GOVERNANCE OF DRINKING WATER AND SANITATION INFRASTRUCTURE IN BRAZIL

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This document was prepared a side contribution in the framework of the 2nd OECD/ANA Policy Dialogue on "Setting and Governing Economic Instruments for Water Resources Management in Brazil" carried out over the period 2015-2017. Under the supervision of Aziza Akhmouch from the OECD Water Governance Programme, it relies on the desk research support of Oriana Romano and written inputs by Peter Gammeltoft, expert, and former Head of Unit in charge of the implementation of the EU Water Framework Directive. This non-paper is meant to provide ANA with a stock-taking of the current governance of water and sanitation infrastructure in Brazil with a view to contributing to ongoing discussions about future pathways and strategies for coordinated public investment across levels of government, and economic regulation modalities. While some findings were published in the OECD report "Water Charges in Brazil : The Ways Forward" released in November 2017, the paper itself has not been subject to discussion in any OECD subsidiary body.

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Setting the Scene

1. Brazil has made progress towards the goal of delivering affordable universal drinking water and sanitation services by 2033, as foreseen by the National Sanitation Plan. However, much remains to be done: in 2015 more than 33 million Brazilians had no access to safe drinking water, while more than 100 million had no access to sewage collection. Only 42% of sewage in Brazil is treated[1] with consequences on public health (i.e. diarrhoea cases[2]), the economy (i.e. high costs for industry), the environment (i.e. reduced utility of waters for recreational purposes) and biodiversity. In certain rivers in Brazil, the lack of sewage treatment is already rendering water unusable for industrial purposes, leading to significant additional costs for industries and posing risks for the development of the tourism industry.

2. Although the legal framework through the Sanitation Law 11.145/2007 is quite complete and contains the substantial requirements needed to the performance and functioning of drinking water and sanitation systems, implementation is lagging behind. In Brazil, the 2007 Law implements the provisions in the 1988 Constitution guaranteeing, progressively, universal access to drinking water and sanitation. However, with the current rate of implementation, universal coverage of drinking water supply and wastewater collection and treatment would only be reached in the course of the 2050s instead of by 2033. This is caused by severe delays in adoption of municipal sanitation plans, in implementation of water and sanitation projects, non-completion of many projects resulting in the inability to spend public funds intended for water and sanitation. All issues linked to capacity gaps at both federal and subnational levels.

3. Approximately R$ 300 billion of funding would need to be mobilised for investment in drinking water supply and wastewater collection and treatment until 2033. At global level, water infrastructure needs will require investment of US$ 12 trillion until 2030, accounting for 20% of the total infrastructure investment foreseen to sustain economic development until 2030[3]. These needs are comparable to those of the power sector and higher than the investment needs in the telecom sector.

4. Infrastructure plays a key role in responding to the pressures on water resources and enhancing water security. The pressure on water resources is set to continue mounting in the coming decades particularly as a result of demographic change, economic growth, pollution, land-use change, ecosystem degradation and climate change. Brazil is no exception in this respect as evidenced by the water crisis in the South-East in 2014. Ultimately, water insecurity may lead to disruption of production value chains for industries globally, increased water competition between various water users and increases in migratory pressure. Economic losses resulting from water insecurity would be accompanied by loss of jobs: globally, 78% of all jobs constituting the workforce are either heavily (42%) or moderately (36%) dependent on water. What is at stake is therefore economic growth, sustainability and jobs.

5. Experience has amply demonstrated that infrastructure development, while necessary, is not sufficient to guarantee the effective, affordable and efficient delivery of benefits, such as public health, water security and resource and environmental protection. Going beyond the purely technical aspects of drinking water and sanitation and addressing governance issues to ensure coherence with other societal aims is a *sine qua non* condition for getting results from drinking water and sanitation policy that can be sustained over time:

- ***Drinking water and sanitation policy is a shared responsibility between all the relevant actors and requires their active co-operation***: Drinking water and Sanitation policy is a long-term policy requiring costly infrastructure that will last for 50 years or more. It has cross-sectoral policy

[1] Ministério das Cidades, Secretaria Nacional de Saneamento Ambiental, Diagnóstico dos Serviços de Água e Esgotos 2015 (Brasília, 2016).
[2] In 2013, there were 400 000 hospitalisations for diarrhea.
[3] OECD (2015), OECD Principles on Water Governance.

impacts at national, regional and local level. Given the timeframe involved, policy should be agreed and developed across levels of government, in close co-operation with private and public stakeholders. In Brazil, complex and resource-intensive responsibilities for provision of water and sanitation services have been allocated to sub-national governments, resulting in interdependencies across levels of government that require co-ordination to mitigate fragmentation. Part of the governance challenge is to ensure coherence between sanitation plans and projects with wider national and regional socio-economic policies targets.

- ***Drinking water and sanitation policy is closely linked to water resources policy in terms of immediate impacts on both availability and quality of water resources***. Drinking water and sanitation policy is also linked to sectoral policies (agriculture and industry in particular) as well as transversal policies such as health, drought, social and climate policies. In "smart cities", investment decisions need to be integrated with those related resource efficiency, decarbonised energy production and sustainable waste management. Globally, the UN Sustainable Development Goals (SDGs), established in 2015, not only push forward the agenda on safe drinking water and sanitation by 2030 (SDG6), but highlight the interdependency between water and a series of other SDGs and targets concerning energy and food security, health, ecosystems, cities, climate change and gender equality, as they are all critically dependent on tackling water-related issues.

- ***Planning should ensure long term benefits of water infrastructure***: In view of the inherent uncertainties about future climatic and economic development, care needs to be taken when planning investments in order to avoid development lock-in. Where possible and appropriate, priority should be given to resilience and to investment in scalable solutions. Large cities will often be particularly vulnerable due to climatic and economic development and may need to take extensive measures across administrative boundaries, both inside and outside the urban perimeter, to strengthen their resilience.

- ***The active involvement of civil society, users and other stakeholders is key to deliver expected outcomes of drinking water and sanitation and water resources policies***. There is sufficient water to satisfy the water needs of human settlements, ecosystems, agriculture and industry if the right measures are taken to manage water resources sustainably and to ensure that water of appropriate quality is available for different uses. It is therefore essential that all levels and sectors of government as well as private stakeholders and civil society are given opportunities to inform discussions and express their views to ensure policy stability over time and to avoid policy changes because of changes in government. Stakeholder engagement can help build confidence and trust, increase the willingness to pay and raise awareness, amongst others.

The objective of the work

6. This work aims to provide an assessment of the state of play with respect to implementation of drinking water and sanitation policy for drinking water and wastewater collection and treatment in Brazil and discuss governance challenges. It sets recommendations to accelerate and improve implementation in Brazil with a view to providing cost-effective and affordable water and sewerage services that can be sustained over time. Finally, it showcases international experiences from the European Union concerning the implementation of legislation on drinking water and sewage collection and treatment.

7. The development and implementation of drinking water and sanitation policy in Brazil confirms that establishing legislation and programmes for investment in water infrastructure is not enough to ensure the practical policies implementation. In fact, the drinking water and sanitation sector holds intrinsic characteristics that make it highly sensitive and dependent on a series of factors other than legislation and the availability of capital for investment. In Brazil, as in other countries, the development of the sector is

critically dependent on multilevel governance. The focus of this report is therefore on the governance arrangements made to ensure the implementation of drinking water and sanitation policy and, in particular, of the law on basic sanitation.

8. This study refers to the OECD Principles on Water Governance as a reading template to assess the situation in Brazil and identify some ways forward (Box 1).

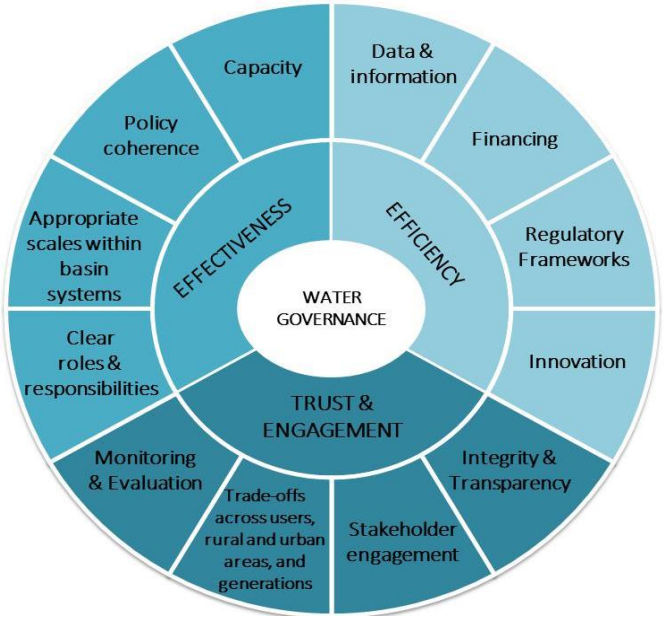
Box 1. OECD Principles on Water Governance

The OECD Principles on Water Governance were developed on the premises that there is no one-size-fits-all solution to water challenges, but a menu of options building on the diversity of legal, administrative and organisational systems within and across countries. They recognise that governance is highly contextual, that water policies need to be tailored to different water resources and places, and that governance responses have to adapt to changing circumstances. These principles can be applied with a view to ensuring cost-effective and efficient delivery of water and sanitation services. This framework addresses the building of trust of engagement of stakeholders, and effective and efficient management.

The Principles are rooted in broader principles of good governance: legitimacy, transparency, accountability, human rights, rule of law and inclusiveness. As such, they consider water governance as a means to an end rather than an end in itself, i.e. the range of political, institutional and administrative rules, practices and processes (formal and informal) through which decisions are taken and implemented, stakeholders can articulate their interests and have their concerns considered, and decision-makers are held accountable for water management.

A graphic illustration of the principles is shown in the figure below which includes the principles clustered under the three main headings of efficiency, effectiveness and trust & engagement.

Figure 1. OECD Principles on Water Governance



Source: OECD (2015), OECD Principles on Water Governance, http://www.oecd.org/governance/oecd-principles-on-water-governance.htm

The state of play in Brazil

The legal framework for water and sanitation services and who does what

9. The Law N° 11.445/2007 and its implementing rules in Decree N° 7.217/2010 regulate drinking water and wastewater collection and treatment. The Law aims at ensuring universal supply of drinking water, collection and treatment of sewage, management of solid waste, and of urban drainage and rain water[4]. The Law on Basic Sanitation explicitly mentions the need for integration of sanitation infrastructure and services with efficient management of water resources and that the services provided need to articulate with policies of social interest such as, *inter alia*, policies for urban and regional development, environmental protection and promotion of health. It also calls for efficiency, economic sustainability of services and transparency and public participation. Consultative bodies with representatives of governmental bodies, service providers, service users, and relevant technical associations, civil society and consumer organisations can participate in the implementation of the Law.

10. By Law, municipalities are responsible for water supply and sanitation services: they are in charge of municipal planning, service provision, organisation, regulation and controls, as well as of defining tariffs and preventing abuse of dominant position. The Law provides provisions on delegation of these responsibilities and the associated conditions: municipalities can decide to delegate their responsibilities for regulation, monitoring and service provision to states or to public consortia under public or private law. When service provision is regionalised, comprising several municipalities, it allows for service provision to be provided by delegation to another public body or a company.

11. In almost all states there are inter-municipal organisations or publically owned companies under private or public law to which many municipalities have delegated some of their obligations under the Sanitation Law. Also, in some cases, the responsibility for operating water and sanitation services has been delegated to private operators with participation of private capital. However, it appears that there is a significant number of municipalities that are not associated with public or private companies able to assist them in fulfilling their obligations. There is no accurate national information available on the extent to which such delegations have taken place.

12. The Law defines roles and responsibilities for water and sanitation policies both at state and federal levels. At federal level the Inter-ministerial Working Group (GTI-Plansab) was created in 2009 to plan, execute and co-ordinate the preparation of the National Sanitations Plan (Plansab) through a transparent and participatory process. The draft National Sanitation Plan would be then submitted to the Minister for Cities for approval after consultation with the ConCidades.[5] In 2013 the mandate of the GTI was renewed[6] to reflect new tasks following the preparation of the National Plan. The new mandate included overseeing monitoring, evaluation, implementation and revision of the Plansab. The Working Group is presided by the Ministry of Cities. It has representatives of the Civil House, five other Ministries, the BNDES and the Caixa Econômica Federal and six additional federal government institutions and Councils, including the National Water Agency (ANA) and the National Councils for Water Resources (CNRH) and for the Environment (CONAMA).

63. The GTI and its subcommittees are the only current co-ordination structures. The GTI is certainly an appropriate body to pull together technical contributions from the different administrations. However, it is a technical body with no decision-making powers. In order to favour improved policy co-ordination, the

[4] Lei N° 11.445, de 5 de janeiro de 2007, with subsequent amendments; Decreto N° 7.217/2010 de 21de junho de 2010, with subsequent amendments.

[5] Decreto N° 6.942 de 18 de agosto de 2009

[6] Decreto N° 8.141, de 20 de novembro de 2013

Civil House has recently proposed the creation of an Inter-ministerial Committee on Sanitation with a wider policy co-ordination mandate, composed by the Casa Civil, the Ministry of Cities, ANA, Ministry of Planning, Ministry of Health, Ministry of Environment, Ministry of Defence; Ministry of Economy and FUNASA[7].

13. Furthermore, there are several additional bodies with responsibilities in water supply and sanitation at federal level. In 2006, a deliberative and consultative Council of the Cities (Conselho das Cidades or ConCidades) was created. One of its attributions is to oversee and assess the implementation of the national urban development policy, including programmes for sanitation. A technical Committee for Sanitation has been established under ConCidades. Moreover, there is a deliberative and consultative National Council for Health under which there is an Intersectoral Committee for Sanitation and Environment (Comissão Intersetorial de Saneamento e Meio Ambiente or CISAMA). It is not clear what the dividing line is between the two Councils and their sub-committees and between these Councils and GTI-Plansab. Further clarification would be needed on the respective role of the above described federal councils, working groups and committees established under different Ministries, all having responsibilities on sanitation.

Ways forward for clear roles and responsibilities

- The new Inter-ministerial Committee on Sanitation proposed by the Civil House could become the body responsible for policy co-ordination. It is still under discussion which body would be in charge of providing technical support to the Inter-ministerial Committee. Disagreements between the federal authorities could be resolved by the standard mechanism for resolution of disagreements in the Government, i.e. with the assistance of the Civil House.

- The GTI- Plansab should create a technical committee to manage implementation actions for Plansab and create additional technical subgroups or subcommittees.

