

## 2 WATER SUPPLY AND SANITATION AS A PUBLIC RESPONSIBILITY

The provision of infrastructure services (e.g. mobility, supply and disposal, education, welfare services, culture) is organised differently in the various European Union countries. The actual structure of infrastructure policies depends on factors including the legal, economic and political framework in the country concerned (see also Chapter 3). In this chapter, we will focus primarily on economic concepts and the reasons for market or state involvement in the water supply and sanitation industry. We will then go on to discuss the institutional options available for organising water supply and sanitation systems.

### 2.1 Reasons for state infrastructure policies in relation to water

For state interventions, i.e. action taken by the state,<sup>2</sup> a range of financial justifications are considered in general terms to demonstrate that individual decisions have caused a range of inefficiencies (“market failures”) which can be corrected through state action. In this context, market failures are traditionally discussed in connection with the following phenomena: external effects, public goods, lack of competition, lack of and/or incomplete markets; lack of information or information asymmetries; lack of foresight, insecurity and uncertainty; long-term, complex coordination and planning demands; merit goods (e.g. books) / demerit goods (e.g. drugs).

The **presence of market failures** generally means that individual decisions should be supplemented or replaced by collective, often state, action and planning. As such, the presence of market failures can generally be assumed in the field of infrastructure policies, particularly in relation to water as a resource (see studies such as Hanemann, 2005; also the distinctions discussed below).

On the whole, arguments for state intervention on the **basis of efficiency** can be derived from the following explanations: individual decisions (including on markets) lead to an inefficient allocation of existing resources; goods and services demanded by citizens are not provided individually, or are only provided individually to an insufficient (i.e. inefficient) extent. State intervention can increase efficiency in this area in the following ways:

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<sup>2</sup> In this study, the term “state” will be used as a synonym for all public-sector actors. This means that the state is active in planning, operating, regulating and financing infrastructure at various levels (European, national, regional, local/municipal). In this sense, the state makes collective decisions which – at least in principle– are intended to be in the common interest, while decisions made by households and companies aim to satisfy individual needs and interests.

- Goods and services demanded by society (e.g. basic health care and education) are provided as a result of decisions made by the state (i.e. by the public sector)<sup>3</sup>;
- Planning and a standardised, central supply can reduce transaction costs (e.g. administrative costs);
- Individual lack of foresight can be compensated for by state insurance systems;
- Environmental and social sustainability can be ensured by a legal framework.

One important requirement in relation to increasing efficiency is that state intervention itself must be efficient, i.e. that it takes place for the common good, for example, and that potential state failures (e.g. distorting taxation, the political economy in infrastructure policy) are not detrimental to overall efficiency.

In addition to these “traditional” forms of market failure, an important role is also played by **considerations of justice** – as well as basic considerations of public finance and welfare economics. The state should not only function effectively, but should also counterbalance any unequal distribution of wealth perceived as undesirable (e.g. income, wealth, opportunities to participate, regional disparities). Extending beyond this significantly, state action can be justified in the interest of **guaranteeing basic rights and the right to freedom, and ensuring desirable social development (ethics)**.

If state intervention is called for on the basis of these aspects, the state must assume a fundamental **responsibility** for the planning and provision of infrastructure. How exactly this responsibility should be exercised cannot, however, be inferred from this economic justification. As a result, how the role of collective planning and decision making is defined in practice primarily results from the various societal aims (e.g. considerations of justice) in connection with the specific, physical properties of the infrastructure concerned.

**Water** is distinguished from other goods traded on markets by its **physical and economic properties** (e.g. Young and Haveman, 1985; Kessides, 2004; Lieberherr and Fuenfschilling, 2016). These properties include its mobility, the variation in available water supply, its interconnected uses, the absence of substitutions and economies of scale in the sense of a natural monopoly, which necessitates direct state supply or at least strict regulation in relation to water as a resource. This special role shall be examined in more detail below, paying particular attention to the reasons for and duties of collective action.

**Table 1** gives an overview of various areas of responsibility that can generally be exercised by various players (e.g. private households, companies, private organisations, non-profit organisations, the public sector). Distinctions are made between tasks within infrastructure policy according to the provision of services, funding and regulation. Normative justification can be found for the state to take an active role in all three sectors. The economic justifications noted above for state intervention in water management systems are summarised in **Table 1** under the heading “Efficiency”. The aspects of efficiency include public goods, external effects, regulation of competition (natural monopoly), network infrastructure, divestiture and information asymmetries. The importance of these individual aspects for the water management system varies with regard to both water supply and sanitation.

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<sup>3</sup> For instance, collective pay-as-you-earn systems (for pension schemes, health and accident insurance) are known for having significantly lower administrative costs while providing much higher levels of provision.

