Aggregation of Water and Sanitation Provision: Finding the Optimal Scale for Operations

When several municipalities unite in a single administrative structure—a process known as aggregation—they can lower the cost of utility services through economies of scale. Aggregation of water supply and sanitation (WSS) services is established practice in some countries and is likely to spread, as decentralization policies leave some service providers too small to be efficient or sustainable.

Aggregation offers returns such as shared overhead and lower unit costs through bulk purchasing and pooled operations, plus other benefits that lower costs to customers or improved service at the current cost. Other benefits include greater access to financing, better distribution of skills, more opportunities for cross-subsidization and efficiency, access to new water resources, and new solutions to pollution problems. ¹

In 2005, we studied 21 instances of aggregation of WSS services aggregations, looking for innovative models and factors that contributed to success. The practices we identified may help other countries aggregate municipal utilities.

**Characteristics of aggregation schemes and structures**

Aggregation options range widely in scale, scope, structure, and process.

- **Scale.** Most aggregations are formed by neighboring towns. Some incorporate many municipalities, and some all major urban centers in the country. It is important to identify the aggregation’s optimal size. Economies of scale are powerful for utilities serving up to 125,000 people, but can tail off above a certain point (figure 1).

- **Scope.** Aggregated structures can provide one or all water services, and execute few or all functions.

- **Structure and process.** Aggregations may be temporary or permanent. They may be formed voluntarily based on mutual interests, or by mandate from a higher level of government. They may be driven by government incentives—for example, certain subsidies may be made available only to aggregated utilities. Municipalities and the aggregated structure may share responsibility for services and oversight in a variety of ways. In short, choices must be made about the institutional form of the aggregation and the procedures it will follow.

Each type of aggregation is different; none can be applied to another situation without tailoring to

¹ Aggregation can lower costs to customers served by high-cost WSS systems through cross-subsidies from utilities in low-cost areas of the aggregation.

suit specific needs. Clear entry and exit rules can allow the aggregation to resize as needed, but limits on exit possibilities should be considered to avoid destabilization of any aggregated structure.

Most of the innovation and success that we identified came from seven aggregations: two voluntary (France, Philippines); two driven by incentives (Hungary, Brazil); and three mandated by government (Italy, the Netherlands, and England and Wales).

The simplest structure may be a loose association of municipalities, with one providing leadership and resources. This model allows members to test their willingness to collaborate before committing to a larger structure.

A more permanent structure, such as the syndicate model in France, offers different services to different towns. Some syndicates package disparate services. A Philippines syndicate provides tourism development, fish processing, health services, and local roads and railways for ten towns. When such entities become, in effect, a supra-level of local government, they may be criticized for undermining local democracy, because the utility’s board is not directly accountable to citizens. If formal aggregation is not possible, aggregation can be achieved through the market, as when a water company achieves economies of scale by serving several towns.

Aggregation often implies changes in oversight. Utility services are usually overseen by local politicians who approve tariffs and monitor quality. Aggregation raises the question of whether such functions should remain in local hands or be aggregated along with the services themselves. The latter course has advantages, although it may encounter local opposition. Decentralized services are subject to interference by local government; interference is less likely when oversight is pooled in an aggregated entity. In Italy, a regional entity supervises smaller service providers. In England and Wales, service regions are self-monitoring—under the watchful eye of a central supervisor.

Governance, staffing, and conditions for entry and exit

To avoid conflict, aggregations must be governed in a way that represents all member municipalities. Members may have differing interests and reasons for aggregating. Those differences can and should be equitably represented in the agreement, and lost advantages adequately compensated. If one member is much larger than the others, it may reasonably seek a special position in the aggregated entity, such as heading up the board of directors.

Differing interests also can be addressed by allocating shares in the aggregated utility and voting rights on the board. Allocation creates multiple minority owners and limits the possibility of unilateral influence. Voting rights can be allocated in a variety of ways; each has advantages and drawbacks (table 1).

The utility’s articles of agreement should include precise rules about depreciation, accounting, pricing, water quality, continuity of service, and extension of the network. Rule changes should require a strong board majority. A clear, data-based strategy for keeping customers and community leaders informed may be necessary to parry opportunistic criticism from politicians.

Transfers of staff to the aggregated entity must be carefully planned. Technical continuity usually demands the transfer of some staff, transfer of an entire staff is typically neither necessary nor desirable. Formation of the new entity presents an opportunity to recruit innovation-minded new executives, to realize economies of scale by reducing staff, and to adjust the staffing mix to fill gaps in skills and capacities. The specialized skills required for effective WSS services are scarce in highly decentralized en-
environments. Larger, aggregated providers need more of such skills and can better afford them.