- Roles and responsibilities across federal authorities should be rationalised and duplication eliminated, by ensuring that the different federal authorities contribute to policy development and programmes in accordance with their specialised skills. Based on desk research and interviews carried out by the author of this paper, roles and responsibilities could be allocated according to four main areas, e.g. as follows:

    1. The Ministry of Cities could maintain the current lead on the National Sanitation Plan and the secretariat of the GTI
    2. The National Water Agency could be the technical reference institution for the definition of a joint set of environmental, economic and social targets and priorities for the sanitation programme and on the regulation of sanitation,
    3. The Ministry of Planning could take the lead on coordination with State and other subnational planning, integration in the PPA; and
    4. The Ministry of Finance could lead on rules for ex-ante and ex-post controls on State disbursement of federal funding and financial transfers to the States.

[7] The newest version of the draft law does not establish the participants of the Committee, but it is expected to be established by Decree after the approval of the Law.

Drinking water and sanitation planning

Municipal Plans

14. Municipalities must adopt plans for water supply and sanitation. Plans provide the diagnostic of the situation, the targets to be attained and their timing; the actions, programmes and projects for implementation and their subsequent evaluation. As from 2017, the non-adoption of the water supply and sanitation plan implies no access to federal funding of sanitation infrastructure, either through grants or in the form of loans from federal financial institutions. Beyond the existence of water supply and sanitation plans, the allocation of federal resources is also subject to the existence of a consultative consumer body, the good performance of the operator and efficient and effective services over the lifetime of works. Resources are allocated on the basis of priorities aiming at supporting municipalities that lack resources to sustain the services without external support. By Law, it is prohibited to grant federal resources to basic public sanitation services not provided by an (public) entity or body of the Federation as defined in Brazil's Constitution. For integrated economic development regions, regional water supply and sanitation plans are articulated with states and municipalities.

15. The elaboration of municipal water supply and sanitation plans is lagging behind. The original deadline for adopting the plans was by the end of 2014. This deadline has been extended twice, to the end of 2015 and the end of 2017 respectively.[8] However, by October 2015 only 31% of Municipalities had adopted their plans[9] and only 32% of Municipalities are expected to have their plans in place by 2018, rising to 51% by 2023[10]. Therefore, more than two thirds of Brazil's municipalities that have not yet adopted sanitation plans have not done so because of lack of capacity and resources. This in its turn prevents them accessing federal resources to fund investments in sanitation.

16. There are several challenges concerning planning at municipal level, which include: mobilising necessary resources and institutional capacities (e.g. knowledge, data) to prepare the plan; ensuring that the planning is coherent with other planning with which it is connected at municipal, regional and national level; mobilising technical and financial resources to implement actions and projects needed to attain the planned targets.

Federal Planning

17. Since 2014, the basis for planning of universal provision of safe drinking water and sewerage services sanitation has been the National Sanitation Plan, Plansab[11] whose time horizon for completion is 2033. At federal level, the National Sanitation Plan (PNSB or Plansab) is required to define short, medium and long term targets for universal coverage of services, proposals for programmes, projects and actions to attain these targets and procedures for policy evaluation. The Plansab, which is reviewed at least every 4 years, is based on a development scenario assuming an annual growth rate of GDP of 4% throughout the planning period, increased use of low-carbon technologies, development of the management and service provision of the state and improved access to water resources through clean development mechanisms and strategies to enhance the protection of spring waters[12]. However, it appears that little or no account has been taken of the impact of climate change and spatial developments on water resources availability or on competition for water resources with other users such as power generation, industry and agriculture.

18. With respect to drinking water and sanitation, Plansab relies on the National Information System on Water, Sanitation and Solid Waste (SNIS), which contains data on sanitation uploaded directly by

[8] §2º do Art. 26 do Decreto nº 7.217, de 21 de junho de 2010. http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/decreto/d7217.htm
[9] FIESP http://www.fiesp.com.br/noticias/203629/
[10] Ministério das Cidades, Secretaria Nacional de Saneamento Ambiental, PLANSAB, Relatório de Avaliação Anual, Ano 2014, Brasília (2015).
[11] Ministério das Cidades, Secretaria Nacional de Saneamento Ambiental, Plano Nacional de Saneamento Básico (PLANSAB) (Brasília 2014)
[12] Ministério das Cidades, Secretaria Nacional de Saneamento Ambiental, idem.

service providers. There is no external or independent quality control of the data uploaded. Plansab estimates the investment needs from 2014 to 2033 to be R$304 billion, of which R$ 122 billion are for drinking water, while R$ 182 billion are for waste water collection and treatment infrastructure. The average planned investment expenditure for drinking water and sewerage in the 2014-2033 period is R$ 15 billion annually. For sewage treatment, estimates of investment needs are based on application of the standard requirements applied in environmental licensing with biological removal of organic matter (reduction of BOD5 to 120 mg/l, or minimum 60% removal of BOD5). As something new, Plansab now foresees that about 20% of the water and sewage funding is intended for capacity building ("*medidas estruturantes*"), while 80% is intended for investment in water and sewage infrastructure.

19. A federal multi-annual programme (Plano Pluri-Annual - PPA) for the period 2016-2019[13], managed by the Ministry of Planning, sets 12 different detailed aspirational national targets for water and sanitation (in addition to national development targets in other areas) to be attained through the implementation of municipal sanitation plans during the programming period. However, it is not clear how these detailed targets have been set and how they relate to broader national and subnational development priorities. As targets are national and not defined by municipalities, there are no immediate consequences if targets are not met at municipal level.

Ways forward for improved vertical co-ordination

20. It is necessary to consider how to promote and exploit the synergies between municipal sanitation planning and local, regional and national planning, and how organisation and planning can best contribute to this. Given that the remaining implementation period of the Plansab is more than 15 years, it is possible to define implementation priorities that will optimise the delivery of these synergies. The legislative framework requiring coordination with other policies is largely in place, and the question faced is one of ensuring that the existing requirements in legislation are met, rather than of adopting additional legislation.

21. In order to ensure coordination with other levels of government, different economic sectors, civil society and the general public, it is recommended to:

- *Co-ordinate and align planning and priorities across national and subnational policy, and national and subnational stakeholders*. This is essential for policy stability, effectiveness and efficiency. Priorities should be fully reflected in the Federal Government's Pluri-Annual Plans (PPA) and the Federal budgets. At federal level, the timely inclusion of targets for sanitation in the Pluri-Annual Planning (PPA) provides an important opportunity for increasing policy effectiveness and efficiency through: i) a better articulation of the targets for sanitation policy with other policies at both federal and subnational level; ii) the translation of this articulation into targets and priorities for investment. In view of the absence of any visible links with national and subnational policy priorities in areas such as water resources management, public health, agriculture and industry, this must be regarded as an untapped potential. The ATLAS Brazil is a tool for co-ordination across the federal, state and municipal levels, as well as a guide for the definition of priorities and goals of the PPA and the allocation of federal budget in the annual budgetary laws. The ATLAS was published by the National Water Agency (ANA) in 2010, as part of a broad planning context, offering in detail a portfolio of projects and comprehensive work on providing an adequate tool for long-term action planning and the identification of emergency interventions in the sanitation sector. In addition to being a valuable decision-making instrument to guarantee the supply of water to supply the entire urban population of the country, ATLAS Brazil contributes both to the integrated management of water resources and the compatibility of its multiple uses, and for the rationalization of investments in sanitation.

[13] Lei N° 13.397 de 21de dezembro de 2016

- *Enhance nation-wide discussion and consultation fora with States and stakeholders* from economic sectors and civil society where the different steps in the preparation of priorities and national sanitation plans and emerging priorities can be discussed to ensure that stakeholder inputs are fully considered.

- *Organise bilateral meetings on a regional or State basis* to ensure that regional or State specificities are properly considered in priority setting and in Plansab.

- *Carry out public consultation* to gauge public opinion as part of the preparation of priorities and of Plansab.

- *Ensure that criteria reflecting the priorities identified in planning are fully integrated into timely reviews* and updates of the national sanitation plan, Plansab.

Policy coherence

22. The Sanitation Law requires that water and sanitation planning be coherent with water resources policy as well as other policies at federal level relating to local, regional and national issues of public health, social issues, the environment and economic development. But the Law does not define operational priorities that can be translated directly into targets in the National Sanitation Plan and be applied in decisions about allocation of federal funds to water and sanitation projects[14]. Improved coherence of sanitation policy with other policies can help establish operational priorities and improve policy effectiveness.

23. It is a clear requirement in the Sanitation Law that municipal sanitation plans, and thus also the infrastructure needed for their implementation, are compatible with the relevant river basin plans. However, there seems to be no operative provision to verify that this requirement is being complied with. Moreover, much water and sanitation planning and infrastructure is critically dependent on major infrastructure works to guarantee water security. The construction of such infrastructure is financed and managed by the Ministry of National Integration. Well known examples of such infrastructure are the infrastructure to bring water transferred from the Rio São Francisco to four North Eastern States as well as the Cantareira System of reservoirs, which provide a significant proportion of the water distributed in the city of São Paulo.

24. Drinking water and sanitation plans and projects should be coordinated with the subnational planning and policies for the development of other sectors and for a balanced development of rural and urban areas. They need to take account of their impact on the economic and spatial development of the hydrological basins in which they will be implemented (Box 2). These questions are particularly important in areas of water scarcity and in areas susceptible to droughts.

25. There is also a lack of co-ordination at federal level between the Plansab and the National Adaptation Plan (Plano Nacional de Adaptação - PNA) for climate change, economic and spatial development plans and policies as well as certain public works, such as those carried out by the Department for Works to Combat Droughts (Departamento Nacional de Obras Contra as Secas – DNOCS). Climate change will affect water resources significantly. To be sustainable, wastewater infrastructure needs to take account of uncertainties about future climate and be designed to be resilient and functional over the full asset lifetime, which is often 50 years or more. National planning and the Municipal Sanitation

[14] While there are clear publically available guidelines for what needs to be detailed in applications for grants and clear rules about what can be financed in sanitation projects, there is no transparent indication or criteria for which projects will be considered as priorities for financing, and thus no visible link with priorities of federal or subnational authorities. This may become an issue once there are more requests for funding than funding available. The Sanitation Law allows for the definition of priorities.

Planning should therefore consider this timeframe in order not to risk losing cost-effectiveness. The National Water Security Plan (PNSH) currently being developed by ANA and the Ministry of National Integration will consider assessments of water availability in 2020 and 2035, respectively. In comparison, infrastructure constructed between now and 2033 would be expected to have a lifetime until 2070-2083, or even beyond.

Box 2. The Atlas of Sanitation – River Basin Depollution

The *Atlas of Sanitation – River Basin Depollution* analysed sewage systems of all the municipalities of the country and proposed actions in sewage collection and treatment, focusing on the protection of water resources, its sustainable use for dilution of effluents and the best strategy to progress in a rational and gradual way in the universalisation of services, in line with the achievement of the targets for access to sanitation and improved water quality set out in the Sustainable Development Objectives in Agenda 2030 of the UN Member Countries.

From the view of water resources, the study raised the sewage treatment collection index and the percentage of organic load removal in each of the 5 570 municipalities of the country and classified them into categories according to the dilution capacity of the cargo received by the respective (unlimited, optimal, good, regular, bad, bad, or null). Based on this analysis, the Atlas of Sanitation provides the levels of treatment efficiency required for each municipality and the ways for the institutional structuring of the providers of sewage collection and treatment services so that the investments pointed out have effectiveness.

The Atlas of Sanitation – River Basin Depollution reveals that less than half (42.6%) of the country's sewage is collected and treated. Only 39% of the organic load generated daily in the country (9.1 thousand tons) is removed by the 2 768 Sewage Treatment Plants (ETE) in Brazil before the effluents are dumped into the bodies of water. The release of sewage into water bodies without proper treatment compromises water quality, especially close to urban areas, and may even render unviable the use of water resources, especially human supply, as well as impact the health of the population.

The investments required by 2035 to universalise sanitary sewage services in the 5 570 municipalities were estimated at R$ 149.5 billion. Solutions have been proposed that can be achieved through treatments: Conventional: requires removal of BOD from 60% to 80%; Advanced: requires BOD removal greater than 80%; Complementary: they need a new receiving water body, dump in the soil or reuse of effluents to municipalities with low water availability in relation to the received load and without interference of the organic load thrown upstream; Joint: joint treatment solutions among the municipalities of the hydrographic basin due to the impact that the release of the organic load causes in the other municipalities located downstream of the launches, and to the Semiarid: processes with high removal of pathogenic microorganisms or reuse of effluents.

There is a more technical, but nevertheless important issue with potentially significant economic and environmental impacts: universal sewage treatment in Brazil will generate large quantities of sewage sludge which have to be either utilised or disposed of (3 million tonnes -dry weight of sewage sludge annually). With a population in Brazil of approximately 200 million people, universal sewage treatment could result in the generation of up to 3 million tonnes of sewage sludge annually. There are several options for use or disposal and combinations of these: production of biogas, use as fertiliser, incineration, landfill etc. The question of use and disposal of sewage sludge which does not appear to be addressed in Plansab could probably best be addressed in Municipal sanitation plans, but regulation or incentives may be needed to ensure sustainable use or disposal. The solid waste component of the municipal Sanitation Plans should take account of the recycling or disposal of the sewage sludge.

Source: Atlas of Sanitation: http://www.snirh.gov.br.

26. A number of audit reports of infrastructure funding programmes from the *Tribunal de Contas da União* have focused on insufficient coherence between the sanitation policy (water and sewage collection and treatment) and other policies[15]. Issues raised in these reports include:

- Absence of the required environmental licenses leading, ultimately, to paralysis of projects due to incompatibility with environmental requirements
- Insufficient co-ordination with national water resources policy leading to lack of priority to ensuring that spring waters are not polluted and priority to treatment of sewage in water scarce areas to increase availability of good quality water
- Insufficient demand management measures to reduce water demand and water losses from networks and decrease pressures on resources in scarcity/drought situations
- Insufficient account of the impacts of climate change and coherence with the National Climate Adaptation Plan (Plano Nacional de Adaptação – PNA)
- Lack of intersectoral coordination (involving stakeholders) between Plansab and the National Water Resources Plan (PNRH)
- Lack of participation by Municipalities and States in River Basin Committees and State and absence of River Basin or State Water Agencies, and lack of input from River Basin Committees to Sanitation Plans where they exist
- Lack of active participation of Casa Civil of the Presidency in the management of the 2014 water crisis

27. Lack of policy coherence leads to lack of priorities that are coherent with wider socio-economic priorities. And lack of priorities translates into lack of policy effectiveness.

Ways forward for improving policy coherence

28. The lack of policy coherence is to some extent linked to the issue of capacity at subnational level. There is a need to improve co-ordination across various subnational governments, especially State authorities, and River Basin Committees and Agencies, where they exist. This would allow consideration of economic, spatial and hydrological issues over longer timeframes. It would be particularly important in areas affected by water scarcity, droughts or desertification, such as the area to be served by the Rio São Francisco integration project which is one of the areas where subnational capacity is weak. The lack of co-ordination leads to municipal sanitation plans and projects that take little or no account of national and subnational water resources policy and water security. Thus, they often fail to consider issues such as the impact on the availability of good quality water for other uses and reducing wastage of water.

