some uncertainty, however, as to the size of potential economies of scale from aggregation and the factors that drive such scale economies. Further research is required to investigate the impact of both the scale of the combined service area and the number of administrative entities being serviced. This would provide improved guidance on the issue, although the importance of local circumstances will always need to be emphasized.

Aggregation facilitates enhanced professional capacity in service providers

The delivery of water services requires a mix of routine and specialist skills. While routine skills might be available even in highly decentralized service provision, the more specialist skills will rarely be available. This is because highly decentralized systems will not have an ongoing demand for such skills, and nor will they have the financial resources to support the costs of such specialist skills. Larger, aggregated, service providers have the need for, and financial resources to support, specialist skills and thus will benefit from overall improvements in professional capacity.

Cost sharing through aggregation can mitigate the impact of high cost systems

Depending on the precise arrangements, aggregation can be used to mitigate the impact on customers of living in areas with high cost WSS systems. If all

the costs within the aggregated service boundary are recovered equally across each cubic meter of water sold, then those customers living in higher cost areas will face lower charges than if they had to pay for all the costs themselves. The extent of such cost sharing is a sensitive issue and may require central government intervention to be resolved.

Central governments can assist, mandate or provide incentives for the aggregation process

The ideal aggregation process is voluntary i.e. where the participating municipalities fully understand the costs and benefits from aggregation and decide by themselves, that the benefits outweigh the costs. To support and encourage voluntary aggregation, central governments can provide guidance about potential forms for aggregated structures, basic rules for internal management, governance structures, tariff-setting arrangements or entry and exit rules. A specific element of such guidance could be the development of model legal frameworks for aggregation, or model Articles of Association for aggregated entities. This is the approach adopted in France through the passing of very specific legislation on models of aggregated structures. Another specific element could be the elaboration of a clear framework for evaluating the costs and benefits of a proposed aggregation. Such exercises have been conducted in a number of aggregation processes and have usually proved to be useful in clarifying the issues.

In specific cases, central governments can seek to mandate aggregation if it does not take place voluntarily and the perceived benefits from aggregation are large. However, mandatory action can be seen as heavy handed in a decentralized environment – even though the aggregation process and benefits are likely to occur more rapidly than through the voluntary route.

If aggregation makes economic sense, central governments may be better advised to provide incentives in order to stimulate the aggregation process and convince municipalities to group. For example, financial incentives such as the provision of higher levels of funding to an aggregated structure may foster aggregation, as it did in Hungary.

Aggregation has implications for local democracy

In a fully decentralized system responsibility for delivery of WSS services will lie with the mayor and municipal government. Aggregation will, inevitably, see some of that control handed over to the body that oversees the aggregated entity. This may be seen as a barrier to aggregation by individual municipalities. The determination of clear and representative governance arrangements that accommodate the needs of the participants are therefore essential.

At the same time, WSS services can become victims of local government interference through short term, politically motivated, decisions which are against the long term interests of consumers. Pooling oversight through an

aggregated entity can reduce the potential for such interference and provide more stable service provision to customers.

Beyond the WSS sector, local governments are constantly debating about the relative merits of grouping together for service provision and proposed reforms in the WSS sector should take account of such broader processes. It may be that some more general aggregation of local public services may be underway, with the creation of metropolitan areas, for example. Aggregation of WSS services should be coordinated and accompany such broader processes rather than clash with them or create confusion in the allocation of functions between various levels of government.

Aggregation can take many forms and is not static over time

As described in the report, aggregation can take many forms. An aggregated structure may incorporate a small number of towns or an entire region. It may be temporary or permanent; involve the aggregation of all WSS services, or only a subset of those; involve all functions or only a subset, such as securing financing for example. Every form of aggregation has its own characteristics and it is unlikely that a solution applied in one situation can be applied elsewhere without tailoring it to suit the needs of the specific situation to be addressed.

One form of aggregation can be used to test the cooperation of several municipalities before moving into deeper forms of aggregation, either in the WSS sector or in other areas of public service under municipal responsibilities. Clear entry and exit rules can provide such flexibility, although it is usually preferable to limit exit possibilities in order to not destabilize the existing aggregated structure.

In some instances, the creation of a single aggregated entity providing the services may be too difficult or too time consuming to establish. In such cases it may be easier to rely on aggregation "through the market". This occurs when a water company, either public or private, signs contracts to provide services in a number of towns and thus achieves the economies of scale from serving the larger area. This study did not analyze aggregation through the market in detail, however, and the analysis of the pros and cons of this form of aggregation will be done within the broader framework of the Town Water Initiative.

Aggregation can take place without transfer of asset ownership

The issue of asset ownership is often very sensitive because it determines which level of government has ultimate control over service provision. Asset transfer also requires preparation of asset inventories and valuing assets, a difficult and cumbersome exercise which can in some cases stall the aggregation process. This issue should not be over-emphasized, however: it is possible to aggregate service provision without transferring asset ownership. In many cases, the transfer of asset ownership is effectively forbidden, as it is

the case in Hungary for example, although this has not prevented aggregation from taking place. But in all cases, it is important to clarify which institution owns the assets and whether an ownership transfer takes place with aggregation.

Aggregation can fail if benefits are not clearly understood and there is no adequate process in place to implement it: a due process and political will is key to the success of the aggregation initiative

The benefits of aggregation may not be fully perceived by local government representatives who place the short-term interests of their constituency before the long-term general interest. Political will and a due process are therefore necessary for effective aggregation. As with any other reform process that creates winners and losers and short-term transaction costs, aggregation needs a champion, either in the form of a strong individual or an entire institution to drive the process through. Preferably, there would be one such "champion" in each of the organizations involved.

Given the high specificity of different aggregation processes, it appears that external assistance would almost always be required to assist municipalities in carrying out the process, especially in the case of small towns that tend to lack capacity. Such external assistance would also involve a role of facilitation, as an external person is sometimes better placed for facilitating a process that could otherwise become very localized and politicized. Representatives of the central government or local consultants can provide such assistance, but they would probably require training for doing so.

Aggregation of service provision often creates the requirement to reform mechanisms for oversight of the service provider

When services are provided at the local level, they are often overseen at the local level and local politicians usually approve tariffs. The aggregation of service provision inevitably raises the question of whether such oversight functions (e.g. monitoring/tariff setting) should still be carried out at the local level, or whether they should be carried out at the same level as the aggregated service provision. Whichever approach is selected it is important to note that an aggregated entity can harmonize tariff and service levels, but it can also maintain differentiated tariffs and service levels at the local level.

When linking aggregation and private sector participation, be careful to not over-emphasize the need for a larger revenue base to attract operators

Aggregation decisions may be formulated when introducing private sector participation (PSP) into the WSS sector. Implementing PSP and aggregation reform processes simultaneously is not necessarily beneficial, however. Aggregation decisions are fundamental decisions for the sector. Maximizing the efficiency of service provision should be the primary focus, as opposed to maximizing the attractiveness of the transaction. Any proposed aggregation should stand on its own and make technical, economic and political sense.

Annex A

Drivers and Constraints for Aggregation

B7 DRIVERS AND CONSTRAINTS FOR AGGREGATION

This Annex identifies the main drivers and associated constraints for aggregation processes and proposes methods for alleviating such constraints. Drivers and constraints are divided into two main categories:

- Drivers and constraints within the water sector;
- Broader drivers and constraints, especially the administrative and political environment for local government reforms.

A1 DRIVERS AND ASSOCIATED CONSTRAINTS WITHIN THE WATER SECTOR

Within the water sector, drivers and constraints for aggregation tend to be technical, financial, or economic in nature. The following drivers are discussed in turn:

- Access to water resources;
- Integrated Water Resource Management;
- Economies of scale and scope;
- Access to professional support;
- Access to finance;
- Access to private sector participation;
- Cross subsidies.

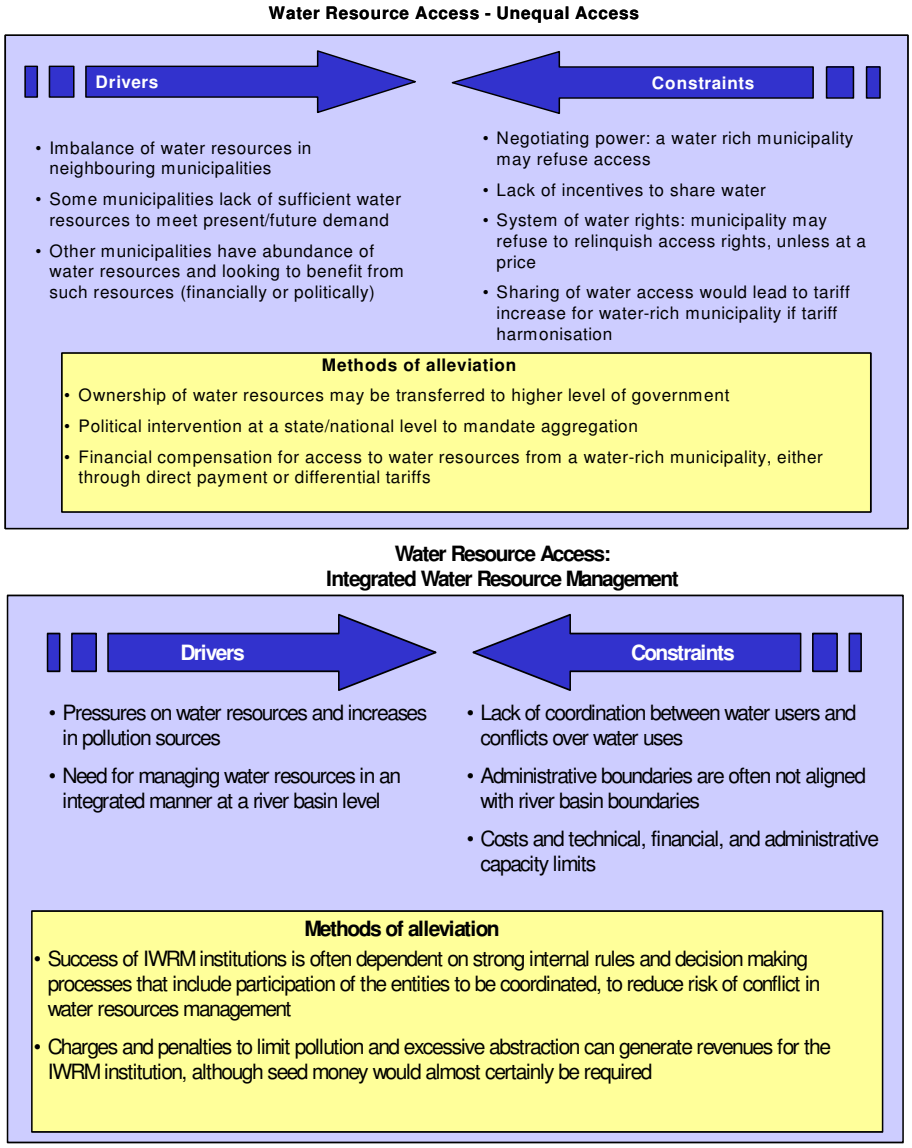
A1.1 Access to water resources

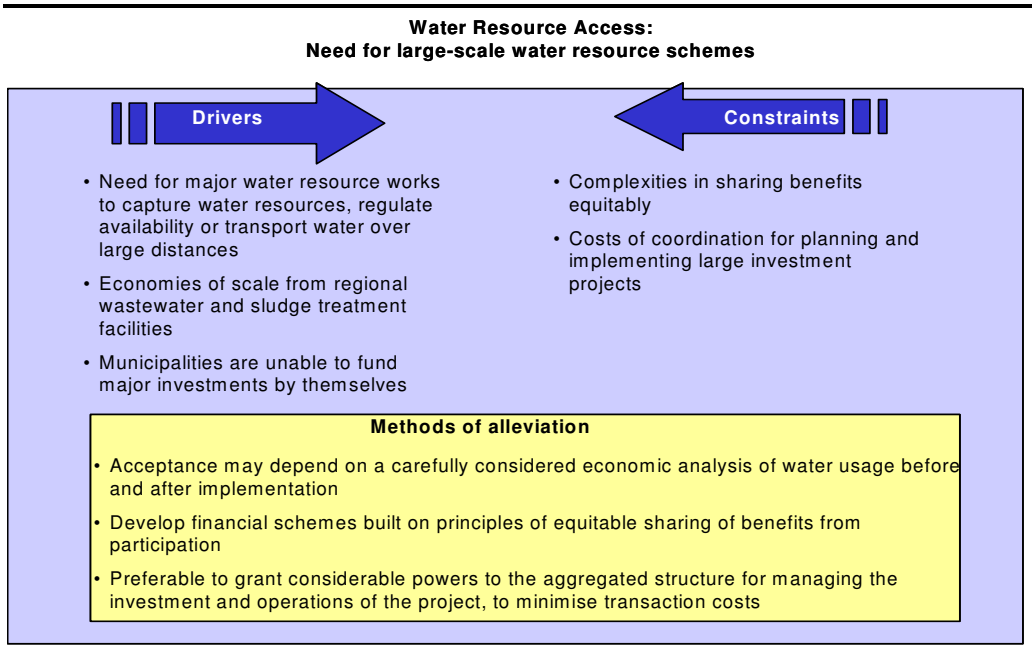
Aggregation can be driven by the need to improve access to water resources or to improve the overall management of such resources within a river basin. This may be because of unequal access to water resources by different localities within a region or country. Alternatively, managing water resources at a higher level than the municipal level may be required because of overall water scarcity or unreliability, which creates the need for large bulk water supply schemes or the management of water resources on an integrated water resource management basis.