Other municipalities may seek to join the aggregation—a sign of success. However, the impact of growth must be carefully considered so as to avoid costly or complex changes. When a member leaves the aggregation, the move may weaken the group’s legitimacy, reduce its customer base, undermine financial viability, and lead to higher tariffs. The articles of association should establish strict exit conditions—including advance notice of the intent to separate and assumption by the exiting member of attendant costs.

Harmonization of tariff levels usually takes time, in part because aggregation may not instantly improve service quality. Harmonization can be a unifying force, but it may also require one member to cross-subsidize others. Uniform rates can cause difficulties if one member believes that it could achieve lower tariffs by leaving the group. The aggregation process should include an intermediate phase, but harmonization should not be put off too long.

If wider aggregation of local services is underway, WSS services aggregation should be coordinated with the process.

### Determining asset ownership

Should ownership of assets be transferred to the aggregated entity or remain with the member municipalities? Local governments may be reluctant to cede control of assets, and the process of inventorying and valuing assets can be complicated. In many cases, asset transfer is effectively or explicitly forbidden. But transferring ownership may make possible greater economies of scale while stabilizing the aggregation by deterring exit. It may also be a precondition for investments by the aggregated entity in shared facilities. (Such investments often make economic sense—but only when they are made in services for which the aggregation is fully responsible.)

To avoid conflicts, investments must be clearly registered and compensation rules clearly defined. There are three ways to pay for transferred assets: (a) through shares in the new entity, (b) through direct reimbursement by other members, and (c) through payment of a lease fee. Every asset transferred should be independently valued and inventoried upon aggregation, with depreciation schedules for future years. In the Netherlands, municipalities that transferred assets to an aggregated entity were compensated for loss of future profits over 10 years.

Water rights, a special class of asset, represent a significant contribution that must be appropriately valued—a difficult task in view of the absence of a true market. Within aggregations, water rights can be converted into shares, sold by the owner, or leased. Conflicts often occur. In the Philippines, a water rights conflict led to the failure of the aggregation.

### Table 1. Pros and cons of several methods for allocating voting rights

<table>
<thead>
<tr>
<th>Method of allocation</th>
<th>Potential advantages</th>
<th>Potential drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>By population of each member’s service area</td>
<td>Most democratic rule</td>
<td>Small members may be deprived of voting rights</td>
</tr>
<tr>
<td>By number of customers, number of connections, or asset value</td>
<td>Sound economic basis</td>
<td>Varies from year to year</td>
</tr>
<tr>
<td>One member, one vote</td>
<td>Simplicity</td>
<td>May be unacceptable to larger members</td>
</tr>
<tr>
<td>Specific powers for dominant entity, if one exists</td>
<td>May be necessary to give dominant entity confidence</td>
<td>Small members have limited influence</td>
</tr>
<tr>
<td>Combination of two previous methods</td>
<td>Acceptable minimum representation for small communities</td>
<td>May deter more powerful municipalities from joining</td>
</tr>
</tbody>
</table>

By population of each member’s service area

By number of customers, number of connections, or asset value

One member, one vote

Specific powers for dominant entity, if one exists

Combination of two previous methods

Potential advantages

Potential drawbacks
Key policy lessons from global experience with aggregation

Aggregation can raise the efficiency of service delivery through economies of scale and scope. Gains may come from sharing overhead costs across a wider customer base and reducing costs through bulk purchases, among other sources. The scope of potential economies and the factors that account for them always depend on local circumstances.

Aggregation can fail if benefits are not understood or in the absence of an adequate implementation process—due process and political will are essential. The benefits of aggregation may go unrecognized or ignored by local governments that put short-term interests ahead of long-term gains. Because aggregation may have clear winners and losers and involve substantial transaction costs, the process usually requires strong leadership, either from individuals or an institution. Because each aggregation is unique, external assistance is usually required. Smaller municipalities that lack capacity in all of the areas covered by the aggregation may be especially in need of outside help. External assistance from disinterested parties may also help the process avoid political conflicts.

Central governments can assist, mandate, or provide incentives for aggregation. The ideal aggregation process is voluntary. But national governments can support and encourage voluntary aggregation by providing guidance on structures, governance and management, tariff-setting, and entry and exit rules. The government may also provide a framework for evaluating costs and benefits. Tax or subsidy incentives for aggregated providers also help advance the process. In cases where the potential benefits of aggregation are large, governments may mandate it. However, as mandatory action may appear as heavy-handed interference in local matters, incentives may be preferable.

As a final note, aggregation is often considered as a prerequisite for introducing private sector participation into the WSS sector. But the decision to aggregate must make technical, economic, and political sense on its own—it should not be made primarily for the purpose of attracting private operators. Maximizing the efficiency of service provision must always be the primary focus.