29. It is proposed to strengthen the link with water resources management in areas where water resources are considered to be at risk, or may become so within the lifetime of existing or proposed water and sanitation infrastructure by requiring that:

- Municipal plans for water supply and sanitation be compatible with regional and river basin needs for protection of water resources;

[15] Recent examples of this are: Tribunal de Contas da União, Relatórios TC 006.993/2011-7 (Funasa), TC 025.536/2009-4 (Obras de Saneamento Básico e Habitações), TC 003.997/2014-6 (Serviços Urbanos de Água e Esgoto), TC 010.945/2014-8 (Obras de Esgotamento Sanitário em Municípios do Programa de Integração do Rio São Francisco), TC 013.478/2015-0 (Obras Hídricas nos Municípios da Região Semiárida) and TC001.554/2015-8 (Gestão Federal da Crise Hídrica)

- Municipal plans for water supply and sanitation fully consider the options of treating sewage to standards allowing for reuse of the treated water and of reducing network losses (leakage) of water;

- In the case of large city municipalities, special consideration be given to identifying the appropriate size of the service provision area and the impacts of service provision on water resources.

30. The relevant River Basin Agency or Delegated Agency (or, in the absence of such an Agencies, Agência Nacional de Águas) certifies that these conditions, especially with respect to impact of water abstractions and pollutant discharge from treated sewage, are satisfied before the Municipality can adopt the Sanitation Plan.

Federal programmes for grant funding in drinking water and sanitation

31. The federal authorities play a double role in relation to drinking water and sanitation. In addition to setting out the regulatory, planning and financial framework within which subnational authorities implement drinking water and sanitation policies and manage the provision of water and sanitation services, they also distribute and manage the disbursement of federal grant funds in support of subnational investments in capacity building or sanitation infrastructure.

32. A large number of federal programmes, including the Growth Acceleration Programme (PAC) from 2007-2010 and PAC2 from 2011-2014, made available significant resources for sanitation. In addition, loans have been provided at favourable interest rates by two publicly owned banks: the Caixa Econômica Federal (a Federal Savings Bank) and the Brazilian Development Bank (BNDES). Loans have been financed with funds from two social contribution funds (Fundo de Garantia do Tempo de Serviço-FGTS and Fundo de Amparo ao Trabalhador- FAT). Moreover, the Caixa Econômica Federal has processed federal grants on a mandate from the Federal Government. The main issue is the lack of coherent logic between the targets set by the PLANSAB and the PPA targets and annual federal budgets.

33. Table 1 below shows the annual budget availability, contractual commitments and payments on federal grants for drinking water and sanitation projects (the bulk of which is expenditure relating to water and sewerage) and the distribution on ministries in the years 2012-2016. The execution of the budget is distributed on 8 different ministries. None of them have managed to commit contractually the allocated budgets. Consistently, there have been significant backlogs of up to about 50% of the budget over a number of years. Each Ministry involved administrates its own sub-programmes[16]. Given the yearly nature of public budgets and the multi-annual nature of infrastructure investment projects, it is not surprising that actual expenditure (payments) has fallen significantly short of annual budget allocations.

[16] Cities with populations above 50 000 inhabitants (Min. of Cities) and below 50 000 inhabitants (National Health Foundation (FUNASA) under the Ministry of Health), rural populations, extractive reserves and traditional populations (FUNASA), indigenous populations (Ministry of Health), cisterns in the semiarid region (Ministry of Social Development), multi-municipal and multi-user systems in the Northeastern region and the São Francisco and Parnaíba river valleys (Ministry of National Integration), sanitation programmes under the Growth Acceleration Programme (Ministry of Planning), and sanitation in tourism areas under (Ministry of Tourism).

Table 1. Annual budget availability for drinking water and sanitation projects

(R$ Million)

Execução Orçamentária															R$ milhão
Ano/Órgão	2012			2013			2014			2015			2016		
	Dotação	Empenho	Pgto	Dotação	Empenho	Pgto	Dotação	Empenho	Pgto	Dotação	Empenho	Pgto	Dotação	Empenho	Pgto
Ministério da Saúde	2.205,6	1.118,4	469,3	1.620,5	1.294,1	155,4	1.206,8	753,7	150,7	1.293,2	568,4	154,9	772,8	74,4	73,6
Ministério do Trabalho	57,8	37,4	16,4	54,7	52,5	6,2	61,8	60,4	8,0	42,9	7,4	2,5	13,0	2,2	0,2
Ministério do Meio Ambiente	239,1	127,6	18,6	150,7	93,6	0,7	89,3	80,7	0,7	60,4	2,5	0,8	25,3	1,4	1,4
Ministério da Defesa	387,8	168,3	6,4	707,7	312,1	3,4	484,9	210,0	15,6	991,4	357,4	21,9	540,3	-	-
Ministério da Integração Nacional	5.720,6	3.263,9	1.096,2	5.036,6	4.332,5	1.702,5	5.994,3	4.366,3	1.586,1	4.377,8	2.247,7	1.049,8	3.655,1	431,5	401,2
Ministério do Turismo	2.530,1	661,4	9,9	2.992,1	1.675,9	7,4	1.081,4	526,5	8,3	1.286,2	295,2	0,3	581,5	0,5	0,4
Ministério do Desenvolvimento Social e Agrário	1.094,8	800,8	474,0	823,0	816,8	60,9	643,0	572,8	215,4	268,5	186,0	26,6	129,7	25,1	25,1
Ministério das Cidades	7.929,5	4.517,3	862,6	7.960,1	4.931,3	485,8	5.149,3	2.786,4	402,4	6.642,9	2.781,7	259,7	2.675,6	138,8	138,8
Total geral	**20.165,3**	**10.695,2**	**2.953,6**	**19.345,3**	**13.508,9**	**2.422,2**	**14.710,7**	**9.356,9**	**2.387,2**	**14.963,4**	**6.446,4**	**1.516,5**	**8.393,4**	**673,9**	**640,5**

Source: Casa Civil (2016), ORÇAMENTO SANEAMENTO – Metodologia Plansab 2014

34. There are more than 10 different Federal Government programmes for grant funding of investments in drinking water and sanitation, managed by 8 different Federal Ministries (Ministry of Health, Ministry of Labour; Ministry of Environment; Ministry of Defence; Ministry of National Integration; Ministry of Tourism; Ministry of Social and Agriculture Development; Ministry of Cities) and their agencies. This arrangement is not conducive to effective cross-sectoral coordination and prioritisation of federal investments. The division of tasks between different authorities and programmes does not seem to be linked to any considerations of policy effectiveness but the result of gradual developments over time.

Ways forward for efficient resources allocation

35. There is no apparent and obvious reason why the existing programmes on drinking water sanitation could not be joined up in a single programme, with clearly defined priorities and taking account of the environmental, social and economic objectives of the Law on Sanitation. A rational approach to the distribution of tasks would take advantage of the specialised skills of different administrations and ensure – without diluting the competences – that they contribute to an overall strategy and policy-consistent with their individual strengths of the programmes in sectoral ministries.

36. It is furthermore proposed to simplify and rationalise the distribution of tasks and programmes at federal level, reducing the number of federal bodies with responsibilities for drinking water and sewage policies and programmes to make federal policy more efficient and effective, by establishing a single federal programme for providing support for sanitation, setting out clear long-term and short-term priorities in the sanitation sector and identifying environmentally, socially and economically based targets for sanitation for the 2020-2023 PPA and to launch a transparent stakeholder process, led by the GTI and its secretariat. This could be one of the solutions to efficiently allocate resources and avoid overlaps. However, in a continental country like Brazil, centralisation is not necessarily a synonymous of efficiency, as what is relevant is the co-ordination across ministries. Further guidance could be found within the *OECD Recommendation on Effective Public investment Across* Levels of Government, adopted in March 2014 (Box 3). The Recommendation argues that "when done right, public investment can be a powerful tool to boost growth and provide right infrastructure to leverage private investment. In contrast, poor investment choices or badly managed investment can waste resources, erode public trust and may hamper growth opportunities". It is based on 12 Principles and 3 pillars.

Box 3. OECD Recommendation on Effective Public Investment Across Levels of Government

Pillar 1: Co-ordinate across governments and policy areas

Principle 1 Invest using an integrated strategy tailored to different places
Principle 2 Adopt effective instruments for co-ordinating across national and sub-national levels of government
Principle 3 Co-ordinate horizontally among sub-national governments to invest at the relevant scale

Pillar 2: Strengthen capacities for public investment and promote learning across levels of government

Principle 4 Assess upfront the long-term impacts and risks of public investment
Principle 5 Engage with stakeholders throughout the investment cycle
Principle 6 Mobilise private actors and financing institutions to diversify sources of funding and strengthen capacities
Principle 7 Reinforce the expertise of public officials and institutions involved in public investment, notably at sub-national levels
Principle 8 Focus on results and promote learning from experience across levels of government

Pillar 3: Ensure sound framework conditions at all levels of government

Principle 9 Develop a fiscal framework adapted to the objectives pursued
Principle 10 Require sound and transparent financial management at all levels of government
Principle 11 Promote transparency and strategic use of public procurement at all levels of government
Principle 12 Strive for quality and consistency in regulatory systems across levels of government

Source: OECD Recommendation on Effective Public investment Across Levels of Government, available at https://www.oecd.org/effective-public-investment-toolkit/Effective-Public-Investment-Brochure.pdf

Financing of drinking water and sanitation infrastructure

37. There is no single system of funding for investments in drinking water and sanitation in Brazil. As mentioned above, the legislation permits grant and loan funding from public sources as well as funding from private sources. Federal Government support is provided for investment by municipalities, partly through grants from the federal budget, and partly through loans from BNDES and Caixa Econômica Federal to Municipalities of funds originating from FGTS and FAT. Given that the funds available for federal budget grants may vary over time as a result of fiscal policies, it may be necessary to consider private sources of funding. The same situation applies, *mutatis mutandis*, to any grant funds provided by States.

38. Loans from BNDES and Caixa Econômica Federal are subject to the same constraints as federal grants with respect to the existence of approved municipal sanitation plans and consultative collegiate consumer bodies.[17] There is no detailed information available about the amount of funding for sanitation infrastructure made available by BNDES and Caixa Econômica Federal respectively. Available information shows that in 2015, R$ 5.1 billion of funds were available for sanitation from FGTS of which R$ 2.5 billion were invested[18]. A report from the Ministry of Cities refers that in 2015, the total public grant funding for investments in drinking water supply and sewage collection and treatment was R$ 4.23 billion and loan funding was R$ 4.14 billion, of which R$ 3.61 billion and R$ 2.33 billion respectively were for drinking water[19]. Similar figures for 2013 are R$ 4,52 billion, 2,20 billion, 3.56 billion and 0,96

[17] DECRETO Nº 8.211, DE 21 DE MARÇO DE 2014
[18] http://www.caixa.gov.br/Downloads/fgts-demonstracao financeira/DEMONSTRACAO_FINANCEIRA_FGTS_2015.pdf

[19] GASTO PÚBLICO EM SANEAMENTO BÁSICO, Relatório de Aplicações do Governo Federal e Fundos Financiadores 2015, Ministério das Cidades, Secretaria Nacional de Saneamento Ambiental, Brasília (2017)

billion (TCU 001.554/2015-8, Management of Water Crisis). In 2016 BNDES ensured that R$ 3.4 billion from FAT were invested in water supply[20]. As regards Caixa Econômica Federal the information is that it made available R$ 78.5 billion for investment in infrastructure, but there is no information on how much of this that was invested in sanitation. Regardless of the exact amounts, this shows that loans from the two public banks play a significant role and that their lending for sanitation is of the same order of magnitude as the federal grants.

39. One of the main obstacles for non-public funding of water and sanitation infrastructure is its longevity (50 years or more) and need for long payback times for loans for this purpose. Governments around the world have thus to a large extent financed infrastructure through public development banks providing long-term loans at preferential interest rates. As demand for water and sanitation services will normally persist over time, water infrastructure can be characterised as a relatively safe long-term investment, provided that there is no political risk and that it can be substantiated that the infrastructure is resilient to uncertainties about the future over its lifetime and does not become irrelevant, due e.g. to lack of water as result of climate change.

89. Until now, the lack of grant funding finance has not been a blocking factor to the progress in implementing drinking water and sanitation policies. Demand in the form of qualifying project proposals has not been able absorb the grant funds allocated for sanitation in the budget. Given the importance of "spending the budget" in public administrations, there is no or little scope for identifying and implementing priorities under such circumstances. There is no complete information about the availability of funding for loans for water and sewage vis-à-vis demand for loans via Caixa Econômica Federal and BNDES.

40. The Relatório TC 003.997/2014-06 from the Tribunal de Contas da União (Urban Water and Sewerage Services Programme) highlights that given the lifetime of sanitation projects and the delays that projects suffer in Brazil, there is a build-up of funds that are transferred from one budget year to another in the Ministry of Cities. In some years such transferred funds have been bigger than the budget. The report points out that in periods with low fiscal revenues, projects and investments already incurred could be at risk if funds are no longer available for transfer from one budget year to another.

41. The Relatório TC 025.536/2009-4 from the Tribunal de Contas da União (Basic Sanitation Works and Housing Programme) highlights that in some cases, due to lack of proper technical preparation of projects, the final projects have little similarity with the originally submitted projects and that oversimplified cost analysis sometimes leads to invoicing for services that are incompatible with those contained in the original project.

42. There is no information at national level on the extent to which outsourcing of the provision of wat6er and sanitation services to private operators has occurred. In the State of São Paulo, the State controlled limited company SABESP provides the sanitation services to more than half of the 45 million inhabitants. The State government holds a controlling majority of the shares of the company. As a result of a budgetary crisis, the government of the State of Rio de Janeiro has decided in 2017 to sell off its water and sewage collection and treatment company CEDAE.

43. Probably the most far-reaching financial issue is that of availability of funds for investment in the sector. It will be necessary to consider the possible sources of finance and whether sufficient funds can be provided in future through grants from the federal budget or loans provided with funds from social contributions (FGTS and FAT). The alternative to public financing is financing through private funds. In the light of the economic recession and austerity budgets in the public sector which could result in the

[20] BNDES (2017) Aplicação dos Recursos do FAT Constitucional, www.bndes.gov.br

availability of public funds becoming a bottleneck for the development of the sector, the Brazilian Government and BNDES have signalled that they want to incentivise participation of private capital in water services, e.g. through privatization, concessions or public private partnerships[21]. In the light of the monopolistic nature of the industry, the possible entry of private capital will present a challenge to regulation of and governance in the sector. But on the other hand, incentives might be needed to ensure the availability of capital in order to finance investments with very long payback times.