Figure A.1 presents an analysis of the drivers, constraints and methods for alleviating such constraints for aggregation processes that are driven by the need to address water resource issues such as:

- Unequal access to water resources;
- Need for large-scale water resource schemes;
- Integrated water resources management (IWRM).

Figure 71.1 Drivers and Constraints related to the management of water resources





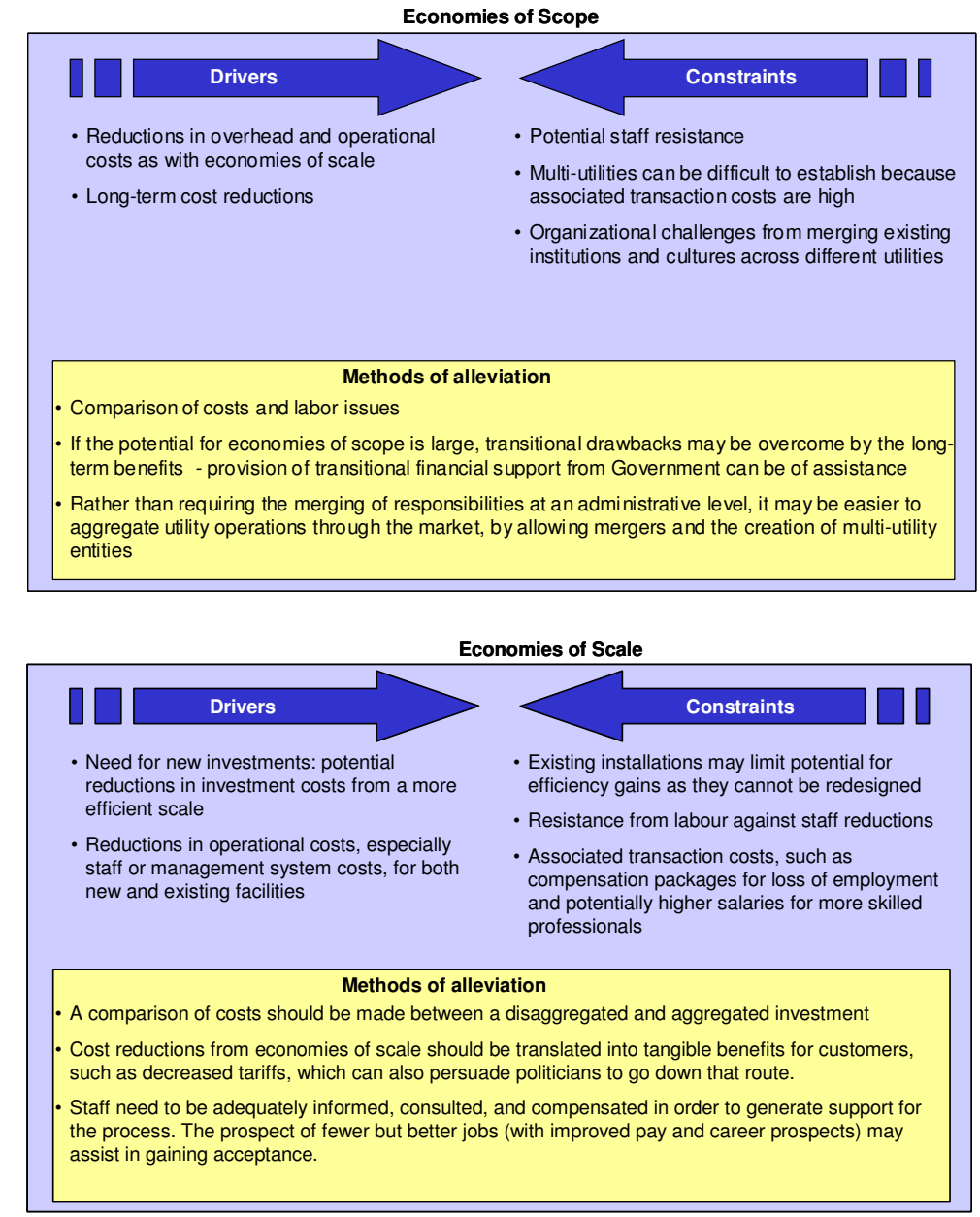
A1.2 Economies of scale and scope

The drive for economies of scale is present in most of the aggregation models. Economies of scale occur when sharing total production costs over a larger demand base reduces the unit costs of production. They can be realized at all stages of the production process, due to efficient production processes and increased bargaining power for the purchasing of key inputs. Whether or not economies of scale can be achieved through aggregation depends on the pre-existing conditions, and especially on whether or not new investments are needed.

Economies of scope derive from aggregating different types of public service that have common operations and/or customer bases. Economies of scope are slightly different from economies of scale: they result from sharing fixed costs, particularly overhead costs, over a larger output. An example would be the aggregating of water and wastewater services where previously they had been separately managed. There may be few specific economies of scale in managing water and solid waste services together but there could be economies of scope derived from the sharing of administrative functions that can be shared over a broader demand base. This can be particularly significant for small towns, where a full administrative staff may not be justified solely for water services, but could be acceptable if their cost were to be shared over a number of other utility services, such as energy or solid waste management.

Figure A1.2 presents the key drivers and constraints concerning economies of scale and scope.

Figure 71.2 Drivers and constraints related to economies of scale and scope



A1.3 Access to professional support

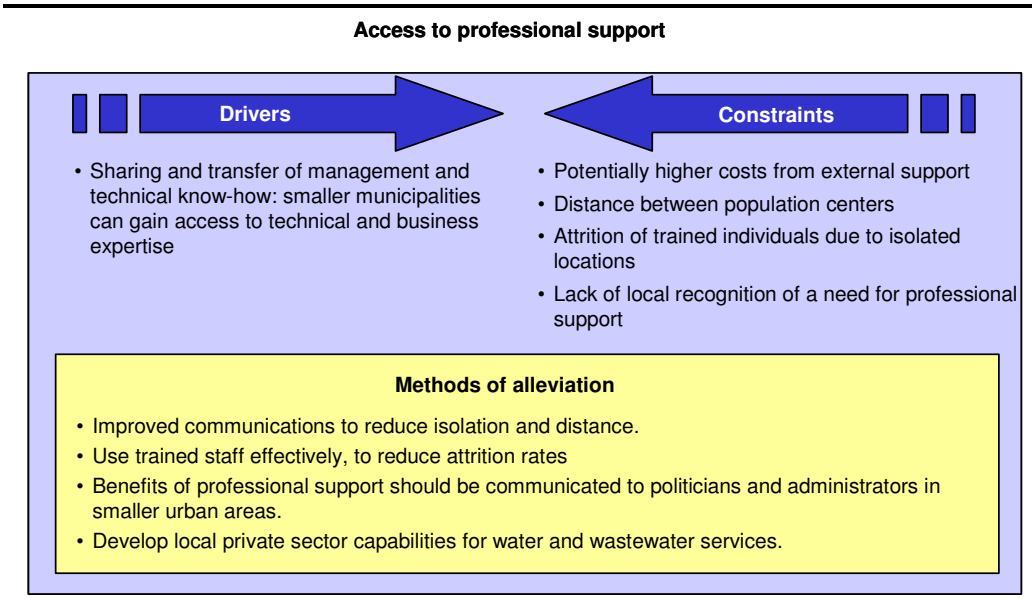
Small municipalities may have sufficient capacity to carry out routine operating and management activities (including customer relation management) but often lack capacity for more skilled activities, e.g. system planning and design, financial management, efficient procurement, advanced maintenance and repairs, water quality testing, and information technology.

Lack of sufficient, adequately trained professional staff and skilled operatives commonly stems from an inability of smaller units to generate sufficient revenue to support the type of operation needed to provide efficient and effective water services. By aggregating the services and revenue from a number of smaller towns, a critical mass can be achieved

capable of supporting the full range of functions. Lack of sufficient professional and skilled support is one of the two most common drivers for aggregation.

A larger operational entity created through aggregation can offer professional staff a more attractive post in their career development and has the flexibility to obtain improved professional support through a mix of in-house staff and contracted-in from the private sector. *Figure A1.3* summarizes drivers and constraints related to access to professional support.

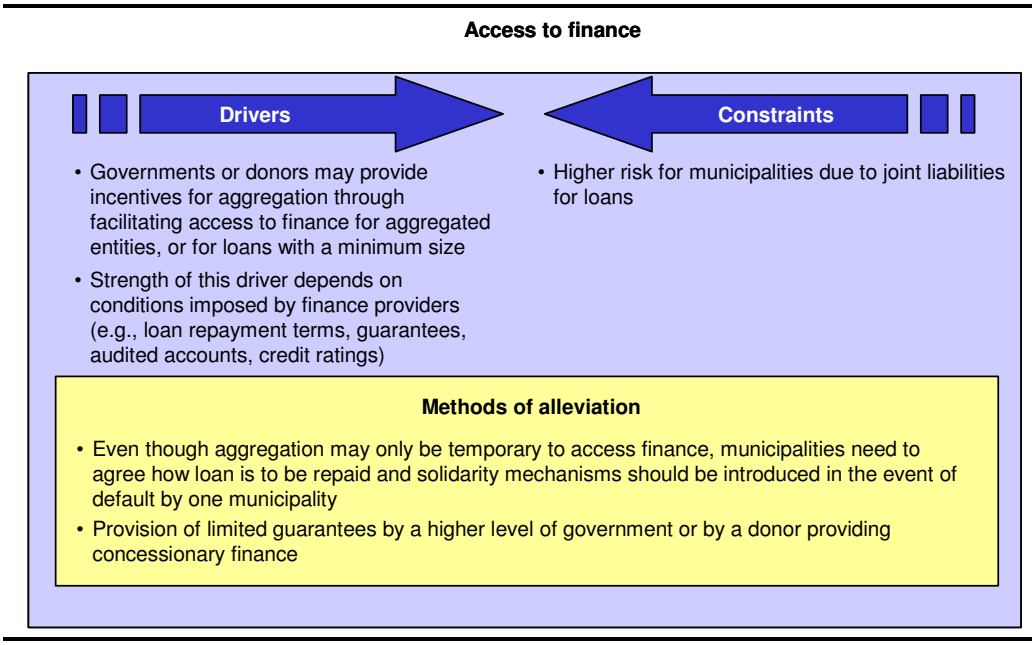
Figure 71.3 Drivers and constraints related to economies of access to professional support



A1.4 Access to finance

An association of municipalities can increase the borrowing capacity of individual municipalities and improve access to concessionary finance from international donors. In the Philippines, this was a primary driver for the aggregation of smaller municipalities within larger groups. There, the range of aggregation models included a temporary arrangement for the purpose of achieving an efficient scale of operation and for securing a loan. Likewise, in Brazil and Hungary, the central government provided financial incentives for municipalities to aggregate or more attractive financial conditions for entities looking to aggregate.

Figure 71.4 Drivers and constraints related to access to finance

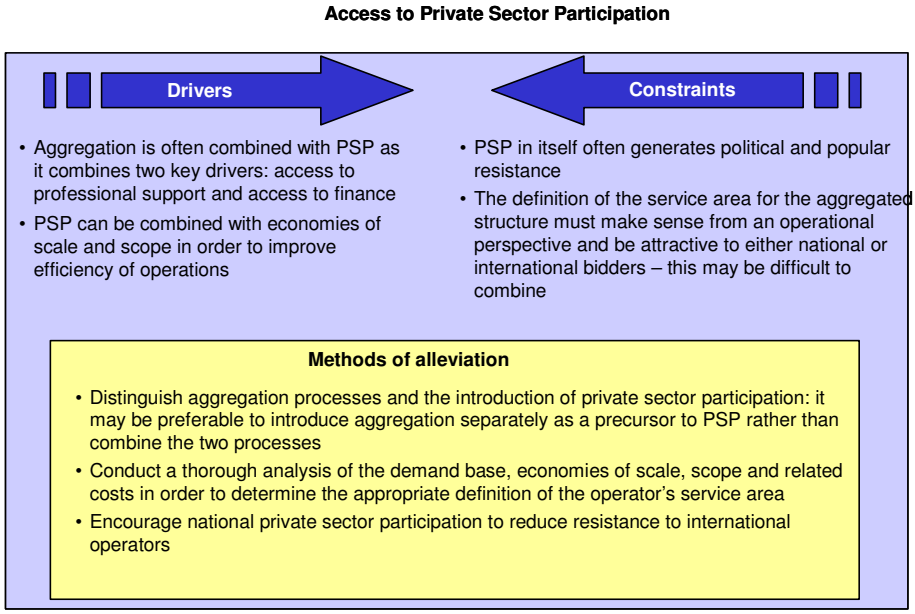


A1.5 Access to Private Sector Participation

A number of aggregation projects have been driven by a desire to increase the attractiveness of the services to private sector operators and, in particular, to international private operators. In practice, aggregation can pave the way for private sector participation well in advance of such private sector participation process, as was the case in England and Wales: a decade after the water sector was aggregated into ten Regional Water Authorities, the companies were privatized through a full divestiture. The experience in England and Wales is relatively rare, however, and the introduction of private sector participation was not an explicit objective of the aggregation process there.