State responsibility for...	<i>Normative justifications for state intervention in the water supply and sanitation industry as part of water management systems</i>		
	<i>Justice, social equality</i>	<i>Social cohesion, ethics</i>	<i>Efficiency</i>
Provision of infrastructure services ("provision"), particularly by means of state ownership and operation	In principle, access to infrastructure is guaranteed to all; public-orientated pricing by means of state (municipal) ownership of systems	Collectively established infrastructure, communal use as core element of municipal fulfilment of duties; non-discriminatory access; water has special properties as an economic good (vital nourishment, lack of substitutions)	Clean water (especially drinking water) and environmentally responsible wastewater treatment: public good (protection of public health, soil protection and protection of bodies of water); external effects (avoiding environmental damage); information asymmetries between providers and consumers (users)
Financing and source of funds for providing infrastructure ("financing")	Supporting the development and operation of infrastructure, access by households on lower incomes, infrastructure provision even in regionally peripheral and/or economically disadvantaged areas	Guaranteeing access to vital nourishment; avoiding privatisation of profits (or mutualisation of losses)	Very long service life for infrastructure (natural monopoly); promotion of positive external effects (health, environmental protection); insecurities and uncertainties
Regulating the market mechanism (supplier, demand, access, prices) ("regulation")	Avoiding exploitation of monopoly positions, affordability of water supply and wastewater disposal	Basic human right to clean water (see Sustainable Development Goals – SDGs, etc.)	Provision of drinking water and sanitation: natural monopoly; regulation of price, quality, network; external effects, public goods

**Table 1:** Provision, financing and regulation of public goods and services: normative analysis of the justifications for state intervention in water management systems

Note: The "strength" of the arguments for state intervention in the water supply and sanitation industry, represented by the darkness of the grey boxes, is based on the economic arguments specified in the text, in conjunction with a judgement by the authors.

Source: Authors' representation and design, partly based on Unger et al. (2017) as well as Young and Haveman (1985).

The assessment of the significance of different arguments is shown by grey shading. Particularly striking are those **efficiency arguments** that focus on technical aspects and aspects of land use within the provision of infrastructure. Regardless of questions of provision, infrastructure in water management systems represents durable networks in the form of natural monopolies connected by strong, external effects (health and environment). Additionally, financing for infrastructure should be secured in the long term; information asymmetries or absence of and/or incorrectly estimated future expectations mean there is a requirement for long-term planning.

Clear arguments in favour of state services can also be seen in relation to the provision of infrastructure; however, these seem less persuasive than those in the area of financing and regulation, as provision itself can take various forms.

In addition to justifying state action based on efficiency, **Table 1** also shows two more aspects which support a clear role for the state in infrastructure policy. Firstly, this is the state's role in **guaranteeing social cohesion and social equilibrium and in ensuring justice, equal opportunities and opportunities to participate**. Even if infrastructure provision would be more efficient through private players, the state would nevertheless have a regulatory role to play, if access to or the price of services (e.g. vital nourishment) were distributed unfairly. The equalising role in the field of providing services results from every individual's basic access to infrastructure, regardless of income or wealth, for example. In the field of financing, there are arguments for supporting fees by granting state subsidies

(societally and regionally) and arguments for the affordability of water supply and sanitation. In the field of regulation, the state role is one of controlling the possibility of a monopoly developing or of the infrastructure provider gaining a market-dominating position. This role also encompasses preventing the exploitation of this market power.

Finally there are additional justifications for state action not solely in relation to efficiency and justice (social equilibrium) but also in relation to **questions of basic ethical values as part of desirable societal development**. Water as a good, as briefly discussed above, is associated with a range of specific physical and economic properties. In relation to basic ethical and societal values, water has the unique properties of being vital for life in providing nutrition and of lacking any substitutes among other goods, both of which can be regarded as particularly important for state guarantees of provision. Illustrating this, a supply of clean water was recognised as a human right by the United Nations in 2010. With regard to providing the infrastructure service (“provision”) as well as financing, some arguments for state interventions can be derived from this viewpoint. However, guaranteed supply can also occur if the state is more active in the field of regulation. From a societal and ethical perspective some arguments do indeed favour state provision. However these arguments are often secondary when the aspects of efficiency and social justice are considered, which both already present very robust arguments for state intervention in the water supply and sanitation industry.

The discussion thus far has indicated that water supply and sanitation present fundamentally governmental (collective) issues that do not (and should not) depend on decisions made at an individual level. The following section will discuss which possible institutional options for organising these sectors arise as a result of this, including funding and provision of infrastructure services.

## 2.2 Institutional options for water supply and sanitation

### 2.2.1 Regulatory requirements and frameworks

The roles and viewpoints of the various players that regulate, provide and fund water management systems, as discussed above, indicate that the planning and providing role of the state does not necessarily need to be carried out by a specific state-run organisation. In addition to the tasks of a “rule-of-law state” (guaranteeing basic rights, legal security and core market institutions) and of a “productive state” (production and allocation of public goods and services), there are also tasks of an “enabling and guarantor state” (commissioning services, tenders and granting concessions).

Currently, the global distribution of roles between the public and private sector in the water supply industry generally favours public provision of water, now as it did in the past. **Figure 1** shows that across the world, only about 10 % of all water provision for large cities (with more than 1 million inhabitants) is supplied by private providers (a more exact empirical data basis is not possible within the scope of this study). Even “private” supplies generally operate on the basis of a range of state regulatory framework conditions (such as granting concessional or leasing agreements; see below for more information). However, we should not infer from these findings that no further steps towards liberalisation of municipal water supply can be taken in future (e.g. see the discussion of financialisation of Chapter 6).