44. Participation of private capital also raises issues of how to ensure that a monopolistic industry contributes to and articulates with related public policies, such as health, environment, climate adaptation, drought and sectoral policies and the social dimension of ensuring universal and equitable service provision to all segments of society. The main private investors likely to be interested in water and sanitation infrastructure investments are institutional investors with long investment time-horizons and need for secure investments, such as pension funds. The most important conditions for attracting such private investment in long-term infrastructure is a clear and stable institutional and regulatory framework, transparent bidding and award procedures, robust rule of law and absence of political intervention through broad political and stakeholder agreement about the future development and regulation of the sector[22]. If the intention is to attract private investors, it would be necessary to satisfy the above conditions.

45. OECD experience shows that public acceptability can be a challenge to engage the private sector if there is no convincing case about contributing to wider public policy objectives and ensuring affordable drinking water and sanitation services for all. There is a significant public scepticism towards private participation in water infrastructure. Fears and suspicions of abuse of dominant positions in this monopolistic sector have likely played a role in this respect, but also the so-called failure of many PPPs designed in the 1990s in the era of the Consensus of Washington. Citizens in major countries and cities in Europe have thus rejected privatisation of water services, e.g. Italy, Berlin, Paris and Barcelona.

46. With dedicated economic regulators in charge of guaranteeing the public interest, as is the case with Ofwat in England and Wales, public confidence can be achieved with a completely privatised industry. Alternatively, public confidence might be maintained by ensuring transparent management arrangements with stakeholder involvement and a clear political lead in strategic decisions, e.g. by ensuring a controlling public authority participation in the capital of any public-private partnership. Regardless of the degree and modalities of private sector participate in water-related infrastructure, public authorities always have a critical role to play throughout the investment, planning and operational phases to pursue the general interest and ensure compliance with the terms of the contract.

47. If infrastructure is designed to be resilient to changing future conditions, there should be little need for financial leverage instruments where public authorities enter with funds to take first risks, before any private risk.

48. Due to the lack of technical capacity from municipalities, there is an issue of chronic underspending. However, once capacity issues have been corrected, it must be expected that there will be more municipal Sanitation Plans, more eligible projects and greater pressure on financial resources, both on lending resources and grant resources. In order to promote coherence with national and regional development priorities and to maximise the benefits, it would therefore be important to set clear criteria at national level, coordinated with subnational government and stakeholders, for deciding which projects should be financed and implemented as a matter of priority. Currently, there are clear publically available

[21] See e.g. O Globo, 13 August 2016 and Folha de São Paulo 14 April 2017

[22] Private Financing and Government Support to Promote Long-Term Investments in Infrastructure, OECD (2014).

guidelines for what needs to be detailed in applications for grants and clear rules about what can be financed in sanitation projects[23].

98. However, there are no transparent criteria to establish priorities amongst projects eligible to receive funds. As such, there is no visible link with the planning priorities of federal or subnational authorities (e.g. ensuring coherent and successful implementation of national integration projects; the readiness to deal with current or future risks relating to public health or water security). Once demand for finance satisfying the necessary technical criteria exceeds availability of funds, the issue of priorities will become acute, as choices have to be made amongst projects whose potential to contribute to overarching regional or national priorities may greatly vary.

49. The audits also identify tensions between budget annuality and the inherent multi-annual nature of implementation of sanitation projects. This leads to substantial de-commitments of allocated grant funds, followed by recommitment of the same funds in subsequent years. This mechanism creates uncertainties about availability of funds to finalise projects in subsequent years and therefore about the effectiveness of public expenditure. This is a technical budgetary issue which should be addressed.

50. The TCU audit (TCU 001.554/2015-8, Management of Water Crisis) documented that 13 out of 28 regional service providers, mainly from the North and North East of Brazil, had costs that exceeded the income from tariffs, affecting the quality of service provided and the willingness of the population to connect to the services, further undermining the economic sustainability of the services. To ensure their sustainability of services over the lifetime of assets, revenues from tariffs should, whenever possible, cover capital expenditure and operational costs as well as maintenance expenditure of the infrastructure. Economic sustainability of service provision is necessary to guarantee continued provision of good quality services and also to attract investment capital to the sector. And if the investment is provided as a grant, revenues should as a minimum cover operational and maintenance expenditure. If the latter expenditure is not covered, the infrastructure will inevitably decay, service quality will decline and provision of the services will ultimately no longer be viable. Ways forward to promote alternative sources of financing

51. Significant funds will still need to be invested in improvement of drinking water supply and wastewater collection and treatment[24]. The most recent estimate is that a further investment of R$ 220 billion of federal funds and R$ 84 billion of other funds (including State funds) in water infrastructure between 2014 and 2033. Brazil's Sanitation Law allows for municipal delegation of service provision and for both public and private investment in the sector, but the possible participation of other funds and other forms of participation may need to be further considered. International experience suggests that public acceptance of privatisation of the provision of water services can be challenged and needs to be built and thoroughly explained upstream to avoid conflicts and resistance downstream.

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[23] See e.g. http://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=02/06/2014&jornal=1&pagina=74&totalArquivos=108 and http://www.cidades.gov.br/images/stories/ArquivosSNSA/Arquivos_PDF/Principios_Manejo_Aguas_Pluviais_Urbanas.pdf

[24] In the light of the significant public resources foreseen for sanitation and the very visible implementation problems encountered, it is not surprising that the Tribunal de Contas da União has shown a considerable interest in the subject and carried out several detailed audits in relation to budget expenditure for investment in sanitation, covering a wide spectrum of the federal programmes for investment support, involving several Ministries (e.g. Tribunal de Contas da União, Relatórios TC 006.993/2011-7 (Funasa), TC 025.536/2009-4 (Obras de Saneamento Básico e Habitações), TC 003.997/2014-6 (Serviços Urbanos de Água e Esgoto), TC 010.945/2014-8 (Obras de Esgotamento Sanitário em Municípios do Programa de Integração do Rio São Francisco), TC 013.478/2015-0 (Obras Hídricas nos Municípios da Região Semiárida) and TC001.554/2015-8 (Gestão Federal da Crise Hídrica). The audits cover only the handling of applications for grants for investment and not applications for loans from Caixa Econômica Federal and BNDES. However, given that Caixa Econômica Federal processes applications and financial transfers as mandatary for the federal authorities, the audit reports also cast light on the quality of processing in this institution. The audits confirm a constant and substantial underspending of the funds allocated for sanitation. The audits have found that large numbers of sanitation projects, and in some programmes all projects audited, present problems. Many projects are the victims of multiple problems, causing either significant delays or complete abandonment of the projects in the implementation phase. This leads to backlogs in expenditure, delays in the delivery of clean water and basic sanitation services for sewage to the population and to stakeholders at large, as well as waste of scarce public funding resources.

52. It is suggested that:

- Private participation in investment should be considered in parallel to robust thinking about the economic regulation of the sector clarifying who does what, defining the performance targets for infrastructure with respect to both customers and its contributions to other policy objectives after extensive consultation with the public and with all relevant stakeholders.

- A continuation of the existing system for disbursement of funds would require a strengthening of capacity at subnational level to improve the technical, administrative and financial preparation of actions, but also at federal level to provide independent verification that all conditions for disbursement of funds are met.

Building Capacity

68. Several of the audit reports identify high frequencies of processing errors for projects in the audited funding programmes. Thus, one of the audit reports (FUNASA, Fundação Nacional de Saúde – National Health Agency under the Ministry of Health) concludes: "there are deficiencies in the elaboration and approval of basic projects", there are "structural difficulties in the parties with carrying out tendering processes and overseeing works", "lack of transparency in the application of the resources of the PAC" (Programa de Aceleração do Crescimento – the Growth Acceleration Programme), "deficiencies in the oversight of budgetary and financial execution", "problems in relation to human resources", "dispersion of resources" and "lack of homogenous controls and processes between the State offices (satellite offices ed.) of the entity". Several audits identify very significant project delays in contracted sanitation projects, linked to, among other, deficiencies in the engineering projects, problems with tendering procedures, difficulties relating to reservation of areas, difficulties with obtaining environmental permits and delays in transfer of resources from the Union or, in some cases, absence of the necessary financial resources to complete.

69. One audit (Basic Sanitation Works and Housing Programme) about projects processed by the Caixa Econômica Federal for the Ministry of Cities thus finds many irregularities of a technical nature in a sample of 34 contracts relating to federal grants processed by the Caixa Econômica Federal: 100% of contracts were not registered in the federal contracts database, 82% had irregularities in the basic projects, 76% had irregularities in the project budget, 68% had irregularities in the execution of the works, 38% had irregularities in the contract on transfer of funds, 18% had irregularities in respect of budgetary resources and 6% had irregularities with respect to land ownership.

53. Some of the main findings in the audits relating to the different phases of the projects are indicated in the below table:

Table 2. Challenges related to project phases

	Phases		
	Project preparation by municipalities	**Project assessment by the federal government**	**Project implementation**
Challenges	• Local actors, especially in the weak project engineering market, need to mobilise many resources in short windows of time to comply with procedural deadlines relating to project preparation • Lack of institutional and technical capacity in Municipalities, State administrations and State	• Inability to assess whether projects satisfy selection criteria due to reduction of project verification to a check-list • Assessment tasks outsourced contrary to regulatory requirements • Lack of proper assessment of financial viability (One audit showed that in 13 out of 28 State-wide service providers had costs	• Project operators with insufficient capacity to carry out projects • Low rate of project completion and high rates of delays (35% of projects cancelled in one audit, 78% of projects delayed in another audit – especially linked to lack of proper technical

	antennae of federal bodies for planning and project preparation • Absence of Municipal Sanitation Plans in areas benefiting from the Rio São Francisco Transfer (leading to pollution risk) • Non-existence of River Basin Committees and, where they exist, they have in some cases neither technical nor administrative or financial capacity • Faulty engineering design (more than half of projects in one audit) • Lack of financial and technical preparation of tendering procedures	exceeding income from tariffs) • Terms of reference agreed without legally required elements • Transfers to beneficiaries with paralysed works or in state of bankruptcy • Absence of measures to block transfer of federal funds when faced with irregular transfers • Inaction of federal authorities vis-à-vis accounts submitted by beneficiaries and significant and repeated delays in transfer of funds • Unwarranted prolongation of validity of transfers	preparation) • Lack of similarity of final results with tendered projects (due to lack of technical or financial preparation of tendering material) • Lack of institutional and technical capacity in Municipalities and States to oversee implementation • Misclassification of the state of project advancement by federal bodies • Irregular withdrawal of money from beneficiaries' dedicated project accounts

Source: Caixa Econômica Federal for the Ministry of Cities (n.d.), Audit: Basic Sanitation Works and Housing Programme

54. There is a systemic problem of lack of technical and administrative capacity, especially at subnational level, but also at federal level. The result is a situation where plans are non-existent in more than two thirds of Brazilian municipalities. And where plans exist, there are important technical, administrative and legal failures in the elaboration of projects at subnational level and in their verification at federal level. In small municipalities, in particular, there is a weak project engineering sector which leads to inability to produce drinking water and sanitation plans and to projects with flaws in the engineering design. Furthermore, the analyses of projects at federal level are often flawed with the result that technical, administrative and legal problems in projects are not identified leading inter alia to transfers of funds to projects which are not implementable and other irregular transfers. The extent of these issues is witnessed by large numbers of delayed and abandoned projects and by projects which, if finally implemented, show little similarity with the originally submitted projects as highlighted in the audits.

72. The consequence of these capacity problems is a vicious circle where too many resources are dedicated to the transfer of too few funds, ineffective and wasteful use of scarce resources and inability to spend budget allocated. If the issue of capacity to develop plans and projects is not addressed, and the efficiency of project assessment is not increased, it will ultimately not be possible to attain the target of universal provision of safe drinking water and disposal of sewage by 2033 and it will not be possible to guarantee that sanitation is provided where it is a regional or national priority, e.g. for reasons of public health or water security.

55. The main ministries involved in financing of sanitation projects have set programmes to strengthen capacities at subnational level. About 1.8% of the federal funds for sanitation in 2013 were allocated to capacity building, mainly through loans. Support has been provided to a variety of purposes such as metering equipment, IT and bookkeeping infrastructure as well as commercial initiatives to reduce financial losses. Given the dependency of successful implementation on subnational capacities and the extent of the capacity problem, more resources should be dedicated to capacity building. Although PLANSAB now foresees that 20% of the funding for investment in water and sewage is intended for capacity building, it is not clear how it will be ensured that there will be a sufficient uptake of this funding.

Box 4. Managing water services: technical and administrative capacity issues in the EU

In most EU countries, the responsibility for providing water services is with local administrative territorial units (normally municipalities), in some countries with an average size of less than 2 000 inhabitants. The important

exception here is the United Kingdom, where responsibility for providing all water services is with 10 privatised water companies, each providing water services to an average of about 5 million inhabitants. The lack of capacity had a serious impact on the ability of local authorities to plan, design, construct and operate water infrastructure, and manage necessary financial and tendering procedures to implement budgets for this purpose, and thus also on the ability to absorb external funds where such funds were provided. Most EU Member States have taken measures to address a lack of sufficient local technical and administrative capacity. These measures have in many cases also provided for the realisation of economies of scale and improved cost-effectiveness.

In many Member States (e.g. in the Czech Republic, France, Germany, Romania and Spain) legislation on water services allows local authorities to outsource provision of water services to private commercial operators which may have the effect of transferring the need for capacity from the public authority to an external contractor with the necessary critical mass of competences. Outsourcing may solve the issues of lacking technical and administrative capacity in the local authorities, but often creates an asymmetry of information between authorities and service providers with the risk of abusive commercial practices resulting in reduced cost-effectiveness and higher tariffs for consumers due to. There are also examples in Europe of local authorities transferring service provision to private operators through long-term concessions on conditions where local authorities maintained responsibility for all investments in infrastructure, while the service providers undertook to operate the infrastructure with long-term guarantees of profits.

Capacity building initiatives are promoted by the European Commission and the European Investment Bank by providing training on EU policies and legislation and practical support in the preparation of projects through the Taiex and Jaspers programmes. Taiex is a programme, created in 1996, offering public administrations in Member States and neighbouring countries expertise sharing best practices application and enforcement of EU legislation. Jaspers is a programme, created in 2005, supporting Member States in the preparation of major projects co-financed through EU funds.

Most EU Member States have in different ways encouraged or provided guidance to local authorities to seek cooperation or create joint ventures with other local authorities, underlining in particular the economies of scale that can be realised by pooling expertise and technical support services, such as e.g. laboratories, engineering or maintenance teams.