Figure A1.5 presents the key drivers, constraints, and methods of alleviation related to aggregation in order to gain access to private sector participation.

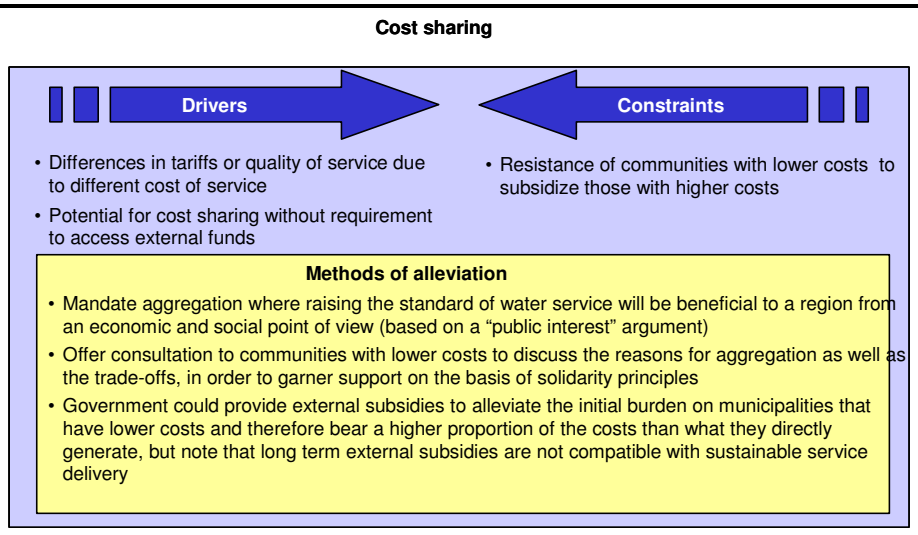
Figure 71.5 Drivers and constraints related to access to private sector participation



A1.6 Cost sharing

Aggregation can potentially make cost sharing between areas with higher cost of service and those with lower cost of service. Drivers and constraints (and methods of alleviation) related to cost sharing are summarized in *Figure A1.6* below.

Figure 71.6 Drivers and constraints related to cost sharing



A2. DRIVERS AND ASSOCIATED CONSTRAINTS OUTSIDE THE WATER SECTOR

This section reviews the drivers for aggregation that fall outside the immediate scope of water and sanitation services but which may nevertheless have a strong impact on the aggregation process, by either

driving it or limiting its potential for success. These are mainly legal, administrative, political, social and cultural factors.

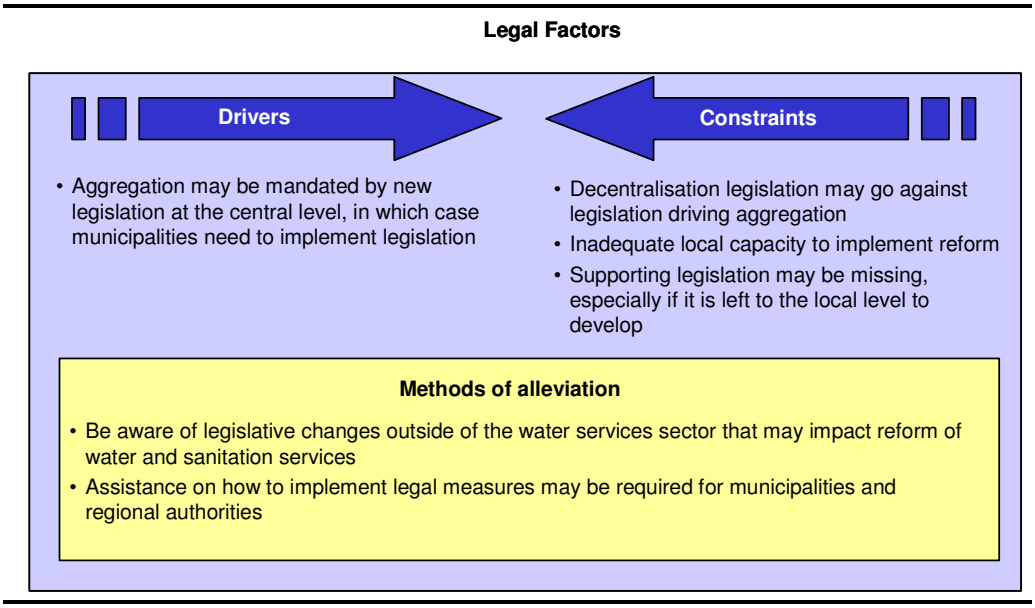
A2.1 Legal factors

Legal factors are likely to drive aggregation when it is mandated from the central government. For example, central governments may pass a law to mandate aggregation or to determine preferred models of aggregated structures, in which case local government have either a legal obligation or a strong incentive to aggregate. Alternatively, legal factors may actually prevent aggregation, i.e. if the law explicitly prohibits aggregation, or if water right ownership regimes make aggregation difficult.

The legal aspects of ownership of water infrastructure assets are important for aggregation. If the central government owns the assets, then mandated aggregation is easier to implement. If assets are owned at a municipal (local) level, this could pose problems for mandatory aggregation.

Similarly, the question of whether water rights are transferable or tradable can make or break the aggregation process. Tradable water rights are being considered in the Philippines amongst clusters of municipalities, particularly where one municipality owns the rights to a water source with capacity well beyond its own needs and is in a position to share this resource with less fortunate neighboring municipalities, drawing on experiences of water right trading in irrigation systems such as in Brazil, Mexico, India, Chile, etc.
Drivers and constraints (and methods of alleviation of such constraints) relating to legal factors are summarized in the figure below.

Figure 72.1 Drivers and constraints associated with legal factors



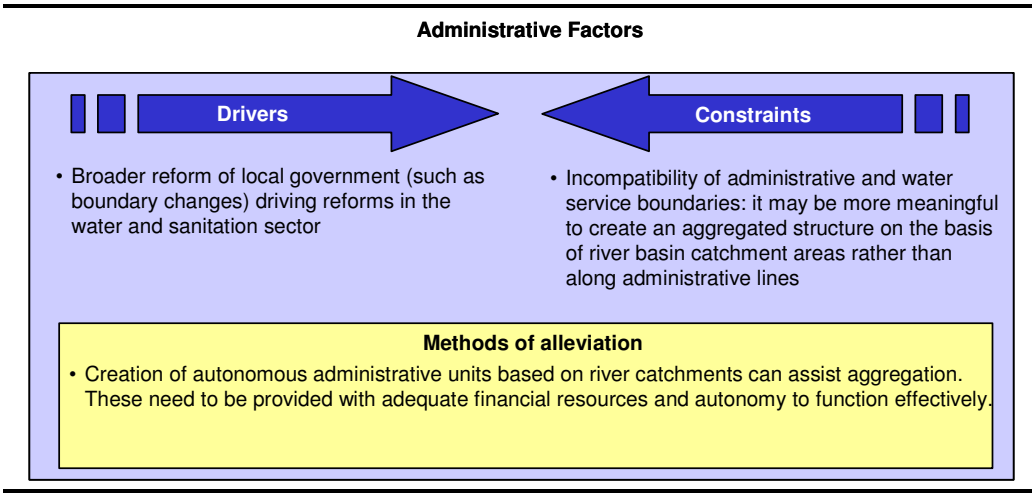
A2.2 Administrative factors

In some cases, the potential for aggregation of water and sanitation services is largely influenced by broad administrative factors, which may induce aggregation or actively prevent it. For example, changes in administrative boundaries of municipalities and municipal areas can be a powerful driver for aggregation of water and sanitation services. In South Africa, the end of Apartheid opened the way for a redefinition of municipality areas, with the aggregation of semi-rural township areas, which are traditionally black areas, into urban, or traditionally white areas. This, together with the decentralization of responsibilities for water and sanitation to local governments, paved the way for aggregation of water and sanitation services, as traditionally white municipalities had to extend coverage of their services to cover township areas and allowed a high degree of cross-subsidization between the two types of areas.

In England and Wales, aggregation of the water sector was concurrent with local government reform: local government units were overhauled by central government at the same time that autonomous river basin authorities were created.

Drivers and constraints related to administrative factors are summarized below.

Figure 72.3 Drivers and constraints related to administrative factors



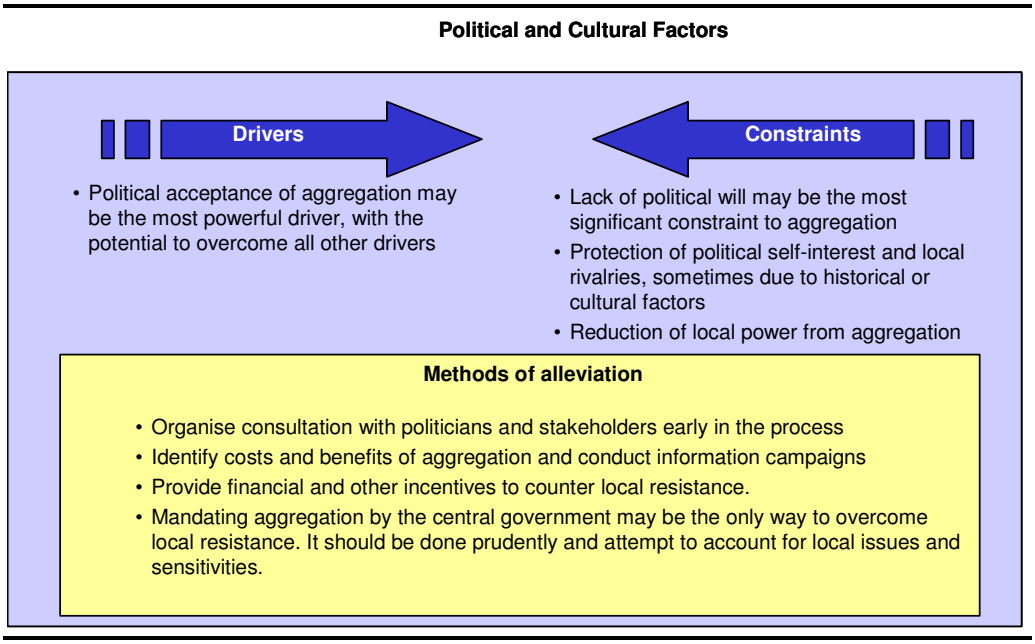
A2.3 Political and cultural factors

Political factors can either be a driver or a constraint for aggregation: there is either political will to integrate, most often at the central level and based on an analysis of the technical or socio-economic drivers for aggregation, or there is resistance stemming from political pressures. In both cases, political will (or lack of it) is often one of the most powerful driver or

constraint for aggregation. Political factors may be combined with cultural ones, when local politics reflect the allocation of power along social, ethnic or religious groups.

Political will is generally crucial for introducing the necessary legislative reforms, but is also required for pushing through the implementation phase, which can still generate political resistance. For example, in Italy, political will existed to pass the Galli Law in 1994 but since then, implementation has been slow, partly due to political resistances at the local level. In some countries, municipalities' empowerment works against aggregation. This tends to happen where municipalities historically had a nominal role in government due to very centralized state systems. With decentralization, municipalities are sometimes loath to render their newly acquired powers to an aggregated authority.