Some Member States have undertaken reforms (also for other reasons) in regional and local government, reducing the number and increasing the size of the local government units responsible for providing water services. This is e.g. the case of France which will reduce the number of local government controlled organisations supplying water services from 24 000 to 1 200 (corresponding to an average of 2500 and 50 000 inhabitants per service provider), or Denmark which reduced the number of Municipalities from 271 to 98 in 2009 (thus increasing the average number of inhabitants per authority responsible from 20 000 to 60 000 inhabitants).

In several Member States (e.g. Denmark, France, Germany, Spain and Cyprus[25]) national or sub-national authorities have in areas with capacity deficits directly contributed to the strengthening of capacities of local authorities, e.g. through training and twinning programmes or financial support from revenues from water charges. Some Member States, such as Romania, have linked access to national and EU funding of water services investments to participation in regional joint ventures to strengthen capacity of service providers.

56. As highlighted by the audits by the *Tribunal de Contas da União*, it appears that there is a systemic issue of capacity at both municipal and federal levels preventing progress in the adoption of

[25] Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus."

municipal sanitation plans and standing in the way of making progress towards the target of universal provision of sanitation services by 2033.

Ways forward for capacity building

57. The issue of capacity building needs to be addressed for planning to become effective. Without capacity to plan and implement plans at both subnational and federal level, the sanitation programme will be a "paper tiger". There are very serious issues of lack of sufficient institutional, administrative and technical capacity, especially at municipal level, but also at regional and federal levels. The consequence is lack of sanitation plans and lack of sufficient sanitation projects to absorb the funds available for investment in the sector. The inclusion in PLANSAB of significant amounts of funding available for capacity building ("*medidas estruturantes*") is a first step in this direction, but it must also be ensured that this funding is taken up. Without resolving the capacity issue, universal water supply and sanitation will only be attained in the 2050s, at the earliest, instead of in 2033 as planned.

58. It is proposed:

- To further establishing conditionalities for the allocations of federal water and sanitation funds in the next years to supporting capacity building ("*medidas estruturantes*") at the level of subnational authorities; and

- To incentivise the transfer of obligations to plan, organise and provide water and sanitation services to a joint municipal venture (minimum criteria to be developed), the state or to other public or public-private partnership bodies on a similar scale by making adherence to such schemes a condition for access to federal funds for investment in sanitation.

The issue of scale

59. The issue of capacity is linked, among other factors, to the issue of scales. Without a sufficient population and economic base, authorities will not be able to sustain the necessary technical and administrative capacities needed to develop, manage and implement drinking water and sanitation policies. Most municipalities do not have the critical mass to build the capacity needed to develop and efficiently implement plans and projects, nor to provide cost-effective services even though the development of plans is a legal obligation under the Sanitation Law. It should be noted that, in several cases, the issue of capacity at subnational level has successfully been solved by municipalities delegating some or all of their obligations to inter-municipal consortia or State companies. This is the case of Rio de Janeiro, São Paulo and Rio Grande do Norte. As this is a decision to be taken by each municipality, incentives are needed in order to accelerate such a transfer.

Box 5. The implementation of the Urban Wastewater Directive in Romania

Romania acceded to the EU in 2007 and had to implement the 1991 Urban Waste Water Directive. In the accession negotiations, a timetable with milestones for the implementation of the Directive in the period until 2018 was agreed. In Romania, Municipalities and Communes are responsible for the establishment and operation of systems for collection and treatment of urban waste water. There are in total about 3000 Municipalities and Communes with an average population of 6-7000 inhabitants. Many rural municipalities do not have the technical and administrative capacity needed to design, construct and operate waste water infrastructure, nor the administrative capacity to manage and outsourcing the tasks. In Romania, the infrastructure is owned by municipalities. 90% of all waste water treatment is also operated by Municipalities and Communes or their joint ventures.

To address the capacity issue the Government of Romania and the European Commission agreed to establish intercommunity development associations for water and waste water and regional operators, at the level of the county, open to participation by Municipalities and Communes representing larger and smaller towns and rural communities. In

each county, a regional operator was created around the water and waste water operator in the county capital. This re-organisation was supported by the European Commission to ensure the successful implementation of the financial programs intended to improve the water infrastructure in Romania. It approved applications for financing of the water projects on the condition that the applicants could prove that they had financial, technical and administrative capacities to implement the very large projects and also to operate the very new and modern infrastructure.

From the Romanian side the reasons for supporting the establishment of regional operators, in addition to those related to the capacity to implement large projects and to operate the modern infrastructure, were the followings:

- Optimisation cost-effectiveness of the water infrastructure needed at county level, in order to make the best use of the available funds (one waste water treatment plant could be constructed to service several agglomerations where this is more economically feasible)

- Harmonisation of water tariffs between urban and rural area (a single tariff in the area covered by a service provider – in practice resulting in a cross-subsidisation from urban to rural areas, tackling the question of affordability in rural area)

Given that Romania in 2015 had a GDP of 57% of the EU average, the country has access to the Cohesion Fund of the EU with support of up to 85% of the cost of the investment in the infrastructure.

At the same time, the national government has put in place the obligations for Municipalities and Communes to establish the required systems and arrangements in order to receive the EU funds. Municipalities and communes not joining the Regional Operators have to finance the infrastructure needed from their own resources. This establishes a situation where, at best, municipalities who do not participate in the intercommunity development associations miss out on important transfers from the EU while incurring all the costs of the infrastructure. Moreover, they receive fines for not having established the necessary collection and treatment of urban waste water.

As a member of the EU, Romania applies the Polluter Pays principle and cost recovery as required by the Water Framework Directive. However, the national government has decided to make municipalities' access to EU funding for this infrastructure conditional on their joining the regional municipal cooperation organisations for this purpose. By virtue of the organization of service provision by intercommunity development associations, prices for services are equalized between urban and rural areas, thus ensuring that services remain affordable, also in rural areas.

That the system works is demonstrated by the fact that by 2012, 6 years after the accession of Romania to the EU, all the 41 counties have a regional water and waste water operator and 77% of the required secondary treatment plants were in place and operating correctly, while for tertiary treatment the corresponding figure is only 38% . While significant progress was achieved, there was therefore still an important backlog that needed to be addressed.

84. While this model can contribute to improved cost-effectiveness everywhere, it is especially relevant for areas where water resources are scarce and have to be shared equitably across users. This occurs when all or most of the basic supply of water resources originates from a single source or when there are significant uncertainties on the future balance between water demand and availability (e.g. in case of states receiving water from the Rio São Francisco transfer once it becomes effective).

Ways forward to manage the issue of scale

60. In large cities, such as Rio de Janeiro or São Paulo, there is a mismatch between the boundaries of the urban agglomeration and those of the territorial management unit (the municipality) responsible for service provision. In such cases, it is necessary to manage the significant impacts on water resource availability and water quality. One way of doing so is through multi-municipal governance arrangements commensurate with the size of the urban agglomeration. This co-operation can enhance the cost-effectiveness, efficiency and security of water supply, while reducing negative spillover effects on public health and environment.

Economic regulation

61. The regulatory framework for water and sanitation is clear. The sanitation law 11.445/2007 and its implementing provisions specify clear operational responsibilities and guidelines:

- Municipalities are in charge of regulating service provision, monitoring of compliance, enforcement and are responsible for the elaboration of municipal sanitation plans which need to be compatible with the relevant hydrographic basin plans and are responsible for organising and controlling the services
- Municipalities can delegate these obligations to public consortia (e.g. inter-municipal consortia or State consortia) under public or private law and to delegate, through contracts, the operation of sanitation services to both private and public entities.
- The federal government defines the technical quality standards for drinking water, establishes the SINISA information system and prepares the national sanitation plan (PLANSAB) which must be compatible with other federal planning (e.g. PNRH)
- There are *guidelines* for federal funding of sanitation investment, *funding* with participation of private investment funds and *conditionalities* for the receipt of federal funds for sanitation projects (e.g. the adoption of municipal Sanitation Plan and (from 2018) compliance with the provisions in the Sanitation Law about social participation through the establishment of a consumer body).

62. Ensuring effective economic regulation of service provision is essential to keep tariffs at an affordable level by promoting efficiencies in a monopolistic sector with few incentives to improve efficiency, provide good quality service to consumers and avoid overcharging consumers.

63. Tariff regulation is attributed to municipalities in the Basic Sanitation Law. This raises two issues: 1) How well placed municipalities are to regulate services provided by themselves; and 2) the effectiveness of municipal tariff regulation in view of the limited capacity of many municipalities as set out above. There is an issue of potential conflict of interest in relation to the role of the municipality or an entity to which the regulatory competence has been delegated if the services are provided by the same body or by an entity which is directly or indirectly controlled by it. A way to avoid conflicts of interest is to ensure regulation that is completely independent from the entities that organise, plan and provide the water and sanitation services.

64. Some municipalities have used the possibility offered by the Sanitation Law to delegate the regulation of the water services to States or public consortia. This is the case e.g. in the States of Rio de Janeiro and São Paulo where the States have created regulatory agencies to which a large number of, but not all, municipalities in the respective states have delegated their powers to monitor, control and regulate service provision, including regulation of tariffs. A total of 21 out of the 27 States have regulatory agencies[26]. Such arrangements can provide effective regulation, provided the agencies have the necessary capacity in terms of powers, independence and staffing. Where outsourcing of service provision takes place to private operators, there is a requirement in the Sanitation Law that contracts are awarded on the basis of a public tendering procedure. If properly implemented, this will help improve cost-effectiveness and economic sustainability.

65. Experience shows that benchmarking on issues such as compliance with legislative requirements, service quality and economic efficiency is a useful tool for regulators when assessing the performance of service provision. By assembling information about many service providers and making the information easily accessible for the public, it will be possible both for consumers and for regulators to compare the

[26] see http://abar.org.br

performance of the service provision in a particular municipality with services in other, similar municipalities. The results of benchmarking should be publically accessible via internet.

66. There is no information available about the effectiveness of regulation at national scale. One of the audits (TCU 001.554/2015-8, Management of Water Crisis) suggest that there is a vicious circle of insufficient revenues from tariffs leading to lack of maintenance and investment which in its turn leads to a degradation of service resulting in a lack of willingness to subscribe to the sanitation services. Due to the absence of sufficient information and the absence of independent monitoring everywhere, it is not possible to reaffirm to consumers that services are of good quality and efficiently operated everywhere.

67. The issue of cost-recovery and economic sustainability of service provision is important, and regulatory authorities should ensure that the provisions in the Sanitation Law about cost-recovery are respected. The Law on Sanitation has clear provisions to ensure full cost-recovery, but allowing for subsidies and adaptation of tariffs to address social issues of affordability.

Ways forward for effective economic regulation

68. In the light of the monopolistic nature of water services provision, the issue of cost-recovery, the regulation of the sector, compliance with regulatory requirements and public and stakeholder confidence in the quality of service provision and of affordable pricing need to be considered.

69. It is important to ensure that the water regulation regime works in parallel with the water charging schemes. Revenues from water abstraction and pollution charges can incentivise utilities to limit non-revenue water and improve the efficiency of wastewater treatment, while ensuring that the charge is not simply passed on to water users through tariffs, by defining clear limits for the right of utilities to do so. Moreover, revenues from abstraction and pollution charges could be recycled to co-finance expenditure programmes which are well-aligned with the needs of the basin (OECD, 2017)[27].

70. It is therefore suggested to:

- Ensure all key regulatory functions are discharged by responsible authorities with enforcement powers (Box 6).
- Condition access to federal funds in support of investment sanitation infrastructure to the existence of sound regulatory frameworks, properly enforced. Objective criteria need to be established for the remit, independence and powers of regulatory bodies.
- Require all service providers to participate in benchmarking to be organised by the regulatory authority.
- Make connection to water and sewer services compulsory in areas where they are offered in order to improve cost-effectiveness of the services.
- Take enforcement action against service provide who do not ensure that provision is economically sustainable. Affordability issues should not be solved by jeopardising economic sustainability.

[27] OECD (2017), Water charges in Brazil. The ways forward, OECD Publishing, Paris.

Box 6. Regulatory functions for WWS

The OECD (2015) established a typology of regulatory functions for WWS, based on a survey of water regulators carried out between September 2013 and September 2014 across 34 water regulators. It argues that all regulatory functions should be properly discharged by responsible authorities in good coordination with other relevant agencies.

The functions are:

- Tariff regulation: Establishing a tariff methodology and/or setting and updating prices or supervising the tariff setting process, determining tariffs by consumer group, establishing caps on revenues or rate of return on investment.
- Quality standards for drinking water: Setting quality standards for drinking water and/or monitoring compliance.
- Quality standards for wastewater treatment: Setting quality standards for wastewater treatment and wastewater discharges and/or monitoring compliance.
- Defining public service obligations/social regulation: Setting public service obligations (including requirements on access to services) and performance requirements for operators.
- Defining technical/industry and service standards: Developing the standards that underpin the technical modalities and level of service delivery.
- Setting incentives for efficient use of water resources: Establishing incentives or specific schemes to promote efficient water resource use.
- Setting incentives for efficient investment: Establishing incentives or specific schemes to promote efficient investment.
- Promoting innovative technologies: Establishing incentives or specific schemes to promote innovative technologies.
- Promoting demand management: Establishing incentives or specific schemes to promote reduced water demands.
- Analysing water utilities' investment plans/business plans: In some cases, the regulator may be asked to approve the business plan or the investment plan of utilities.
- Information and data gathering: Collecting data from operators, undertaking market research to identify trends and potential risks.
- Monitoring of service delivery performance: Monitoring of the performance of water services against a set of targets or of performance indicators. This can involve benchmarking water utilities.
- Licensing of water operator: Granting or approving licences for the operation of water systems.
- Supervision of contracts with utilities/private actors: The obligations granted by the public authorities to a specific utility may be detailed in a specific contract (it is usually the case when a private actor is brought in). The regulator may be tasked with the supervision of the contract.
- Supervising utilities' financing activities: Monitoring the financial schemes of water utilities (e.g. bond issuance, equity investments).
- Carrying management audits on utilities: Auditing and /or approving the business plans of utilities.
- Customer engagement: Consulting with customers on regulatory issues; communicating regulatory decisions to the public.
- Consumer protection and dispute resolution: Handling consumer complaints about regulated entities.
- Advice and advocacy: Providing advice for policy making and project implementation; identifying opportunities for reforms, encouraging improvements to the regulatory framework.

Source : OECD (2015), The Governance of Water Regulators, OECD Publishing, Paris

Monitoring and Enforcement

115. The Brazilian sanitation policy must be assessed and evaluated on the basis of its ability to deliver on its headline target of providing safe drinking water and basic sanitation for sewage for all by 2033. This requires regular monitoring, evaluation and review of service provision and planning at both municipal and federal level.

71. There are clear provisions in the Sanitation Law 11.445/2007 on responsibility for monitoring and evaluation of the implementation of the sanitation policy. Municipalities may supervise execution of services or delegate this task to an agency. According to the information received, the monitoring mechanism is usually weak or non-existent in cases where services are provided directly by Municipalities.

72. At the level of municipalities, the Sanitation Law stipulates that these are responsible for monitoring implementation of the Plans and for reviewing them, at least every 4 years, prior to the adoption of the national Pluri-Annual Planning. At the level of the Federal Government, the National Sanitation Plan is required by the Sanitation Law to be evaluated annually and revised every 4 years, "preferably for periods coinciding with the validity periods of the Pluri-Annual Plans".

73. The Law requires the review to be based on, inter alia, data from the information system, SINISA, established under the Law. It is assumed, contrary to the data recorded since 1995, that, in the future, data will be quality assured so that these data will be an appropriate basis on which to base future revisions of Plansab and that all relevant information needed for its regular review are included in Sinisa.

74. Compliance with regulatory requirements is always an issue for sectors with a natural monopoly. The sanitation sector is no exception in this respect. The regulatory requirements are set out by the 2007 Sanitation Law. Even a good law has little impact if it is not enforced. And enforcement is weak in many parts of Brazil. Increased stakeholder and public participation, segregation of powers, enforcement authorities with capacities and transparency about key information on service provision should create the conditions needed for more effective enforcement, including, where necessary, sanctions and penalties that can help boost the effectiveness of other incentives by applying a "carrot and stick" logic.

Ways forward greater enforcement

75. It is suggested to:

- Announce a date by which the obligation to have developed municipal sanitation plans satisfying the criteria of the Sanitation Law will be enforced via the Courts of justice.
- After this date, the public service provider (state-wide or similar) could prepare an alternative draft plan concerning the municipality where it operates.
- Ensure that all regulatory authorities active in the sector are given effective enforcement powers and obligations to ensure compliance.

Public Confidence

76. Sustaining sanitation services requires public and stakeholder support and customers need to be convinced that the services deliver the benefits that they are meant to deliver in a cost-effective way. Customers need to have confidence that there are no conflicts of interest and that service providers and municipalities are acting in the best interest of customers and society at large.

77. Public and stakeholder participation plays a key role in ensuring the economic efficiency and the quality of services. Establishing public participation as required by the Sanitation law is already a condition for receiving financial support from federal resources. Accessibility of benchmarking data as set out above should provide the public and stakeholders with a tool to make their participation more effective.

78. Although there is a clear requirement for public consultations and auditions as part of the preparation of sanitation plans, there is very little information in the public domain on the role of the

public/consumers in the adoption and implementation of sanitation plans and in sanitation policy. According to the Ministry of Cities the proportion of municipalities with collegiate consumer bodies in place was only 11% in 2011, but expected to rise to 36% in 2018. Considerable additional effort will be needed to ensure stakeholder and consumer participation in the preparation of municipal water and sanitation plans.

125. At federal level more transparency and involvement of stakeholders will be needed. This would be key for a sanitation policy with greater focus on ensuring that cross-cutting priorities are fully taken into account in the implementation, such as projects prioritisation.

79. Also, experience shows that where there is private participation in the infrastructure investments, having a strong regulatory framework is all the more important to maintain public confidence that service provision represents value for money for consumers, and that the industry is contributing to wider public policy priorities, irrespective of its monopolistic position. In 2006 the OECD produced a Checklist for Public Action as guidance for governments willing to involve private sector participation in water infrastructure investment (Box 7).

Box 7. Private Sector Participation in Water Infrastructure. OECD Checklist for Public Action

The checklist highlights 24 principles and 5 pillars:

Principles 1-4 : Deciding on public or private provision of infrastructure services

1. Informed and calculated choice.
2. Financial sustainability of infrastructure projects.
3. Apply tailor-made model of private sector involvement.
4. Preserve fiscal discipline and transparency.

Principles 5-8: Enhancing the enabling institutional environment

5. Enabling environment.
6. Fight against corruption.
7. Create a competitive environment.
8. Facilitate access to financial market.

Principles 9-12: Goals, strategies and capacities at all levels

9. Consultation with stakeholders.
10. Empower authorities responsible for privately-operated infrastructure projects.
11. Clear and broadly understood objectives and strategies.
12. Mechanisms for cross-jurisdictional co-operation.

Principles 13-19 Making the public-private co-operation work

13. Establish communication and consultation with private sector.
14. Full disclosure of project related information.
15. Fair, non-discriminatory and transparent awarding of contracts.
16. Output/performance based contracts.
17. Competent, well-resourced and independent regulatory bodies.
18. Allowing for good faith, transparent and non-discriminatory renegotiations.
19. Setting dispute resolution mechanisms.

Principles 20-24 Encouraging responsible business conduct:

20. Responsible business conduct.
21. Good faith and commitment.
22. Fight against corruption.

23. Communication with the consumers.
24. Awareness and responsibility for the social consequences of actions.

Source : OECD (2006), Private Sector Participation in Water Infrastructure. OECD Checklist for Public Action, OECD Publishing, Paris.

80. The establishment of collegiate consumer bodies is a condition for access to federal funds for water and sanitation projects since 2014. There is no information about the implementation of this requirement or about the number of requests for federal funding that has been rejected as a result of this requirement. Equally important is consumer and stakeholder confidence in the regulation of the services. The oversight by users and stakeholders and the establishment of collegiate consumer bodies for this purpose are therefore an essential part of the implementation of the sanitation agenda.

81. The Sanitation Law from 2007 foresees the establishment of municipal information systems on sanitation with public access and the articulation of these systems with the federal information system SINISA. There is not a national information system aggregating such municipal information systems. What is known is that in cases where services are provided directly by Municipalities, the monitoring mechanism of service provision is usually weak or non-existent. In cases where municipalities have delegated service provision to the State or to a private company, Municipalities may supervise execution of services or delegate this task to an agency.

82. The national sanitation database SNIS into which service providers have uploaded information about water supply and sewage collection and treatment since 1995 is the database which informs implementation and policy development on basic sanitation at federal as well as State level. So far, there has been no independent verification of the uploaded data. It is not clear whether such independent verification has been introduced already. As the data in the information system is the basis on which the policy and the federal sanitation plan PLANSAB is reviewed and revised, it is crucially important for avoiding ill-informed decisions that the data in both the municipal and federal systems are accurate. A new database, SINISA, is under development as foreseen by the 2007 Sanitation Law, which should help bridge the identified information gap.

83. To be useful in the evaluation of policy effectiveness, the sanitation database should contain not only technical information about the services provided, but also data allowing an assessment of the non-technical quality of services, tariffs, the effectiveness and efficiency of service provision and effectiveness of regulation and enforcement.

Ways forward more effective consumer bodies

84. It is suggested:

- To establish a publically accessible information system, accessible via internet and smartphones, with benchmarking information about water provision in the municipalities, allowing for comparisons between service areas and municipalities. It can be organised either linked to the National Information System on Sanitation (SINISA), or independently thereof, containing information to be specified by the coordinating federal authority in the area of sanitation.

Conclusions

85. In summary, and based on the available information, the main conclusions that can be drawn about the implementation of universal provision of safe drinking water and wastewater collection and treatment and the issues that need to be addressed are the following:

- To develop coherent municipal plans for water and sanitation, information systems and well-prepared projects to implement the plans, in a Brazilian system based on municipal self-government, municipalities should acquire and apply the necessary institutional, administrative and technical capacity.

- To realise the full potential for the contribution of sanitation to water security, growth and job creation, it will be necessary to improve co-ordination and rationalise distribution of tasks within and across national and subnational levels of governance to exploit synergies with sectoral and related transversal policies - such as water resources management or climate adaptation, desertification and drought policies - and to identify criteria for priority actions for investment in the area of sanitation.

- To maximise cost-effectiveness of water and sanitation infrastructure, it will be necessary to ensure that infrastructure are effectively planned over a life-time which is often 50 years or more and that sufficient revenues are generated to guarantee their operation and maintenance. Due to the capacity deficits, the financial resources available for investments in water and sanitation have so far been sufficient to satisfy effective the demand. However, in the light of economic and fiscal constraints, alternative sources of funding will have to be considered in the light of the unlikely future availability of public funds for infrastructure finance.

- To maximise the efficiency and quality of water and sanitation services provision and ensure both economic sustainability and affordability of the services for the population, a strengthening of monitoring, regulatory controls of tariffs and service delivery, and enforcement of regulatory standards will be needed, including a strengthening of the oversight of service provision by consumers and other stakeholders. Private sector participation as an alternative source of funding need to be assessed in terms of the long-term nature of the investments, the risks associated with the investments, their influence on the contribution of the sector to other public policy goals and the public acceptability of such participation.

86. Table 3 below sets out for each of the 12 *OECD Principles on Water Governance*, the main issues identified and the ways forward to making progress in implementation of the sanitation agenda.

Table 3. An assessment vis-à-vis the *OECD Principles on Water Governance*

GOVERNANCE PRINCIPLE	MAIN FINDINGS	WAYS FORWARD
Clear Roles and Responsibilities	– Fragmentation of responsibilities and programmes in the Federal authorities	– Roles and responsibilities across federal authorities should be rationalised and duplication eliminated, by ensuring that the different federal authorities contribute to policy development and programmes in accordance with their specialised skills – The new Inter-ministerial Committee on Sanitation proposed by the Civil

		House could become the body responsible for policy co-ordination
Appropriate Scales within Basin Systems	– Little concrete information available about the number of multi-municipal supply systems in Brazil	– Policy effectiveness requires a scale providing a critical mass of competences. Already There are several instances in Brazil where Municipalities have established either joint service provision, increasing the size of the supply area or joint support services to improve cost-effectiveness of service provision to the public – Special consideration needed for large cities, where there is a mismatch between the urban agglomeration and the boundaries of the territorial management unit (normally Municipality) responsible for service provision
Policy Coherence	– Lack of coordination of municipal water and sanitation plans with Water Resources Planning – Lack of coordination of municipal sanitation plans with national, State and regional policies – Lack of horizontal coordination at Federal Level across Federal programmes for grant funding in sanitation and no clear prioritisation of targets (e.g. Plansab, PPA)	– River Basin Agency verification of coherence of planning with water resources planning (ANA for the federal level) – Enhanced multi-level coordination and alignment of Plansab with other federal planning, and with State and regional planning and identification of criteria for priority actions to be included in Plansab and Pluri-Annual Plans (PPA)
Capacity	– Lack of technical, planning and implementation capacity in Municipalities – Lack of technical capacity at Federal Level – Lack of municipal sanitation plans	– Ensure federal funds include a soft infrastructure component to support greater capacity building – When municipalities lack technical and financial conditions for quality service provision, it would be advisable to reach an alternative scale for service provision, for example through State sanitation service providers or other providers on a similar scale, a condition for receipt of federal funding
Data & Information	– Absence of Quality Control	– Quality control of self-sourced data entries – Ensure all information needed are available for Plansab reviews
Financing	– Inability to spend allocated funds – Lack of Economic Sustainability – Risk and public confidence issues with entry of private funds	– Improve municipal capacities in planning and implementation – Private participation in investment should be considered in parallel to robust thinking about the economic regulation of the sector.
Regulatory Frameworks	– Ineffective Regulation	– Ensure all key regulatory functions are discharged by responsible authorities with enforcement powers – Condition access to federal funds for investment in sanitation infrastructure to the existence of sound regulatory frameworks,

		properly enforced. – Objective criteria need to be established for the remit, independence and powers of regulatory bodies Require that service providers participate in benchmarking – Make connection to water and swearer services compulsory, where available
Innovative Governance	– No information available	
Integrity & Transparency	– Potential conflicts of interest in municipalities	– Set and enforce strict rules for ex-ante and ex-post controls for State disbursement of federal funds to prevent abuse or corruption Clear distinction of tasks between service provision, financing and regulation. – Public access to benchmarking information – Enforce requirements of municipal sanitation plans through the Courts
Stakeholder Engagement	– Weak participation of stakeholders and consumers	– Ensure sufficient and timely information on service provision is provided to stakeholders for greater awareness of water risks and utilities performance.
Trade-offs across Users, Rural and Urban Areas, and Generations	– Little concrete information available	– Equalisation of tariffs over larger supply areas of service providers – Promote active participation of collegiate stakeholder bodies to accompany implementation of the municipal sanitation plans – Ensuring economic sustainability over lifetime of assets
Monitoring & Evaluation	– Little concrete information available	– Use of benchmarking information in Municipal Plan evaluation – Integration of information from SINISA and priorities identified in multi-level planning in Plansab reviews

ANNEX I: SANITATION POLICIES IN THE EU

This section describes European experience in implementation of policies to ensure universal provision of safe drinking water and collection and treatment of sewage in the European Union. The EU is a Union of 28 countries and has had drinking water requirements in place since 1980 while requirements to sewage collection and treatment were established in 1991. However, 13 of the 28 countries joined the EU in 2004 or later and have therefore had only 4-14 years to establish compliance with the requirements to sewage collection and treatment. Deadlines for the 15 "old" EU countries have expired while not all of the deadlines applicable to the 13 "new" EU countries have expired.

The EU Legal Framework for Drinking Water Distribution and Sewage Collection and Treatment

87. In the EU sanitation policy has been driven by the need to protect public health, the environment and water resources. The main instruments in this respect are the Drinking Water[28] (1980, modified in 1998), Urban Waste Water[29] (1991) and Water Framework Directives[30] (2000). In addition, sewage treatment plants above a certain size[31] are required to respect the procedural requirements concerning assessment and consultations required by the EU's Environmental Impact Assessment Directive[32].

88. The Drinking Water Directive sets quality standards for drinking water[33] to protect public health. There are no EU-wide environmental licensing obligations relating to the establishment of drinking water treatment plants. Abstraction licenses for raw water abstraction are however required under the Water Framework Directive as part of the basic measures in River Basin Management Plans.

89. The Urban Waste Water Directive sets an EU-wide obligation to collect and treat urban wastewater and defines a timetable for doing so. Collection obligations were to be satisfied by 1995. The Directive includes a planning timetable for implementation requiring treatment obligations to be satisfied by 1998, 2000 and 2005, depending on the size of the agglomerations concerned and the requirements of the receiving waters according to their use or their nature. The implementation dates in the directive reflect priorities for implementation, based on sensitivity of the waters receiving the discharges and the size of the discharges.

90. The Water Framework Directive requires that discharges of treated sewage are integrated into the basic measures in River Basin Management Plans and that they are subject to prior regulation or specific authorisation (discharge licence). Where circumstances warrant this, the Directive allows for use of Individual or other appropriate sanitation systems. The Directive obliges Member States to establish a regularly updated implementation programme, detailing information about their compliance with the Directive and the timing and costs of further planned infrastructure.