Figure 72.4 Drivers and constraints related to political and cultural factors



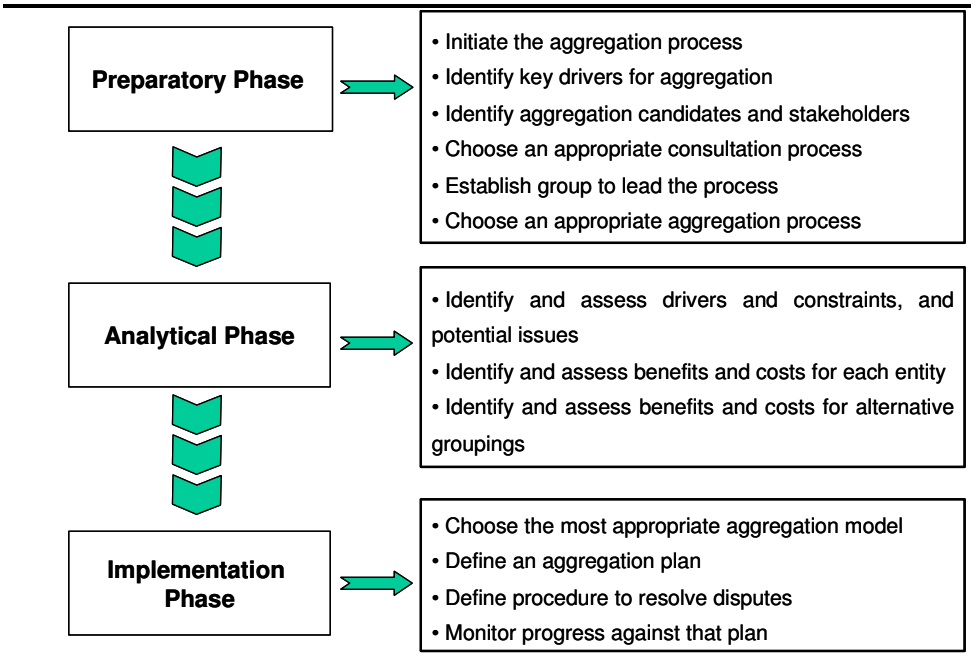
Annex B

Steps in the Aggregation Process

B1 STEPS IN THE AGGREGATION PROCESS

This section formulates initial recommendations as to what an appropriate process for aggregation could consist of, based on the analysis of case study experiences and general experience with such processes around the world.
Figure B.1 shows the general steps as described in this section.

Figure B.1 Steps in the Aggregation Process



However, every aggregation process is likely to be unique, building on specific circumstances and characteristics of the water services in each country. Therefore, the actual process will depend on the starting situation, the model of aggregation chosen, the allocation of responsibilities between levels of government and other legal, social, cultural, and political factors.

B1.1 PREPARATORY PHASE

B1.1.1 Initiate the aggregation process

Generally, aggregation requires a champion to steer the initial development of the reform idea. A number of levels of government (national, regional or local) or even an external party, such as a potential source of funding, can initiate the process. Such champion would generally be responsible for carrying out most of the preparatory steps described below, unless this responsibility is transferred to the group formed to carry out the process.

B1.1.2 Identify key drivers for aggregation

The aggregation champion should help to identify and clearly define the prime driver for aggregation. Although there may be one or more secondary and supporting drivers, it is essential that potential parties included in the aggregation have a clear understanding of the main purpose of the process.
A clear focus for the process will help the aggregation champion to "sell" the case to potential participating entities and to assist them in the onward "selling" of the case to the stakeholders they represent.

In some cases, aggregation is seen as a logical precursor to private sector participation, due to the potential efficiency gains that can stem from both processes combined. However, identifying private sector participation as the key driver for aggregation may not be enough to convince municipalities who believe in the public sector nature of water, and it may be preferable to identify drivers that would lead to aggregation irrespective of the form of management.

B1.1.3 Identify aggregation candidates and stakeholders

The aggregation champion will have a view as to which entities could be members of the aggregated structure. These candidate organizations should be approached to determine their interest and to identify stakeholder groups that would be affected by, or that could have an influence upon, the aggregation process and the aggregated entity.

B1.1.4 Establish a group to lead the process

If it is established that there is an interest in pursuing the proposed aggregation, representatives of the entities that are candidate for aggregation and other stakeholders should set up a group to drive the process.

The objectives of such "driver group" would be:

- To drive the development of the aggregation process;
- To represent the interests of aggregated entities, stakeholders and influential, affected organizations;
- To assess the drivers, constraints and issues affecting each group; and
- To implement the establishment of the chosen aggregation model.

There is always the risk that the champion may be viewed with suspicion, and considered as having a particular vested interest in the process, which may not coincide with the best interests of candidate aggregating entities. This is particularly the case where the champion is not one of the aggregating entities, for example, where central or regional governments or the private sector initiates and drives the process. Establishing a

broader group to lead the process can help overcome these suspicions by actively engaging and empowering candidate municipalities and other entities.

The driver group should be composed of representatives of the principal entities that will be affected by the aggregation process. Representation of all aggregation candidates, stakeholder groups and organizations exerting an influence on the water service should be considered, although to what extent it will be appropriate for them to be represented will depend on the purpose, extent and nature of the specific aggregation situation. It would be prudent for the driver group not to be chaired by the champion that originated the aggregation idea, although for practical reasons, that is often difficult to achieve.

B1.1.5 Choose an appropriate consultation process

One of the first tasks of the driver group should be to identify all potential aggregation candidates, stakeholder groups and organizations that could be affected and need to be involved in consultation to design the process.

Experience has shown that it is of fundamental importance to a successful aggregation process that the communities or entities considering or undergoing aggregation be convinced of their overall individual benefits of working together. The entities proposed for aggregation should be involved throughout the process, from its inception to completion, and their views sought and taken into account, and they should be kept informed of ongoing developments. Consultation processes tend to take time, however they can ultimately save time and money by preventing polarization of stakeholder groups against the process. This is particularly the case where the initiative for aggregation has not come from the local communities themselves.

The consultation process can range from an invitation to selected stakeholders to comment on proposed legislation for aggregation, as it occurred in England and Wales, to more active consultation with different stakeholder groups, including special considerations for vulnerable groups.

While consultation is important, it should be structured to facilitate the process rather than to slow it down. Where stakeholder groups meet to discuss issues, consultation groups should be kept to a manageable size so that discussions are meaningful. The more centrally driven the aggregation process, the more levels of consultation will be needed. It may be unwieldy to include all affected local entities in a single consultative assembly; they will need to be represented as groups at the progressively higher levels of consultation. However, in a locally driven process, all potential candidate municipalities should be represented on a single

consultation body. Larger, public forums are also useful to convey progress and to allow the general public to provide feedback, in addition to stakeholder groups.

B1.1.6 Choose an appropriate aggregation process

If the central government is the aggregation champion and in the driving seat, it would also need to choose the most appropriate aggregation process. As discussed in the main report, there are three main types of aggregation processes: voluntary, incentive-based, and mandatory.

The central government should identify the process of aggregation that would work best. For example, if the key driver for aggregation is to rapidly improve coverage in urban areas, a centrally or regionally driven process (whether mandated or incentive driven) will likely be more effective than a voluntary one, as individual municipalities may not be able to see the broader picture of reform. For example, in Brazil, a national effort to increase access to water supply and sanitation led to the creation of the PLANASA program, and generated substantial increases in water and sanitation coverage rates between 1971 and 1991. Even though the process was in theory voluntary, it was linked to strong financial incentives and took place during a period of dictatorship that left little alternative options to municipalities seeking to improve services.

B1.2 ANALYTICAL PHASE

Once the driver group has agreed a process for aggregation, it will be necessary to develop the case for aggregation, particularly for the purpose of stakeholder consultation. It may be useful to frame the case in a cost-benefit analysis framework, which will also help identify the most appropriate scale for the aggregated structure and the type of incentive mechanisms needed. This section discusses the steps towards conducting such an analysis.

The objective is to determine whether or not, in any given situation, aggregation will be beneficial and, if so, what form of aggregation would bring the greatest benefits. Analysis should examine the "with" and also the "without" scenarios. It should also seek to cover different boundaries for the benefit assessment: there will be winners and losers within a specific area but if looking at a larger are, there may be a net benefit. Such analysis could consist of two parts: first, a qualitative analysis of costs and benefits, followed by a more detailed quantitative analysis.

Qualitative analysis. Examples of the factors that can be taken into account for a qualitative assessment are those mentioned in *Annex A* outlining potential drivers and constraints. Qualitative factors could be assessed subjectively using a negative/positive points system for each of

the various aggregation options and the "without" scenario, in order to rank those different options. The qualitative assessment may be used to reduce the number of options for which the more complex, quantitative analysis would be undertaken.

Quantitative analysis. A quantitative assessment of costs and benefits might consider aspects such as:

- Legal and financial costs of aggregation;
- Costs inherent in the disruption associated with change;
- Additional capital works requirements and savings on capital works;
- Costs of effective Management Information Systems;
- Costs of staff training schemes;
- Potential for economies of scale (shared premises, management, administration and operational facilities such as warehousing, spares);
- Economies resulting from reductions in staff numbers;
- Additional costs relating to redundancies and cost of better-qualified staff;
- Reduction in power charges due to access to lower tariffs (in the event of a large user tariff;
- Improved income from higher tariffs due to raised service delivery and improved billing and collection efficiency.

B1.2.1 Identify and assess drivers and constraints

The driver group will need to evaluate drivers and constraints as they apply to the group as a whole, and to each candidate entity. This process should be as specific as possible, using data (where it exists) on:

- Financial viability of existing water systems;
- Existing water resources and legal information about water rights;
- Legal models for aggregation;
- Broader policy data such as investment plans, strategies, targets for improving access, etc.

B1.2.2 Identify and assess benefits and costs for each entity

For every driver and constraint, there are associated benefits and costs that may impact the various stakeholder groups differently. Using the information gathered in the previous step as a baseline, it will be important to tabulate the benefits and costs for each municipality involved. These benefits may or may not materialize, depending upon the starting position of the municipalities and the degree to which they succeed in working together for their best common interests.

B1.2.3 Identify and assess benefits and costs for alternative groupings

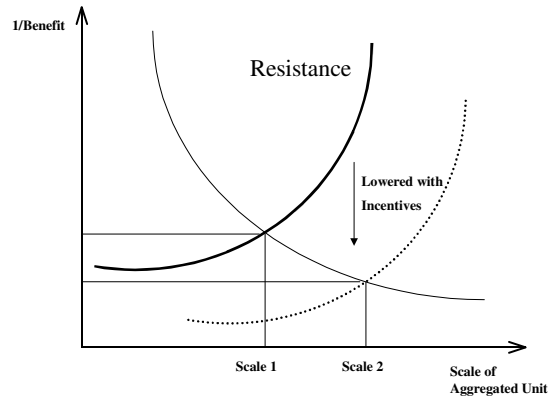
Upon completing the assessment of benefits and costs for each entity, it will be important to consider the impacts of alternative types of grouping, considering different geographical scales, services and functions

aggregated. Under this analysis, the distribution of benefits and costs for each entity for alternative types of grouping should be conducted, as one of the main constraints of aggregation is often that such benefits and costs are inequitably distributed.

Intuitively, it appears that the benefits of aggregation are likely to increase with the degree of grouping (up to a certain level) but so would the costs and the associated constraints. Therefore, the optimal level of aggregation (or optimal size of the unit of water service provision) should be where the curve showing the reciprocal of the increasing benefits would intersect the curve showing the increasing constraints, or degree of resistance to aggregation that would result from such constraints, as in Figure B.2.

Figure B.2 also illustrates the point that barriers to aggregation could be reduced through the provision of incentives for aggregation (such as financial incentives provided by higher levels of government), broadly described in the main report. If incentives were adequately provided, it may be possible to move further along the progressive complexity from informal or temporary clusters of municipalities to more formal types of grouping, or aggregation.

Figure B.2 Benefits and Resistance to Aggregation



B1.3 IMPLEMENTATION PHASE

Having estimated the costs and benefits from alternative aggregation models, the driver group will be in a position to decide whether or not to proceed and to choose the model most appropriate to the circumstances of the group and the general form of the aggregated entity.

When this is done, it will need to determine an implementation program and monitor progress against plan. Many aggregation processes fail because the transition to the new aggregated structure is not well thought through, and problems arise at a later stage when they should have been tackled early on in the process. This was the case in the Laguna LGU case study in the Philippines case studies, where the lack of clear attribution of water rights emerged as a significant stumbling block and collapsed the process, when it could have been foreseen earlier on.

Because disputes are likely to emerge, it is also important to define mechanisms for resolving potential disputes between aggregating entities. It would be useful that the Central Government retain some ability to settle disputes, as it is the role of the prefect in France, for example, as there will always be winners and losers at the local level and the general interest should prevail.