91. Furthermore, the Water Framework Directive requires that water abstraction and discharges of urban waste water are subject to discharge permits or regulation. The quality standards for discharges into

[28] Council Directive 98/83/EC on the quality of water intended for human consumption, OJ L 330, 05.12.1998, p. 32 ff
[29] Council Directive concerning urban waste water treatment, OJ L 135, 30.05.1991, p. 40 ff
[30] Directive 2000/60/EC of The European Parliament and of the Council establishing a framework for Community action in the field of water policy, OJ L 327, 20.12.2000, p. 1 ff
[31] plants treating a load greater than 150 000 p.e. (person-equivalents)
[32] Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, OJ L 185, 05.07.1985, p. 40 ff
[33] Except for non-commercial supplies which supply less than 10 m^3 per day or serve less than 50 people.

receiving surface waters are thus set in regulations or in authorisations to discharge in accordance with the needs of the receiving waters. These requirements may where necessary to satisfy chemical or ecological quality objectives defined in their River Basin Management Plan. In some cases - especially in water scarce areas or areas where groundwater has been overexploited - Member States impose special additional treatment requirements to allow for the safe reuse of the treated wastewater for economic purposes or reinjection into overexploited groundwater aquifers.

92. EU's Member States are responsible for implementing the Drinking Water, Urban Waste Water and Water Framework Directives. The implementation of the Drinking Water Directive is predominantly managed at national level by ministries or agencies responsible for the environment or health. In most cases, local or regional authorities monitor and enforce the correct implementation of the Directive.

93. Levels of compliance with drinking water and sewage collection and treatment requirements are shown in tables 3 and 4 for selected EU countries. Table 3 shows that the EU has, in practical terms, almost fully implemented its Drinking Water Directive. However, it is equally clear that there is still an issue to be solved with small supply systems. These are faced with challenges in terms of both technical capacity and cost-effectiveness of remediation measures. The European Commission is currently reviewing the implementation of the Directive and may make proposals to improve compliance in the small supply segment. Table 4 shows that the EU is close to full implementation of its Urban Waste Water Directive, with the exception of some limited gaps, especially in the 13 Member States having joined the EU since 2004. A deeper analysis shows that in big cities (> 150 000 inhabitants) across Europe, the average rate of compliance is 98% and that, at regional level, the backlog in compliance is mainly in rural and semi-rural regions . It is estimated that full compliance will require an investment of a further 22 billion euros, of which 25% are needed in the 15 "old" EU countries, while 75% are needed for investments in the 13 "new" EU countries, some of which is needed to comply with transitional deadlines set when joining the EU and which have not yet expired.

Table 4. Compliance (distance to target) with EU drinking water requirements[34]

	LARGE SUPPLIES[35]	**SMALL SUPPLIES**[36]	**PROPORTION OF SMALL SUPPLIES (BY VOLUME OR POPULATION)**
CYPRUS	99-99.9 %	90-95%	25%
CZECH REP	99.9 %	95-99%	26%
DENMARK	99.8 %	<90%	38%
FRANCE	99.8 %	90-95%	22%
GERMANY	99.9 %	95-99%	10%
NETHERLANDS	100 %	95-99%	<1%
ROMANIA	99.7 %	<90%	48%
SPAIN	99.6-99.8%	76%	12%
ENGLAND AND WALES	99.9-100 %	99-100%	3%

Table 5. Compliance (distance to target) with EU Urban wastewater requirements[37]

	COLLECTION SYSTEMS	**STANDARD BIOLOGICAL**	**ADVANCED TREATMENT**

[34] Compliance data from European Commission documents COM(2016) 666 (large supplies from 2011-2013) and COM(2014) 363 (small supplies from 2010)

[35] Large supply zones are distribution zones with a population of more than 5000 people or a volume of water exceeding 1 000 m^3 per day.

[36] Small supply zones are distribution zones with a population of less than 5000 people or a volume of water of less than 1 000 m^3 per day.

[37] Compliance data from 2012 from European Commission documents COM(2016) 105 final and SWD(2016) 45 final

		TREATMENT REQUIREMENT	REQUIREMENTS
CYPRUS	100%	74%	100%
CZECH REP	100%	98%	71%
DENMARK	100%	99%	99%
FRANCE	100%	90%	99%
GERMANY	100%	100%	100%
NETHERLANDS	100%	100%	100%
ROMANIA	98%	77%	38%
SPAIN	>99%	86%	72%
ENGLAND AND WALES	100%	99%	98%
EU 28	99.7%	93%	92%

94. Member States are required by law to report back to the European Commission on planning and compliance with key requirements of the Directives. The European Commission oversees compliance, also through citizens' complaints. Where necessary to ensure it, the Commission raises cases against the Member States before the European Court of Justice. In the first stage, the Court of Justice rules on whether the country is in compliance or not. If the Court rules in favour of the Commission, the latter will give the country a deadline to ensure compliance. If the deadline is not respected, the Commission can bring a new case, asking the Court of Justice to inflict a fine. The fines inflicted by the court are substantial. An example is a fine from 2013 for non-compliance with urban wastewater related requirements in 21 agglomerations delays. The Court of Justice inflicted on a country a lump sum fine of 10 million euros in addition to 850 000 euros for every 6 months of further delay of implementation.

95. Examples of the main governance arrangements put in place to implement the legislation by 8 EU countries (Cyprus, Czech Republic, Denmark, France, Germany, Romania, Spain, and England and Wales).

Private or Public Water Services?

96. The EU does not make specific requirements to the form of ownership for providers of sanitation services. The model for service provision is therefore left to its Member States (Box 3). Traditionally, delivery of sanitation services in Europe are the responsibility of elected governmental bodies. In almost all EU countries this is still the case with the notable exception of England and Wales, where the responsibility has been entirely transferred to privatised water companies, each serving a particular area.

Box 8. Models for service provision

Where responsibility for drinking water and waste water services is directly or indirectly with public authorities (controlled by elected governmental bodies), there are different models of organisation for their provision. The main models are:

- Direct provision by public authorities which own and operate the infrastructure or by a joint venture association of public authorities, financed either through taxes or by resources from participating authorities.
- Delegation to public law organisations and semi-autonomous organisations run by or owned by a public authority.
- Private companies entirely owned by public authorities of the area where the services are provided. This organisation form frees the companies from the constraints applicable to public authorities.
- Delegation by public authorities of the obligation giving concessions to a public or private company or a PPP

to provide the services. The holder of the concession is responsible for investment, maintenance and operating expenses while asset ownership remains with the public authority. This kind of delegation is typically managed through long-term contracts to allow the company to recuperate investments.

- Delegation by public authorities of the obligation through leasing of the infrastructure to a public or private company or a PPP responsible for maintenance and operating expenses to operate it and provide the services. Investments and asset ownership remain with the public authority. This kind of delegation is typically managed through shorter-term contracts to allow the public authority to put the leasing to competition.

In addition to these modalities, provision of drinking water and sanitation services is in some Member States provided by the private sector. There two main forms of private participation:

- Public Private Partnerships (PPPs) organised jointly by private accompanies and public authorities, e.g. in the form of private law companies owned jointly by the participating parties.

- Private law companies which are privately owned and have no ownership or management link with the public authorities. In some countries, drinking water in some areas is provided by private law companies on a cooperative basis, where the users of the services are the owners.

Private sector participation is significantly more prominent in production and distribution of drinking water than it is in the collection and treatment of sewage. Except for England and Wales, private sector participation in collection and treatment of sewage is very limited, except for contractual service provision to public authorities through concessions or leasing.

Table 6. Provision of drinking water services in selected EU countries

	MUNICIPAL OR REGIONAL	OTHER PUBLIC LAW BODY	PUBLICLY OWNED PRIVATE COMP	DELEGATED LEASING	DELEGATED CONCESSION	OTHER PPP	PRIVATELY OWNED PRIVATE COMPANIES
CYPRUS	100%						
CZECH REP	± 35%			± 65%			
DENMARK			±55%				±45%
FRANCE	± 40%			± 60%			
GERMANY	± 60%					± 25%	± 15%
NETHERLANDS	100%						
ROMANIA	± 90%					± 10%	
ENGLAND AND WALES							100%

Sources: Water & Wastewater International, vol. 21, Issue 4, Regional-Europe, PPPs help Czech republic comply with EU Directives; DANVA, Vand i tal 2016; Global Water Market 2015, GWI; Profile of the German Water Sector 2015 (BDEW et al)

Table 7. Provision of wastewater services in selected EU countries

	MUNICIPAL OR REGIONAL	OTHER PUBLIC LAW BODY	PUBLICLY OWNED PRIVATE COMP	DELEGATED LEASING	DELEGATED CONCESSION	OTHER PPP	PRIVATELY OWNED PRIVATE COMPANIES
CYPRUS	100%						
CZECH REP	± 35%			± 65%			
DENMARK			100%				

FRANCE	± 60%			± 40%			
GERMANY	± 90%						± 10%
NETHERLANDS	100%						
ROMANIA	± 90%					± 10%	
ENGLAND AND WALES							100%

Sources: Water & Wastewater International, vol. 21, Issue 4, Regional-Europe, PPPs help Czech republic comply with EU Directives; DANVA, Vand i tal 2016; Global Water Market 2015, GWI; Profile of the German Water Sector 2015 (BDEW et al)

97. Furthermore, when comparing the ownership structures and the compliance records in the Member States, there is clearly no simple correlation between the ownership structure in the industry and delivery of the objectives of the water legislation. The best performing Member States have very different ownership and operation structures – some are entirely public, others entirely private. And, among the Member States who are performing less well, there are both services which are mainly privately operated and services mainly operated by public authorities. In fact, the main thing the latter countries have in common is the fact that they have joined the EU much more recently, in 2004 and 2007, than the others and that they have therefore had less time to bring about compliance. Many of the "older" EU countries had similar backlogs 5-8 years after the entry into force of the Urban Waste Water Directive[38]. There is thus no evidence in Europe that private participation has a direct impact on the ability to comply with environmental and health related standards for drinking water supply and urban waste water treatment. The available evidence suggests that giving sufficient time to ensure implementation is a key factor, provided the investment can be financed.

98. Private control of water services is particularly sensitive in the EU. Thus, in Italy a law allowing for private management of local public water services provision was defeated in a referendum in 2011 with a majority of 95% of the votes. Furthermore, in several EU Member States, there has in recent years been a clear tendency for major cities with privatised water services to return to an operation of the services which is directly controlled by the public authorities. This is inter alia the case for Berlin and Paris. There are probably several factors that have influenced these decisions, including: 1) a public perception of lack of transparency from service operators about tariffs, 2) a perception that synergies with other services to the population (energy, waste, flood protection, water protection etc.) may be better exploited and coordinated under public management.

[38] The OECD 2011 water governance report highlighted that insufficient infrastructure is an important obstacle to vertical co-ordination of water policy, and Greece is a prominent example within OECD countries. Greece's biggest cities are in compliance with the EU Wastewater Treatment Directive of 1991, but smaller municipalities face major obstacles related to infrastructure. In April 2015, the European Commission took Greece to Court over a failure to ensure that waste water was properly treated.

Implementation at EU level

99. The EU legislation on safe drinking water and on urban waste water treatment were adopted in 1980 and 1991, respectively, at a time when a significant part of Europe already had access to these services. The Directives in question were widely seen as part of a drive to protect public health, allowing people to travel safely all over Europe, to tackle transboundary pollution, and to ensure that regions lagging behind in terms of development would catch up in this respect. Annex 2 provides a comparison of EU and national measures in the area of drinking water and urban waste water treatment.

100. As most of the EU already had functioning drinking water treatment systems and piped distribution systems, the major challenge was the urban waste water legislation which required significant investment in new sewer systems and sewage treatment plants. The then 12 Member States were given a deadline of up to 15 years before full compliance with the Directive was required for all waste water discharges, depending on the sensitivity of discharge areas and the size of the discharge. Nevertheless, when that deadline expired, several Member States had important implementation backlogs, including for discharges to sensitive areas. Many delays were only resolved after the European Commission brought cases at the European Court of Justice. In contrast, drinking water requirements could in many locations be satisfied by upgrading of existing treatment systems.

101. There was widespread agreement – within and between the EU Member States - about the benefits of this legislation. At the time when these Directives were adopted, all Directives had to be agreed by unanimous decision in the Council of Ministers.

102. The Directives set clear goals. The Urban Waste Water Directive set out a clear timetable over 15 years to ensure that priorities in terms of discharges, so that the requirements to discharges to more sensitive areas and larger discharges were implemented before discharges to less sensitive areas and smaller discharges. In addition, the Water Framework Directive contains coordination provisions requiring Member States to set more stringent standards when necessary to reach the goal of good status of water bodies as required by that Directive.

103. Finally, and importantly, there was across political and national differences a willingness to ensure that the necessary finance for investment, could be made available for implementation, either sub-nationally, nationally or at the level of the EU. Implementation was not without challenges, especially for the urban waste water legislation. In particular, there were issues relating to technical, administrative and financial capacity at the subnational levels in charge of the practical implementation of the legislation.

104. The Drinking Water Directive is currently under review and a proposal for its revision may appear in late 2017 or early 2018[39]. Following a petition to the European Commission with more than 1 million signatures based on the recognition of access to clean water as a human right and asking that market rules should not apply to drinking water management and provision. The European Commission took the first steps in 2014 with a view to reviewing the 1998 Directive. A public consultation revealed that the provisions in the Directive on information to the public were not satisfactory. The Commission has carried out an assessment of the whole Directive which has revealed that the Directive is effective with very high compliance rates and efficient with no excessive administrative burdens or costs. Nevertheless, the assessment has identified that there is scope for improving coherence with the resource protection under the Water Framework Directive and that more may be needed to be done to address new risks, apply

[39] See http://ec.europa.eu/environment/water/water-drink/review_en.html

risk based approaches and water safety plans to improve the quality of small supplies and to modernise the provisions on public information to provide better and more up-to-date information to consumers.

Box 9. Organisation of administrative competences at the level of the EC and EU member states

At the level of the European Commission, the lead on the different aspects of policy implementation and interaction with the EU Member States has been distributed internally in accordance with a principle of specialisation and of concentration of expertise:

- The Directorate General for Environment has the lead on the Drinking Water and Urban Waste Water Directives, their implementation and technical content
- The Directorate General for Regional Policy has the lead for assessment of Partnership Agreements and Operational Programmes under EU regional policy funds, including the Cohesion Fund, the definition of the applicable conditionalities, and the respective budget allocations
- The Directorate General for Budget for the processing and execution of financial transfers
- The Legal Service for initiating infringement procedures against Member States for non-compliance with legislation at the European Court of Justice

This distribution of policy and implementation leads has allowed to build a critical mass of specialised competences in very different fields within a limited number of administrative settings, thus reaping the benefits and the effectiveness of concentrating specialised knowledge in one field in one place, while at the same time living the number of entities with which each entity has to coordinate.