Annex C

Aggregation Case Studies Summary

AGGREGATION IN FRANCE	
Topic	**Information**
A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Water and sanitation services have been a municipal responsibility since the 1789 Revolution. There are a total of 36,000 municipalities in France, which results in a fragmented context for the provision of water and sanitation services. The majority of such municipalities are small and located in rural areas. Municipal responsibilities for water and sanitation services have been strengthened through a series of laws, the most recent being the 1992 water law that strengthened responsibilities for sanitation services. Municipal autonomy has also been strengthened through an ongoing process of decentralization, especially following the 1982 reforms that gave them the authority to levy taxes. Municipal autonomy is partially limited by an elaborate system of checks and balances, with administrative and financial Courts, technical services and local representatives of the Central Government (the Prefects) overseeing municipal activities.
B. Legal framework for aggregation	
Does the law define aggregation models?	Existing laws establish clear models for aggregation, with rules on governance structures, entry and exit conditions, tariff setting or asset transfers. The first law establishing a model for a "single-function syndicate", primarily active in the water sector, dates back to 1890. Other aggregation models have been defined through subsequent laws. The most recent law in that respect, the 1999 *Chevènement Law* introduced new forms of grouping, by allowing the pooling of local taxes. Some of these new forms of groupings must include water and sanitation services. To aggregate their water and sanitation services to those new groupings, municipalities need to leave the syndicate to which they previously belonged. This Law has generated a lot of recent activities on the aggregation reform front.
How frequent is aggregation?	A considerable amount of aggregation of water and sanitation services has taken place in France over more than a century. In 1999, there were 18,410 aggregated structures in France, 81 per cent of which were single-function syndicates predominantly providing water and sanitation services.
C. Drivers and constraints for aggregation	
Main drivers	As municipalities have acquired more responsibilities following decentralization, they have increasingly turned to their neighbors in order to pool resources and capabilities. Other important drivers have included technical drivers (especially for the first-generation of aggregated structures, the syndicates), economies of scale, the acquisition of negotiating power for signing delegation contracts with private operators, and achieving benefits in terms of regional coordination.
Main constraints	The political legitimacy of aggregated structures has become a critical issue. Some aggregated structures, particularly in urban areas, operate services that touch many aspects of daily life: public transportation, waste collection, school lunch programs, cultural and athletic facilities, etc. These aggregated structures are financed by direct local taxation, but their President and the representatives in its assembly are elected indirectly by the

AGGREGATION IN FRANCE	
Topic	**Information**
	municipalities rather than by the citizens.
D. Processes for aggregation	
General process	Aggregation is usually voluntary. However, the approval of the representative of the central Government at the local level, the Prefect, is required for the structure to officially formed and the Prefect retains a veto power over its creation even if the municipalities have approved it. The Prefect can force a municipality to join the grouping for territorial continuity.
Bas-Rhin water and sanitation syndicate (SDEA)	The Service des Eaux de Strasbourg-Campagne was created in 1939 without any legal basis; its statutes were elaborated in 1958 when it became the SDEA. The grouping was initially made up of 55 municipalities but this number has grown since to include 453 member communities, covering a population of 655,000 inhabitants. The scope of the structure has also grown, adding sanitation to water in 1998. The process of aggregation has been mostly voluntary, although a court decision led to the addition of sanitation services. Some already aggregated structures have also joined the syndicate.
Nîmes metropole – Mixed rural and urban community with aggregated water function	The Nîmes Metropole aggregation is a 'mixed rural and urban community', made up of 23 municipalities, serving a total population of 206,616. The aggregated structure has grown significantly from its creation on 1 January 2002 when 14 municipalities set it up voluntarily; this initial process took only 5 months to complete. The main driver was to optimize conditions for metropolitan development and compete with neighboring towns. The mandatory inclusion of new members by a Prefect's decree in the spring of 2003 created some hostility between the first municipalities to join and the ones incorporated at a later stage.
E. Key Features of the aggregation models reviewed	
Scope	Variable. For the traditional syndicate model, it is possible to aggregate only specific operating functions (for example, to aggregate only waterworks maintenance). For urban or rural communities, every operating function relating to water and/or sanitation services must be transferred. *Bas-Rhin*. Municipalities must at least transfer maintenance functions and they can pick and choose other functions. *Nîmes-Metropole*. Water services only have been aggregated, due to the high investment costs associated with wastewater and solid waste. Municipalities manage wastewater services themselves and receive subsidies for them.
Scale	Variable. For syndicates, municipalities of relatively similar sizes tend to group together. For urban or rural communities, there is usually a bigger municipality that tends to dominate the others (as it is the case in Nîmes). More than 50% of these syndicates had population of less than 5,000 inhabitants. The most prevalent number of municipalities in such structures is from 2 to 5, with a much smaller number above 20 municipalities.
What is the form of the aggregated	For all groups of municipalities, a deliberative assembly is elected amongst the municipal delegates. A president is

AGGREGATION IN FRANCE	
Topic	**Information**
structure and governance arrangements?	elected and acts as the Executive Authority. Seats on the assembly are shared among the municipalities according to their size. The law puts the maximum number of seats for the larger municipality at 50% and every municipality, even the smallest, must be given at least one seat. The precise allocation of seats depends on the rules chosen by the assembly. *Bas-Rhin*. The syndicate is governed by an assembly with 450 representatives, one for every community over 3000 inhabitants. The number of votes depends on the size of the community and the number of functions transferred. General assemblies take place twice a year, to define key policies for the grouping. The syndicate employs 480 employees, most of whom are regional public servants. The syndicate is widely regarded as a very professional structure in France and abroad *Nîmes-Metropole*. The attribution of seats on the Assembly was done to share power amongst municipalities while limiting the influence of the largest city, Nîmes: while Nîmes represents more than 40% of the population, it holds 32% of seats.
Are assets transferred to the aggregated entity?	Yes, assets relating to the provision of the aggregated service must be transferred according to the Law. For syndicates, the existing infrastructure remains the property of municipalities, with simply usage rights transferred to the syndicate. For small communities where infrastructure is shared between several services, an agreement to share infrastructure must be reached. Any new assets become automatically the property of the syndicate.
What are the entry and exit rules?	A municipality may exit a syndicate in two cases: • If it decides to join a more integrated structure (such as an urban community), withdrawal is automatic; • If the municipality decides to withdraw at its own initiative, the withdrawal must be accepted by a qualified majority of the syndicates' deliberative assembly. In both cases, conditions for exit, including sharing of assets, human resources and other financial issues must be negotiated. The sharing can be done on the basis of criteria such as initial investment or number of consumers. Conditions for exiting an urban community are stricter and prefect approval is required.
Does harmonization of tariffs and service quality take place?	*Bas-Rhin.* Water rates were not harmonized at the time of the syndicate creation: the SDEA always chose to set rates in line with the quality of service in each community. However, the investments made by SDEA to improve the weaker portions of its network over the past decades have led to more uniform rates as the quality of service has become more uniform. *Nîmes Metropole*. Tariff harmonization is a long-term objective of the structure but was not implemented at its creation: there are currently 23 different tariffs, which themselves vary according to the level of service provided.

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A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Water services were provided by a national utility from 1955 to 1972. The 1973 Provincial Water Utilities Act devolved responsibility for water and sanitation services to local government units (LGUs) and created the Local Water Utilities Administration (LWUA), which authorizes the creation of Water Districts and provides them with technical and financial assistance. Two or more contiguous cities, towns, or provinces (generally in urban areas) can form Water Districts to manage water and wastewater services jointly. To date, there are approximately 440 active Water Districts grouping 694 out of 1,600 cities and towns in the Philippines and serving a population of roughly 15 million, or 18.5% of the population. There are also 127 inactive Water Districts that have been set up on paper but are not yet operating. A special case is that of Metropolitan Manila, for which the Metropolitan Waterworks and Sewerage System (MWSS) represents the largest aggregated entity, serving approximately 10 million people in 27 cities and towns. For areas not covered by the MWSS or the LWUA, the LGUs are responsible for providing safe potable water through the provision and operation of water systems. In rural areas (agglomerations with less than 20,000 inhabitants), approximately 1200 Rural Water Supply Associations (RWSA) are providing services. The RWSAs are registered with the LWUA and are primarily barangay-based, which is the smallest political unit in the Philippines.
B. Legal framework for aggregation	
Does the law define aggregation models?	Aggregation is guided by several pieces of legislation that support voluntary and mandated groupings of water services in towns, cities, or provinces. According to the 1973 Provincial Water Utilities Act, there are three different ways in which aggregation may be pursued. Where the aggregating entities are of similar sizes, each entity's local government must pass a resolution to support aggregation. In areas where one of the entities is significantly larger than the others, a majority vote of 75% within the larger entity is sufficient for aggregation, so long as the smaller entities agree to it. Finally, the LWUA may mandate aggregation of Water Districts where aggregation is in the best interests of the involved districts. The Local Government code also provided for voluntary aggregation of services by LGUs if is mutually beneficial, "in order to benefit from economies of scale that could expand water supply services to consumers at the lowest possible cost". By law, Water Districts are formed as quasi-public corporations that perform public services but are financed and operated independently from the LGUs. The policy-making body is the Board of Directors, made up of 5 members representing civic-oriented service clubs; professional associations; business, commercial or financial organizations; educational institutions; and women organizations. No public official can serve as a director, except if the district has obtained the financial assistance of LWUA; in that case, the administration may appoint any of its personnel to sit in the Board as a sixth member, with all the rights and privileges pertaining to a regular member, for as long as the debt remains. The Secretary of the District contacts each organization; association or institution represented by the Board of Directors and solicits a nomination from their organization to fill the position for the

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	term. The list of members is provided to the office of the authority (e.g. the mayor of the town with more than 75% of the customers). If the customers are more widely dispersed, such as in an aggregation of similar sized towns, the Provincial Governor appoints the Board. The Board, by majority vote, appoints the General Manager, who is not a director, but has full supervision and control of the maintenance and operation of the Water District facilities, with power and authority to appoint all Water District personnel.
How frequent is aggregation?	Aggregation through Water Districts is frequent and encouraged; it has been far more successful in urban areas than in rural areas, where the benefits from economies of scale have failed to materialize due to population dispersion. Clustering for the procurement of private sector operators has also been attempted in a number of cases, particularly in the context of a World Bank funded development project for towns that cannot satisfy the financial requirements to become Water Districts: in that case, LGUs clustered to run the procurement process but signed distinct contracts with contractors.
C. Drivers and constraints for aggregation	
Main drivers	The need for economies of scale was a key motivation for aggregation in the legislative framework. Other drivers include access to water resources, as the distribution of water resources is fairly unequal, although this has also represented a key constraint for voluntary aggregation processes; access to finance (government loans); and, more recently, access to private sector participation (PSP), although PSP has been limited due to low tariff levels, usually politically motivated.
Main constraints	Political disunity, circuitous approval processes and indecisiveness of some authorities have acted as common constraints in the aggregation processes. The transfer of water rights also emerged as a critical issue. The 1991 Local Government Code has been interpreted to imply that local governments have exclusive rights to water resources within their respective territories. However, under the Constitution, the State owns all of the water resources, and, through the Water Code, the National Water Resources Board has the authority to issue permits for the development and utilization of water resources. Such conflicting legal interpretations have led to water right problems that led to the failure of aggregation processes.
D. Processes for aggregation	
General process	The first aggregation experiences in the Philippines, such as the creation of a national utility (from 1955 to 1972) or the creation of MWSS for Metro Manila, were both mandated by the central government. Processes taking place since the break-up of the national utility under the Provincial Water Utilities Act have usually been voluntary but can still be mandated by the central government in certain cases (see the Partido Model).
Laguna-LGU Grouping	The Laguna-LGU is the grouping of 3 neighboring municipalities of similar sizes under the Provincial Waterworks Office (PWO) created in 2000. Services were already aggregated prior to that date, but under arrangements that had proven unsatisfactory. The objective was to aggregate control of the waterworks at Provincial level to attract

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	private sector participation. The lack of clear guidance on the issue of water rights created conflict in this case, and effectively stalled the process of reform. The perceived value of the water source due to environmental and demand constraints made one town unwilling to share water resources with the other entities in the grouping without compensation. Two towns sought to quit the grouping and to form their own Water Districts but were not allowed to do so by the Provincial Governor.
Laguna Water District	In 1982, one large town (Los Baños), which was already constituted as a Water District, and two small ones were aggregated to form the Laguna Water District, for both water and wastewater services. Due to increased economies of scale in the larger town and better funding availability, service upgrades and investments were carried out in the larger town before any upgrades were made in the smaller towns. This led to a perception within the smaller towns that the aggregation was not in their best interests; they tried to exit the grouping and no private operator was recruited.
Partido-GOCC Model	This regional grouping for 10 municipalities, based on administrative boundaries (the congressional district) was formed through specific legislation that created the Partido Development Administration (PDA) in 1994. The PDA is not only in charge of water services, but also communications, training services, port facilities, energy programs, tourism, fish processing, health services, economic zones and/or industrial estates, local roads and railways. The specific objectives of its creation were to accelerate development through an integrated approach, to increase investments and attract finance. Specific investments were supposed to be carried out by a private operator but the process of its recruitment is on hold.
E. Key Features of the aggregation models reviewed	
Scope	Scope varies: there are examples of clustering (aggregating only the procurement function) or bulk supply providers. Most commonly, Water Districts group all functions related to water services, for either water only or water and sanitation services combined. Some groupings also include other local services, such as the Partido Development Administration.
Scale	The scale of aggregated entities vary greatly: from MWSS, the largest aggregated entity providing services to almost 10 million people in 22 municipalities, to small aggregated entities, such as Laguna-LGU serving 30,000 people in 3 towns.
What is the form of the aggregated structure and governance arrangements?	In the case of *Laguna-LGU*, the aggregated entity was effectively included in the Provincial administration and governed by the Provincial Board, which is the policy-making entity for the Province and is elected directly by citizens. There were no specific representatives from each member town. The Provincial Waterworks Office (PWO) was under its jurisdiction, but certain positions were not filled as they were going to be filled by the joint-venture/ private concessionaire. The Provincial Governor and the Provincial Board are authorized to let private sector contracts on behalf of the grouping. In the case of *Laguna Water District*, all of the Directors of the Water District came from the largest town (Los

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	Baños), as more than 75% of the customer base is located there. That led to suspicions in the other two towns that the Board did not make decisions with all of the towns' best interest in mind. The Water District has its own staff, with no staff transfers. In the case of *Partido,* the PDA has a subsidiary (Partido Water Supply System Project), which is a specific subsidiary in charge of water services. All member municipalities are represented on the Board of PDA, including the Provincial Government, which also includes a representative from the private sector from each member town. The PDA has stock subscribed and paid equally by the member towns. The PDA has its own staff, with no diputation from members, although it has recruited employees from the disbanded Water Districts and LGU systems.
Are assets transferred to the aggregated entity?	In *Laguna-LGU*, the assets were owned by the Provincial District from the start and did not need to be transferred. For the *Laguna Water District* as in any other Water District, the transfer of assets from the annexed entities is not required by law, but a District may purchase, construct, or otherwise acquire works, water, water rights, land, rights and privileges necessary to supply the service. In this case, the two small towns transferred their assets to the larger town at the time of the grouping (one obtained financial compensation, the other did not because the assets were not usable at the time). In *Partido*, the PDA acquired the existing water supply systems from the previous entities responsible for the service plus the newly constructed water supply systems in all ten towns.
What are the entry and exit rules?	In the *Laguna-LGU* grouping, all three LGUs willingly joined the aggregated entity and passed a resolution to that effect. Exit rules were established, such that municipalities were required to pass a resolution to exit, subject to approval by the Provincial Governor. As expectations were not realized, two municipalities expressed the will to exit the grouping. In *Laguna Water District*, both entry and exit require a resolution passed by the town. No participating entity can be expelled from the aggregated structure by the others. In *Partido*, no member entity can leave or be expelled from the grouping but the PDA can be dissolved by legislation.
Does harmonization of tariffs and service quality take place?	In *Laguna-LGU*, tariffs are set by the Provincial Government as recommended by the PWO and approved by the National Water Resources Board (NWRB), a national entity in charge of economic regulation. Tariffs were already similar before the time of grouping but had to be modified to improve the financial standing of the aggregated entity. In *Laguna Water District*, tariffs were dissimilar before the grouping and a uniform tariff was introduced.

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	In *Partido*, tariffs were dissimilar prior to grouping and a uniform tariff was introduced.

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A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Following the end of communism, municipalities acquired the right and obligation to ensure the provision of water and wastewater services in their territory. There are a total of 3,150 municipalities in Hungary, resulting from the break-up of 1,600 local councils that were operating prior to 1989. During the transition, State assets were transferred to the municipalities they served, but insufficient funds were transferred to municipalities to enable them to adequately maintain and expand those assets. Central government continues to play a key role in the water sector, largely because the municipalities were ill equipped to handle their responsibilities and remain dependent on the central budget for funding.
B. Legal framework for aggregation	
Does the law define aggregation models?	Municipalities are free to provide services in whatever way they find appropriate. They are allowed to "hire" a neighboring municipality to provide the service or to form loose associations managed by a lead municipality for the provision of such services. According to the Act on Municipal Associations, municipalities can form associations that have an independent legal identity. The association requires a local council resolution from each member to be created. In 1998, the law was changed which meant that associations can no longer have an independent legal identity: instead, they must operate through a designated leader for the association.
How frequent is aggregation?	The 3,150 municipalities are served by a total of 367 water and sewerage companies (with 132 water-only utilities, 51 sewerage-only and 184 combined water and wastewater utilities). This implies that a large degree of aggregation has taken place, although this would include "administrative aggregation" (whereby municipalities group together to provide the service) as well as "aggregation through the market" (where a company supply services to several municipalities).
C. Drivers and constraints for aggregation	
Main drivers	Aggregation has largely been driven by the need to expand coverage of water and wastewater services (which went from 85% and 42% of inhabitants in 1990 respectively, to 92.6% and 53.5% in 2003) and to comply with EU environmental directives in order to pave the way for EU accession. While water supply services were improved shortly after the end of communism in 1989, sanitation services continue to require attention. The need for rapid upgrades to the system to meet the accession timetable, and to stimulate economic growth, led the central government to provide financial incentives for aggregation of water and sanitation services. The government stipulated in the 1992 Act on Targeted and Addressed Grants that municipalities must have a minimum of 2,000 people to qualify for wastewater grants and that joint applications receive an extra 10% for design of sewer collection systems, and an extra 10% if the system uses treatment capacity of some other municipalities or state-owned regional water and sewer works. This means that Wastewater Associations' borrowing can be subsidized by the State for up to 70% of interest payments.

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Main constraints	The legislative framework does not provide a comprehensive and clear framework for aggregation to take place. In addition, the law explicitly prohibits the transfer of asset ownership from municipalities to aggregated service providers.
D. Processes for aggregation	
General process	The aggregation process is voluntary with strong financial incentives provided in the form of a higher level of grant available for municipal associations. Villages or municipalities in association have received approximately 5 times more grants than villages that applied in isolation. Grants to an association served, on average, three villages, with the number of municipalities in association ranging from 2 to 15. Aggregation of water and sanitation services usually led to increased cooperation amongst municipalities for other public services, and for regional development.
Dunavarsany	A rural municipality, Dunavarsany and three of its neighbors, formed a Water Association in 1990 to build and operate a water system. In 1993, two additional municipalities joined to form the Dunavarsany Municipal Wastewater Association with the objective of designing, funding and building a sewerage collection and treatment system. Two additional municipalities subsequently joined in 2000 when the wastewater system had already been built. Some municipalities in the grouping had less than 2,000 inhabitants and would not have been eligible for state support otherwise. The same municipalities also created a project company, Clean Water Dunavarsany Ltd., under the control of the member communities. This company was to act as the operator of the treatment plant and the collection system until a concessionaire was selected. The Wastewater Association members took a 40% share in that company, using the proceeds of the loans to finance those shares. The Association temporarily sub-contracted project management to that company and then granted a 28-year concession to a company that pays a concession fee for use of the assets. This new company was created jointly with the six municipalities, which have a 26% ownership share, enough to block decisions on the Board.
DRV Rt.	A previously existing county-level water company was able to retain and expand its service area and to add new services to its area of operation near the Lake Balaton, one of the most touristy areas in the country. This is effectively an example of "aggregation through the market" and is not developed further in the analysis below. This company supplies a total of 369 villages with water services and 110 with wastewater services, through a series of separate concession contracts. The municipalities continue to own the assets, which have the right to exit this service area.
E. Key Features of the aggregation model in Dunavarsany	
Scope	The Association started with water services and later expanded to wastewater services. A similar Association is now being considered for solid waste services and other services, such as the maintenance of public areas.
Scale	Four municipalities created a water association, another 2 joined to create the wastewater association and 2 more joined since. The total served population is 20,000 throughout the year, with an additional 15,000 during the

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	tourism season.
What is the form of the aggregated structure and governance arrangements?	Due to the lack of a legislative framework, the association is relatively loose. The Association's founding charter, signed by the six mayors, apportions votes to each member on the basis of its contribution to the budget of the Association. The Association and its designated chairman, the mayor of Dunavarsany (the lead village), carry out all activities on behalf of its members. All the grants were made to the Association, but for practical reasons, were paid through the bank account of the lead municipality. The lead municipality, Dunavarsany, assumes the day-to-day administration by donating its own staff time and overhead to the association, amounting to 80 percent of the administrative costs. Those costs cannot be recovered from the other members for a variety of legal, accounting and practical reasons. Recovering these additional administrative costs became an issue for the lead municipality after a while: as a form of partial compensation, the operating company and later, the concessionaire, pay their business taxes to the lead municipality, Dunavarsany. A distinct advantage of having the largest and better-equipped municipality as the lead was that there were staff members, equipment and know-how available to members for preparing the grant application and supervising the project. However, the smaller members often could not understand the details of some processes, such as the grant application and permitting processes, which led to disagreement and tensions. Considerable efforts therefore had to be expanded to maintain a constant information flow with the smaller municipalities.
Are assets transferred to the aggregated entity?	No, the law does not allow such transfer. The physical assets located within the territory of each municipality were placed on the balance sheet of each municipality. Assets such as the pipelines connecting the villages and the treatment plant were temporarily placed on the books of the lead village, Dunavarsany. Within ten years, they will need to be proportionately allocated to each member village.
What are the entry and exit rules?	The Association may be disbanded, but it would then need to reimburse the state for the additional 10% grant it received for constructing the collection and treatment systems. As such, there are no good reasons for a member to leave.
Does harmonization of tariffs and service quality take place?	Municipalities are responsible for setting their own water and wastewater charges, based on the proposal of the operating company. In doing so, they also make reference to centrally-determined tariffs, which are used for defining subsidy eligibility criteria: if water tariffs in a municipality are higher than the centrally-determined tariffs, customers are eligible for central government subsidies to pay their bills. In general, when services are grouped, municipalities have sought to harmonise tariffs, as voters would not accept differentiated rates for villages connected to the same system.

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A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Water and sanitation services have historically been the responsibility of local authorities, which are both in charge of service provision and regulation and policy, although the State level of government has a specific role for water issues of regional interest. There are a total of 5,561 municipalities in Brazil, and most of them are very small (the 4,000 smallest municipalities represent 66% of the number of municipalities and 20% of the population, whilst the 45 largest municipalities represent over 50% of the population). Services may be provided directly by the municipalities or through concessions. During the National Water Supply and Sanitation Plan (PLANASA) during the 70s and the 80s, all Brazil's states created a State Water Company (SWC) and a Water and Sanitation Fund (FAE) to support investments. Municipalities' access to federal funding for water supply and sanitation investment was only possible through their SCW. To be part of a SWC, municipalities were requested to sign concession contracts with their State Water Company, which transferred operations and maintenance of water and wastewater services to the SWC. However, exceptions were possible in many cases, for example, when the municipality in question served as the nucleus of the new SWC: in fact, even today a significant number of important municipalities (such as Rio de Janeiro) does not have concession contracts. Municipalities were not forced to join the program but they were barred from receiving federal support if they did not. Financial resources to support the policy included the creation of a compulsory fund financed by taxes on employers based on employee wages, and the creation of a financing framework at the national level to fund loans for sanitation (set at 37.5% of the program's total expected costs). States were expected to match the national fund through contributions from State revenues (not to exceed 5% of total revenues). Municipalities were expected to contribute 25% of the necessary investments. In practice, municipalities were unable to contribute 25% of investment costs, which over time led to increased and unsustainable borrowing by SWCs to cover costs. With the economic crisis in Brazil in the 1980s, the SWCs faced significant financial difficulties. This, combined with several years of an insecure institutional environment, ultimately led to the demise of PLANASA in the early 1990s. At present, the SWCs provide water and some sanitation services through concession contracts to 3,892 municipalities, serving 77% of the population receiving such services. The end of PLANASA led many municipalities to claim control over the management over their water and sanitation services, particularly in the context of private sector participation where they could potentially benefit from the proceeds of privatization. Provision of sanitation services is even more complex and fragmented because as sewerage was not PLANASA's key objective, financing was not as generous and the SWCs never invested heavily in this area. As a result, the SWC and the municipalities have built and currently operate systems in parallel in many instances.
B. Legal framework for aggregation	
Does the law define aggregation	Despite several reform attempts, the legal framework defining responsibilities for the water services is particularly

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models?	unclear, particularly with respect to the issue of asset ownership, and does not provide a clear framework for aggregation in the post-PLANASA era. The municipal take-over following the end of PLANASA led to a legal battle between SWCs and municipalities, because of the lack of clarity regarding asset ownership. On the one hand, at the end of the concession contracts, municipalities are legally supposed to get back the ownership of the assets on the other hand, state water companies, that built and managed such assets, claim that they need to be compensated for assets not depreciated yet before returning any of them. There is also confusion over the responsibility over systems that are shared between municipalities, which would imply a regional interest and hence, State government control. Municipalities contest this notion of regional interest, and the dispute between municipalities and State governments is now in front of the Supreme Court. In the absence of a clear legal framework, aggregation processes require a significant level of cooperation between States and municipalities.
How frequent is aggregation?	Currently, Brazil is attempting to decentralize responsibilities for water services away from the State Water Companies down to the municipalities. However, as it becomes clear that many municipalities would not have the capacity to manage the service or to attract private sector interest by themselves, there have been several attempts at aggregating municipal services to create a regional operator.
C. Drivers and constraints for aggregation	
Main drivers	Drivers for the PLANASA scheme were the intention to rapidly increase coverage of water services through central government investments and cross-subsidies. The need for economies of scale and, to a lesser extent, for attracting private sector participation into the new municipal service providers drives the current process of aggregation on a regional basis.
Main constraints	Political disputes, particularly between State and municipal governments, have acted as a main barrier.
D. Processes for aggregation	
General process	Aggregation under the PLANASA scheme was voluntary in theory, but strong financial incentives played a crucial role and importantly, the whole process was designed and launched under a dictatorship. The current processes of aggregation, when voluntary have a high risk of failure (as exemplified by Mato Grosso). The most successful ones, as in Dos Lagos, have relied on agreements between State and municipal governments.
Mato Grosso	In *Mato Grosso*, service delivery by the former SWC, SANEMAT, was poor. Several local politicians started to argue in favor of decentralization, but a main issue was whether municipal governments would need to pay compensation to the State for taking over the assets. A candidate for Governor promised to return water supply and sanitation systems to the municipalities during his campaign and kept his promise when elected. "Municipalization", as the whole process was called, was based on a specific agreement between the State, SANEMAT and the municipalities, referred to as a shared management agreement, whereby revenues were partially kept by the State to repay the debt associated with those assets. By mid-1999, 15% of Mato Grosso's municipalities (mostly the larger ones) had assumed responsibility for their services. The State realized that this would not significantly improve service quality and sought to provide incentives to municipalities to group together to form aggregated structures serving 200,000 inhabitants or more, to derive scale

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	economies. Incentives included federal loans for investments, greater flexibility to negotiate the extent and phasing of payments for State's asset compensation and assistance for the letting of private concessions to manage the service, including participation to the payment of the concession fee. That strategy failed, all services have now been municipalized and no grouping between municipalities has been formed. This has led to service provision deteriorating sharply in many places, particularly, in the poorest municipalities. The main reason for this failure was that Mayors in relatively better off municipalities sought to regain political control over the service, effectively ending cross-subsidization and the financial incentives provided for aggregation were not sufficient.
Santa Catarina	In *Santa Catarina*, a similar process is now being attempted, with the creation of a regional provider servicing 5 towns. The main source of resistance there comes from the SWC, which does not accept a reduction in its service area and is offering investments and improvements of all type to the smaller municipalities to avoid a break-up , on top o f the usual effort to seek compensation from the municipalities for its assets. The municipalities have signed an informal agreement between themselves to aggregate but the process is still largely underway.
Dos Lagos	In the *Dos Lagos* region in the State of Rio de Janeiro, aggregation has been more successful as it has benefited from a state induced agreement with the municipalities. As service quality was unsatisfactory, the State government decided to improve the service through private concessions and signed an agreement with municipalities in the Dos Lagos region in July 1996. The model involved as follows: first, disaggregation from the State Water Company, CEDAE, and then reaggregation into two concession areas, based on the structurally integrated physical systems: the West Concession Area (Aguas do Juturnaíba concession) and the East Concession Area (the Prolagos concession), involving the State government and 5 municipalities. Two concession contracts were signed in mid 1998.
E. Key Features of the Dos Lagos aggregation model (Prolagos concession area)	
Scope	The grouping is for both water and sanitation services, except in one municipality where sanitation services are not provided. Prolagos is also in charge of managing the water reservoir and dam that serves both concessions, and charge a fee to the other region.
Scale	The grouping includes 5 municipalities in a region with heavy tourism. There are ongoing discussions about merging the two concession areas, which could cover a total of 310,000 permanent population and an estimated floating population of between 390,000 and 893,000 people. This would take place through the market with Prolagos acquiring Aguas do Juturnaiba to make scale economies.
What is the form of the aggregated structure and governance arrangements?	The aggregated structure is very loose, simply based on the signing of a covenant between the State and municipalities. The covenant organized the termination of existing concession agreements between municipalities and CEDAE and assigned responsibilities. The State obtained the right to sign the concession contracts with the private operators, even though it was not the ultimate concession granting authority since some assets remained in the ownership of municipalities. In the covenant, the State and municipalities also agreed on the sharing of the concession fee. An external regulatory agency at State level (ASEP) was to regulate the contract.
Are assets transferred to the	Assets were not aggregated, but the agreement between the State and municipalities clarified the asset ownership issue, by

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aggregated entity?	stating that the State owned the assets related to the services of bulk water extraction and distribution from the rivers included in the State water domain and the municipalities own the assets related to the other stages of the service. The covenant defined the respective liabilities and eliminated the risk of potential dispute over compensation to the former SWC, CEDAE, for its assets.
What are the entry and exit rules?	The covenant establishes rules for denunciation (exit) by the involved parties, but only based on the interest of the water service. Reasons resulting from secondary public interests (such as the financial interests of any party) cannot give rise to cancellation.
Does harmonization of tariffs and service quality take place?	Tariffs were already harmonized under the CEDAE management, with cross-subsidies between categories of users and municipalities. Tariffs in the concession areas remained uniform, with the introduction of an innovative seasonal tariff. Service levels were defined through targets set in the concession contract.

AGGREGATION IN ITALY	
A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Municipalities are responsible for local public services, including water and wastewater services. There are 8,101 municipalities in Italy, which fall under 103 Provinces and 20 Regions. Prior to the 1994 Galli law, water services were both vertically and horizontally fragmented: for example, water abstraction, storage, treatment, transmission and distribution could be managed by different entities. As a result, there were approximately 13,000 operators, with 6,200 entities responsible for water supply and 7,200 providing a sewerage service. This means that, on average, entities were serving populations of approximately 9,000 with water and 7,000 with sewerage services, and were too small to provide an effective and economic service.
B. Legal framework for aggregation	
Does the law define aggregation models?	The 1994 Galli Law mandated a process of aggregation at the national level in quite prescriptive terms. The main objectives of the Galli Law were to reduce the fragmentation of water services, to integrate the management of water supply and wastewater services, and to introduce industrial practices to improve the efficiency and effectiveness of water utilities. The Law specified that all existing water service suppliers should be consolidated into water sector management areas based on hydrographical sub-basins ("Optimum Territorial Areas", referred to as ATOs), to be defined by the 20 Regional governments within 6 months. The Regions defined 91 ATOs covering the whole country. The Regional governments had to pass implementing legislation to define the number and boundaries of the ATO and the details of implementation within their area of jurisdiction. They had to establish ATO Authorities for each ATO, which in turn needed to prepare "Water Resource Plans" for the management, rehabilitation, expansion and operation of the services in the ATO. These plans were to be drafted within 6 months of creating the ATO. Finally, each ATO authority needed to appoint one or several managers for the services to be provided within the ATO, which could be a public sector entity, a private company or a mixed public-private equity company. For options involving the private sector, procurement would be through an open public tender or in the case of a joint stock company, a public company would be established with an obligation to open the capital to private sector interests within 2 years, or the existing concession-holders (until expiry of their contract). The Law provided for central government support through technical, financial, and contractual advice to the aggregation process. A Supervising Committee (Comitato di Vigilanza) under the Ministry of Public Works was set up to promote the efficient, effective and economic operation of the service and to provide guidance on the approval of tariffs.
How frequent is aggregation?	All of the Regions have now defined the boundaries of the 91 ATOs (mostly based on the limits of the existing Provinces, with some modifications to reflect water management criteria) but this process took much longer than expected. Regional laws were passed between 1995 and 2002. By July 2003, 83 ATO Authorities had been appointed, but only 25 of them had delegated service to an Operator/Manager (most chose one operator per ATO).

AGGREGATION IN ITALY	
C. Drivers and constraints for aggregation	
Main drivers	The main driver for the law was the need to improve the efficiency and effectiveness of water services in the country and to set tariffs at cost-recovery levels in order to be able to finance major capital investment required to meet EU directives.
Main constraints	Powerful local political interests, combined with strong, vested private sector interests at a local level, have slowed down the implementation of the law considerably. The larger existing public service providers formed a powerful lobby against the implementation of the Law, as did the few existing private service providers, as it was unclear that their existing contracts would be safeguarded until expiration. Local authorities, which were used to managing the services themselves, had to learn to cooperate with each other and difficult issues emerged with the harmonization and determination of tariffs. As tariffs had to rise to cost-recovery levels at the same time in order to make the integrated water service profitable, some public authorities were reluctant to transfer the service to a private sector operator just as it was becoming profitable.
D. Processes for aggregation	
General process	Although aggregation was mandated at a national level, implementation of the Law was delegated to Italy's 20 regional governments. A mechanism for monitoring implementation of the Law was established (the "Monitoring Office") but this organization simply relies on information provided by the Regions to maintain a register of operational entities. It is also charged with analyzing data to determine the economic effectiveness of the service and to provide guidance to the water service operators with respect to tariffs or technological issues; and with preparing an annual report to Parliament on the state of the reforms. However, neither this Monitoring Office nor any other entity has any power to apply sanctions for inadequate performance with respect to the implementation of the Galli Law. Furthermore, no incentives were provided to local governments for speeding up the process of implementation. This has recently been changed, by only permitting ATOs where service reorganization has been initiated to benefit from EU funding.
Lazio Region	The Lazio region has made significant progress with implementation of the Galli Law. Prior to its implementation, there were 436 separate water service providers serving 377 municipalities. The Region adopted enabling legislation in 1996, which defined 5 ATOs and started organizing integrated water services in accordance with the Galli law. The ATOs mostly coincide with the boundaries of the Provinces, although some boundary areas of the Provinces have been split between different ATOs to take account of physical constraints. The ATO Authorities were created on the basis of a model Convenzione established by the Region. In 2003, each ATO was in the process of contracting its operator (only one per ATO according to regional law). The Frosinone ATO, which serves 550,000 inhabitants in 86 municipalities and 3 Provinces, was the first one in Italy to let a concession through open public tender, for managing the entire water service. ACEA, a multi-utility operation with a majority stake owned by the municipality of Rome, won the contract and signed a 29-year concession contract with the Frosinone ATO in 2003.

AGGREGATION IN ITALY	
E. Key Features of the aggregation models	
Scope	All functions are to be integrated since the model is one of integrated water management.
Scale	ATOs do not have a standard size, but they would serve, on average, a population of 640,000. The greatest number of Municipalities associated in a single ATO is 377 Municipalities in the Sardinia Region, whereas the Lombardy region has an ATO with a single Municipality, that of Milan.
What is the form of the aggregated structure and governance arrangements?	The ATO Authority is responsible (together with the constituent local authorities, i.e. Provinces and Municipalities) for the practical re-organization of the water sector within the territory defined by the Region, and for defining and adopting the organizational model best suited to their local conditions and agreeable to all parties involved. Two models can be used: • *Consortium:* a new public entity, established by and between the existing local entities and having legal personality and autonomous organization; • *Convenzione:* this simply involves the signing of an agreement between the existing entities. The Region appoints the local organization in charge of coordinating the entities, with responsibility for management of the integrated service. Representation on the Board of each ATO is generally in accordance with the size of the population in each municipality but the Governance structures would vary with each type of agreement, defined at the local level. A typical agreement sets out the form and mode of cooperation between the public entities in an ATO Authority; a list of the entities involved; the entity that will coordinate the grouping; water service infrastructure assets - their use & ownership; procedures for procuring an operator; form of monitoring and regulation; the duration of the agreement; the form of consultation between entities; financial relationships and reciprocal obligations and guarantees.
Are assets transferred to the aggregated entity?	Constitutionally, municipalities must own the assets for water and sewerage service assets they provide. Therefore, prior to the aggregation process, each municipality owned water and sewerage assets within its boundaries and they may have had all or part of the ownership of infrastructure outside their boundaries if it served their community, such as bulk water supply or wastewater treatment assets. Following aggregation, the ATO Authority is the owner of assets acquired jointly in the future but the rest remain in the ownership of the local governments, who "contribute" those assets to the ATO.
What are the entry and exit rules?	Entry rules are mandated by an agreement between the parties. Constituent municipalities cannot exit the ATO.
Does harmonization of tariffs and service quality take place?	ATO Authorities are in charge of approving tariffs. A single tariff structure normally applies to the whole ATO – although it is possible that some small mountain communes, which had an exceptionally low tariff prior to aggregation, may be treated as a special case. As a result of this harmonization, cross-subsidies have been created. There would usually be harmonization of all essential levels of service, although some small, remote settlements may have a lower level of service.

AGGREGATION IN THE NETHERLANDS	
Topic	**Information**
A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Institutions for water management, wastewater treatment and drinking water supply developed separately in the Netherlands. Water boards (*waterschappen)* are in charge of essential aspects of water resource management in a given area defined by a "natural" water system, and are specifically in charge of treating wastewater. Water supply services are mostly a municipal responsibility. Traditionally, many of the water companies were under either direct private management or direct municipal management. Both forms of management have been steadily declining and have been replaced by Public Water PLCs, regional companies with multiple municipal shareholders. The remainder of the case study focuses on the aggregation of companies in charge of providing water supply services.
B. Legal framework for aggregation	
Does the law define aggregation models?	The 1957 Water Supply Act required the reorganization of the drinking water sector into larger territories for the drinking water supply companies. Little aggregation took place voluntarily on this basis, and concerns about demand growth and quality control triggered a change in policy in 1975, with a revision of the 1957 Act, which provided provincial authorities with instruments to speed up the aggregation process. Provincial governments were required to lead the reorganization and were made responsible for preparing binding reorganization plans, allocating service areas and assigning a water supply company to distribute water in a service area. The Act also granted power to the national government to draw up and enforce reorganization plans if the provincial government failed to achieve the necessary reorganization. The main criteria for determining the size of the aggregated water companies was that each supply company should have at least 100,000 connections to produce potable water on a larger and more efficient scale, as well as appropriate management and a laboratory for quality control. Since 1998, there has been a parliamentary discussion on possible amendments to the 1957 Water Supply Act. The government is looking to take a step back, by providing incentives for voluntary aggregation based on proven gains from economies of scale. In particular, the proposed amendment of the Water Supply Act puts a lot of emphasis on benchmarking.
How frequent is aggregation?	The number of drinking water companies went from 180 in 1965 down to 24 to date. This number is likely to go down to 20 shortly, as additional mergers are still on the cards. For instance, three major public water PLCs (Nuon Water, Overijssel, and Gelderland) aggregated in 2002 to form the largest public water PLC in NL with 1.6 million connections. Other smaller utilities neighboring the area served by Vitens are under pressure to join forces with them. There is also renewed emphasis on considering the "water supply chain" in a more integrated way, with interest in the vertical bundling of water supply services (currently provided by the public water PLCs), wastewater collection services (often carried out by municipalities), and wastewater treatment services (carried out by water boards or specialized wastewater boards).
C. Drivers and constraints for aggregation	

AGGREGATION IN THE NETHERLANDS	
Topic	**Information**
Main drivers	Concerns about quality control and demand growth meant that the water supply industry needed to scale up to carry out large investments at a reasonable cost, for which 100,000 connections was considered a minimum size.
Main constraints	Water supply companies that had not aggregated voluntarily were not keen to do so, as they did not perceive any financial benefits from the process, or felt that there were substantial organizational and cultural barriers. Existing companies were reluctant to give up their concessions, especially because some of the existing contracts did not have a clear end date.
D. Processes for aggregation	
General process	Aggregation based on the 1957 Act was supposed to be voluntary but proved to be piece-meal and slow. The 1975 amendment to the 1957 Act somewhat accelerated the process, with the number of water supply companies dropping from 105 in 1980 to 40 in 1994. Of those, 32 were public water PLCs serving multiple municipalities.
Friesland Province	In Friesland, the process of aggregation took place earlier than in the rest of the Netherlands and largely voluntarily. In 1922, following problems with a privately-managed company, a regional water supply company was established by nine participating municipalities including the provincial capital, Leeuwarden. In 1974, the service area of the company was extended to the whole Province. The municipalities played a key role in enabling the expansion of the company, as they joined as shareholders, guaranteed revenues and passed required regulations.
South Holland Province	In 1975, 35 water supply companies were operative in the province of South Holland. Only two of these companies supplied more than the required 100,000 connections. During a period of almost ten years, the Province of South Holland took several initiatives to voluntarily reduce the number of water supply companies. However, these initiatives were resisted by the companies, which were not keen to give up their concessions. The Provincial authorities drew up a reorganization plan in 1985, which stipulated the formation of three integrated water supply companies in the Province: South Holland South (Europoort Water), South Holland East and South Holland Dune Water. The plan was initially resisted and was only finally implemented in 1991. The merger of 10 water supply companies into Europoort Water was eventually considered a success, but took several years. A total of 29 municipalities own shares in that company and a certain degree of local influence on water supply was deliberately maintained to improve acceptability.
E. Key Features of the aggregation models reviewed	
Scope	Water supply and wastewater treatment are separated, since the Water Boards are in charge of the latter.
Scale	A typical water supply company covers 200,000-600,000 connections and has 1 to 40 local authorities as shareholders.
What is the form of the aggregated structure and governance	Water supply companies are usually set up as Public Water PLCs, which is a company incorporated as a joint-stock company under Company Law, but all the stock is owned by local, provincial or national government (which, as a result, retains an element of control).

AGGREGATION IN THE NETHERLANDS	
Topic	**Information**
arrangements?	
Are assets transferred to the aggregated entity?	With respect to infrastructure assets, some water supply companies own assets whereas, in other cases, asset ownership is retained by the local governments. With respect to share ownership in the companies, the 1975 law stipulated that the owner of a water supply company to be taken over had to be compensated for the loss of future profits, which required a thorough investigation of technical systems, since take-over partners had to pay the net present value of the predicted costs and benefits for the next ten years, governed by a consistent tariff policy.
What are the entry and exit rules?	Initially, under the voluntary processes, municipalities decided to join together and set their own entry and exit rules. In the more recent "mandated" process, the Provinces defined the boundaries of the water boards and water supply companies. No entity can be "expelled" from the grouping.
Does harmonization of tariffs and service quality take place?	Yes, tariffs are usually similar throughout the territory of a water supply company. Service quality has generally improved throughout the service area of water supply companies.

AGGREGATION IN ENGLAND AND WALES	
Topic	**Information**
A. Institutional context for water and sanitation services	
Which level of government is responsible for water services?	Prior to aggregation in 1973, water and sanitation services were the responsibility of local governments under the ultimate responsibility of the Ministry of Local Government. There were 200 public water supply undertakers, 29 private water supply undertakers and almost 1,400 public sewerage authorities in England and Wales. This number had already been reduced through a series of Acts, since there were 1,200 water service providers after the Second World War. Following aggregation in 1974, water and sanitation became the responsibility of ten Regional Water Authorities. In addition, the 29 private companies remained in operation, serving about 25% of the population (as it would have been too expensive to purchase the assets of those companies and the Government was not advocating nationalization). Even though it formed no part of the policy at the time, aggregation laid the basis for the subsequent privatization of the RWAs in 1989, which involved the granting of licenses to publicly limited companies, whose shares were sold on the London Stock Exchange. This reform was accompanied by a clearer separation of functions, as the aggregation of all functions under the RWAs was perceived to have created an unsustainable "poacher and game keeper" conflict of interest.
B. Legal framework for aggregation	
Does the law define aggregation models?	The 1973 Water Act effectively mandated aggregation of water and sanitation services in England and Wales. The Act provided for the establishment of ten Regional Water Authorities (RWAs), with boundaries based mainly upon river catchments. The RWAs were established to carry out Integrated River Basin Management (IRBM) with responsibilities for watershed management, including pollution control of inland and tidal waters, water and wastewater services, land drainage, flood control, water-based recreation and fisheries. Local authorities continued to maintain sewerage networks but the RWAs controlled discharge of industrial effluents to those sewers. Local authorities retained responsibility for independent testing of water supplies. Previously existing bodies discharging some of these functions, such as the Water Resources Board or the River Authorities, were simultaneously abolished. A National Water Council was created to advise government on water policy matters and to assist RWAs in their functions. The central government retained some control over the financial management of the RWAs, and in particular, on their investment practices through the approval of their 7-year rolling capital investment programs. In addition, the Central Government had the power to direct RWAs to secure a rate of return on the value of their assets, limit the external financing sought by the RWAs and retained overall Ministerial oversight over the RWAs.
How frequent is aggregation?	Aggregated provision is the dominant form of service provision.
C. Drivers and constraints for aggregation	
Main drivers	Concerns about a degraded environment, poor water quality, inability to finance capital investments and poor

AGGREGATION IN ENGLAND AND WALES	
Topic	**Information**
	performance of the public authorities led to proposed legislation to reorganize the water sector, based on an Integrated River Basin Management (IRBM) approach. The reorganization of water services was also driven by a general reorganization of local government and the provision of healthcare services, with which it coincided. The 1972 Local Government Act led to the creation of a two-tier system of local authorities, with 47 counties and 33 district councils representing larger populations than the previous system of local governments.
Main constraints	A significant constraint to aggregation was in the overall design of the reform: as the RWAs were simultaneously required to meet water and effluent quality standards and to monitor their own compliance with those standards, the Act created a "poacher and gamekeeper" conflict of interest. Also, it was widely considered that insufficient time had been given for consultation and accommodation in the reform process. The creation of larger structures created a break in accountability between local authorities and customers. Other constraints included the opposition by local authorities or relatively high levels of staff attrition, which created resistance.
D. Processes for aggregation	
General process	The Secretary of State announced its intention to reorganize the sector in 1971, to take effect with the local government reorganization on 1 April 1974. Extensive consultations were carried out during 1972 and the legislation was drafted and debated in Parliament during the course of 1973. Although the Bill was substantially debated, with some resistance expressed by the Labour Party on specific points of the Bill, it was passed in both Houses within six months. The schedule for reform was constrained to fit timetables for the local government and public health reorganization, leaving just nine months between enactment and implementation. The structure for aggregation was established and implemented at the national level but each of the RWAs had to establish their own operational and financial structures according to their specific needs. Government provided invaluable guideline support during the implementation period, through working committees, which provided guidance on management structures, staffing, economic and financial issues. Shadow RWAs were created before the effective date for their creation, in order to organize the transition period.
Southern Water	Southern Water resulted from the aggregation of 4 River Authorities, 16 water undertakers and 106 sewerage and sewage disposal authorities. The new RWA served 3.7 million people in Southern England. The RWA was a relatively small organization compared to the size of its customer base: as a result, it was quite difficult to avoid conflicts of interest, with only one department responsible for operating the system and monitoring effluent quality for example.
Thames Valley	The Thames Water Authority was built largely on the Oxfordshire and District Water Board, which had been created through grouping in 1967, when 14 undertakings had been regrouped into one Board. A significant advantage of the aggregation in that region is that stand-by facilities for emergency situations and droughts became available for a broader population base and that alternative supplies could be made available in the event of a pollution incident.
E. Key Features of the aggregation models reviewed	

AGGREGATION IN ENGLAND AND WALES	
Topic	**Information**
Scope	The RWAs provided water and wastewater services, as well as other water resource management services.
Scale	All RWAs served more than 100,000 people.
What is the form of the aggregated structure and governance arrangements?	A Board of Directors governed the RWAs, and Central government Ministries and local authorities appointed their members onto the Board. Although the size of the Board could vary, the Board of Directors needed to have a simple majority of local authority members. Each Board was allowed to choose its Chairperson but a central Ministry appointed the Chief Executive of each RWA. The Boards were not accountable to their consumers in the same way as before aggregation, as not all local authorities could be represented on the Board. For example, the Board of Southern Water had 19 members, with 10 appointed by local authorities. The RWAs could then hire their own staff, on the basis of a typical organizational structure recommended by the Central Government.
Are assets transferred to the aggregated entity?	Ownership of all public water and sewerage infrastructure was transferred from either local authorities or joint boards of local authorities to the newly created RWAs on 1 April 1974.
What are the entry and exit rules?	As the boundaries of the RWAs were defined through legislation, there was no possibility for modification bar through the passing of new legislation.
Does harmonization of tariffs and service quality take place?	The RWAs had to set their own tariffs, equalized throughout their service area, and were required to be financially self-sufficient, except in isolated situations such as extending rural service coverage. That meant that previous rate support grants provided by the central government would be discontinued and a two-year transition period was granted to achieve this. Against the recommendation of the Government to introduce stepped tariff increases, most of the RWAs moved to cost-recovering and equalized tariffs immediately. Substantial tariff increases ensued (between 25% and 56% increase in one year depending on the RWA), to cover the costs of the transition to the new system, compensate for the elimination of subsidies and cover the cost of existing debt. The result was a surprised and concerned customer base, which impacted public support for the reorganization.

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ERM London

8 Cavendish Square
London
W1G 0ER
Tel: 44 (0) 20 7465 7200
Fax : 44 (0) 20 7465 7272