The distribution of competences at the national level of Member States in most cases mirror that in the Commission, with the difference that, in some Member States, drinking water quality is the responsibility of Ministries responsible for public health rather than environment ministries, and that in Member States receiving significant regional policy funds from the EU the counterpart of the European Commission's Directorate General for Regional Policy is a single Ministry responsible for distribution of EU funds in that Member State.

Multi-Level Governance: focus on cross-cutting priorities

105. The EU executive, the European Commission, has a limited formal role in the implementation of the specific EU legislation for the water and sanitation sector. The EU Treaties very clearly specify that it is the Member States who finance and implement the environment policy under which sanitation issues fall. Most EU Member States have, in their turn, delegated this obligation to subnational levels of government. Today, 70% of public investment, including for water, in the OECD region relies on subnational governments and the EU is thus no exception in this respect.

106. The main instruments for cooperation between the European Commission and the Member States in the field of water policy is the informal Common Implementation Strategy for the Water Framework Directive (CIS). The European Commission, the Member States and stakeholders ranging from water users to civil society and organisations representing experts all participate in the CIS. The main thrust of the CIS is the discussion of issues arising in implementation of the Water Framework Directive and the elaboration of guidance documents in relation to the implementation of the Water Framework Directive. Guidance documents are agreed between the European Commission's and Member States' Water Directors. In addition, there are Drinking Water and an Urban Waste Water Regulatory Committees with representatives of the European Commission and the Member States only (no stakeholders) which adopt implementing measures under the respective Directives (e.g. methods of analysis or reporting formats to be used).

107. The main formal interactions on drinking water and sanitation between the European Commission and Member States providing direct or indirect incentives for Member states to improve compliance with EU legal requirements are:

- EU contributions to investment in less wealthy Member States from the EU Cohesion Fund and the European Regional Development Fund where eligibility for funds is subject to compliance with the legislation applicable to the infrastructure and the fulfilment of additional ex-ante conditionalities to ensure compliance with key provisions of the legislation on water resources management[40].
- Triennially published reports to the European Parliament and the Council of Ministers on the implementation of the Drinking Water and Urban Waste Water Directives, based on information reported by the Member States; and
- Enforcement actions brought by the European Commission before the European Court of Justice. If a Member State persists in not complying after the Court has ruled in favour of the Commission, the Court can inflict substantial financial penalties on the Member States[41].

108. In some cases, such as Spain, there are legal mechanisms to ensure that penalties inflicted by the European Court of Justice on the Government of a Member State can be recuperated from the subnational Government causing the infringement for which the penalty was inflicted.

109. The main players in planning of water services in the EU are generally local or regional public administrations (with the notable exception of England and Wales) and their service providers.

110. National administrations mainly play a role where infrastructure of importance for national water security issues are at stake, where national or EU subsidies for investments are provided to establish infrastructure in less wealthy regions and in overseeing implementation of national policies for the universalisation of service provision and levels of debt of subnational authorities in the framework of economic policy.

111. In the EU, there is an important interaction between EU, national and subnational authorities in the context of general economic and development planning through the EU's regional and cohesion policy. This policy provides financial support to less wealthy Member States and regions as water infrastructure investment is closely linked to general economic and territorial planning, financial planning and last, but not least, to water resources planning and policy implementation.

112. EU regional policy aims at redressing the main regional imbalances in the Union through participation in the development and structural adjustment of regions whose development is lagging behind and in the conversion of declining industrial regions. It does so by supporting smart, sustainable and inclusive growth and by contributing to economic, social and territorial cohesion in the Union. It therefore especially targets the provision of financial assistance to regions that are lagging behind or are in decline, in particular through financial assistance from the European Regional Development Fund (ERDF) and the Cohesion Fund which is reserved for the least wealthy Member States[42]. This allows them to invest in the

[40] For water infrastructure, the requirement is compliance with the key provisions of the Water Framework Directive. See Guidance on Ex ante Conditionalities for the European Structural and Investment Funds, PART II, based on Regulation (EU) No 1303/2013 of the European Parliament and the Council of 17 December 2013 laying down common provisions on the ERDF, the ESF, the CF, the EARFD and the EMFF and laying down general provisions on the ERDF, the ESF, the CF and the EMFF, Brussels, February 2014.

[41] In one case concerning failure to implement fully the Urban Waste Water Directive, the Court imposed a lump sum penalty of 10 million euros in addition to almost 1 million euros for each 6-month period until the failures have been corrected, see http://curia.europa.eu/juris/document/document.jsf?text=&docid=143181&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=76263

[42] Other programmes relevant for sanitation include the regional development Interreg (https://www.interregeurope.eu), the environmental LIFE+ (http://ec.europa.eu/environment/life/index.htm), the research and technological development Horizon2020

infrastructure they need without contributing to unsustainable levels of debt. In the context of regional policy, water services are thus coordinated with economic, territorial and water resources planning.

113. Based on a Common Strategic Framework agreed at the level of the EU, national authorities in each EU Member State draw up, in dialogue with the European Commission, a "Partnership Agreement" in cooperation with subnational authorities, economic and social partners and civil society setting out their priorities for use of EU financial support over a 7–year period (currently 2014-20). Once finalised and approved by a qualified majority in a Committee of all EU Member States, the Agreement can be adopted by the European Commission and implemented by Member States. On the basis of the Partnership Agreements, Operational Programmes are elaborated and adopted through a similar procedure, transforming the priorities of the Partnership Agreements into concrete projects for financing.

114. The EU Directives on drinking water and sanitation and water management ensure that in decisions on sanitation and drinking water, account is taken of some of the environmental and public health related priority issues, but do not take account of other priorities. In areas receiving substantial support through EU funds, the system of Partnership Agreements and Operational Programmes therefore helps ensure that other issues are taken into account when identifying priorities and thus promote coherence and focus on overarching social, economic and environmental priorities across the different levels of governance and geographical scales and across different policy areas.

115. In terms of procedures, the Partnership Agreements and their Operational Programmes help improve efficiency by eliminating the need for additional layers of assessment at different administrative levels, provided the necessary administrative capacity is available for the management of the programme and that all the necessary controls are in place at national and subnational level to prevent abusive use of funds.

116. A spectacular example of synergies in cross-sectoral planning in the EU, is the Netherlands' Delta Plan[43] which provides cost-effective protection against climate change marine and riverine flood risks and salt intrusion in fresh drinking water resources (groundwater) through a combination of dikes, coastal morphology measures and extensive reestablishment of river flood plains through a "room for the river" programme to prevent the flooding of densely populated urban areas. Investments of a total of 15 billion euros are foreseen for the Delta Programme.

Ensuring coherence with water resources policy at National, Regional and Local Level

117. The hydrological situation across Europe is very diverse – and depending on the challenges that each Member State faces, some EU Member States have in addition to river basin planning chosen to develop national hydrological planning with associated investment plans to improve long term water security. The European experience (e.g. from Spain) shows that such plans are only helpful if they respect all three pillars of sustainable development (economic, social and environmental) and have broad political support. Otherwise they become the subject of major political controversies and are abandoned once there is a change of government, and the long-term impact on water security is lost.

118. At *national level*, coordination has mainly aimed at ensuring coherence of planning of water services with national economic, territorial and water security policies, coherence with national infrastructure needs and ensuring that social and economic priorities are integrated into the planning and

(https://ec.europa.eu/programmes/horizon2020/) programmes and the EU Strategy for the Danube Region (EUSDR) (http:// http://www.danube-region.eu) and the Water Supply and Sanitation Technology Platform (WSSTP) (http://wsstp.eu).

[43] see https://deltaprogramma2016.deltacommissaris.nl/viewer/publication/1/delta-programme-

that the necessary infrastructure water could be financed. To support this coordination, some Member States have established advisory councils, such as Spain's National Water Council (Consejo Nacional del Agua), with representatives of public authorities, national representatives of user groups and other stakeholders to advise Governments before important water policy decisions are taken.

119. In cases of persistent and serious differences between national level authorities representing different policy areas in a Member State, these are settled through the usual arbitration and coordination mechanisms of government. In most EU countries, only the services under the Head of Government (Prime Minister) have the necessary authority to carry out this task.

120. At *subnational level*, the coordination generally takes place through the active participation of municipal and regional authorities in transparent river basin planning processes together with economic and civil society stakeholders[44]. This ensures that local water security issues and sustainability issues as well as discharge licences, abstraction permits, environmental impact assessments and planning of water services are coordinated and mutually consistent and that they are coordinated with regional and local economic and territorial development.

121. The detailed distribution of competences between regional authorities, local authorities and basin authorities[45] vary from one EU Member State to another, but the coordination between the authorities exercising these three competences is in any case essential to the functioning of the system.

122. In the EU, various instruments and combination of instruments have been applied to ensure that coordination at subnational level takes place. These instruments include:

- Written guidance from national to subnational authorities
- Requirements of ex-ante agreement to sanitation plans or projects from authorities responsible for river basin plans, environmental impact assessments, discharge licenses or water abstraction permits
- Financial incentives, by making availability of finance (e.g. from EU Cohesion Fund or national funds) for investment conditional on the conformity of projects and plans with coordination requirements (e.g. relating to licenses or permits from other authorities)

123. In Member States having recourse to private service providers by delegation or concession, such as e.g. France, cooperation agreements between service providers and River Basin Agencies have in many cases worked well, as there have been no important asymmetries in competence and capacity between the service providers and the agencies concerned.

124. Coordination *between national and sub-national* levels in the EU takes place respecting the far-reaching constitutional autonomy prerogatives of subnational government where responsibility for service provision is with this level of government. As set out above, EU Member State governments apply a series of instruments to encourage the subnational governments responsible for service provision to actively cooperate and interact with other relevant levels of subnational government:

- Provision, by national governments, of EU and national funds to support investment in less favoured regions, as e.g. in all EU Member States that qualify for support from the EU's Cohesion Fund.

[44] In England and Wales, also the private industry water services providers

[45] In some EU Member States, the river basin authorities are vested with regional government, e.g. in Germany and in Spain (for intraregional basins), but this does not affect the argument.

- Elaboration, jointly with subnational government, of national and regional service provision plans, agreed by national, regional and local authorities, and by river basin authorities. An example is Spain's plan for sanitation 2007-2015.
- Legal enforcement action vis-à-vis local authorities or service providers by the national competent authorities, initiated through the public prosecution services.
- Recovery from regional governments of penalties inflicted by the European Court of Justice on EU Member States for breaches of EU legislation for which the regional governments are responsible.
- In England and Wales, requirements from the 3 national regulatory bodies (Ofwat, the Environment Agency and the Drinking Water Inspectorate) to the large monopolistic private companies, and where necessary by imposing penalties

Economic Regulation of Service Providers and Participation of Civil Society

125. A number of countries (e.g. Italy, United Kingdom, Denmark, Romania and Portugal) have established independent economic regulatory agencies that regulate tariffs and prices for water and urban waste water services. The River Basin Management Plans, which are subjected to public consultation before adoption, set out the general scheme for cost recovery in the river basin and its distribution on households, industry and agriculture. However, these Plans will not set out the detail of the tariff scheme applicable to individuals.

126. If properly resourced in terms of finance, staff numbers, expertise and guarantees of independence from vested interests, such agencies can help bridge the asymmetries in knowledge and capacity between service providers and local authorities responsible for provision of the service, thus helping ensure good quality customer service while providing communities a protection against potential abuse by service providers.

127. The exact tasks of regulators vary from one Member State to another, but they all include ex-ante approval of prices and tariffs and often include approval of budgets and investment plans, improvement of customer service and environmental performance[46]. Several regulatory agencies (e.g. in England and Wales and in Denmark) use benchmarking results to identify good and less good performers and identifying service providers that need to improve performance. In other countries approval of tariffs and prices are part of the prerogatives of local authorities. This carries risks of excessive prices or tariffs, due to absence of incentives for innovation and efficiency improvements.

128. Where tariffs or prices for services are approved ex-ante by an independent regulator, there are different regimes applied for public participation. In the fully privatised water companies in England and Wales, there is a statutory Consumer Council for Water which is systematically consulted by the regulating body, Ofwat. In the municipally owned private law water companies in Denmark, consumers are represented on the board of Directors by two full members of the Board of each company. In these countries, consumers can always complain about tariffs and prices to the companies and to the regulator who will examine the complaints and intervene if there is justification for doing so. Where tariffs or prices are set or approved directly by local or regional authorities with no other regulatory ex-ante approval (e.g. in Germany, France, Spain and the Czech Republic), elected representatives are directly responsible to the electorate and there are many examples of representatives that have been sanctioned ex-post at elections. In Germany, consumers can complain to their State competition authorities who will assess whether tariffs or prices are reasonable and, if necessary, intervene.

[46] See e.g. OECD, Governance of Water Regulators, OECD (2015)

129. Several countries (e.g. Netherlands, France[47], Spain and Germany[48]) have introduced compulsory or voluntary benchmarking with publically available results, available on the internet, allowing customers to compare their service providers with other providers on a number of parameters. France has introduced an obligation for Municipalities to produce an annual report on the pricing and quality of their water related services and has created a web-based national observatory of water services[49] where consumers can compare water services in their local area with those in other areas.

130. Public access to economic information about providers of water services is currently not the competence of the EU, but that of the Member States. A public consultation and stakeholder dialogues in 2014 and 2015[50] on the 1998 Drinking Water Directive and on benchmarking of drinking water quality and water services revealed that, on a European scale, consumers are not satisfied with the information available about water quality, cost of supply and profit margins. But Europe has also had examples of local authorities transferring service provision to private operators through long-term concessions on conditions where local authorities maintained responsibility for all investments in infrastructure, while the service providers undertook to operate the infrastructure with long-term guarantees of profits.

Economic sustainability – Tariffs, prices and social considerations

131. The EU applies the polluter pays and user pays principles to water resources. As the water services are universally provided for, the general rule in the EU is that there has to be full cost-recovery of capital, operational and maintenance expenditure in order to ensure the economic sustainability of the services. This applies irrespective of whether the services are controlled or provided by public authorities or private operators, and whether tariffs or prices are being applied to water supply and waste water services.

132. As in most of Europe local authorities are ultimately responsible for tariffs and prices – either by providing services and setting tariffs themselves or by approving the contractual terms for any concessions to private providers – the elected representatives risk being punished in local elections if consumers feel that services are overpriced, due to inefficiency or profiteering by private providers. The widespread use of benchmarking to which public and private service providers are subjected, e.g. in France, Germany, the Netherlands and Denmark, in many cases allow consumers to compare their performance on prices and tariffs, quality of service, environmental impact and other important parameters across similar service supply areas.

133. Social considerations and affordability play an important role in price and tariff setting in Europe. Service providers in Europe generally apply a uniform tariff/price system in their supply areas which allows for equalisation of costs for consumers across urban, suburban and rural areas so as not to penalise unnecessarily relatively remote consumers of services, areas where services are provided through joint ventures of several municipalities or through arrangements for larger metropolitan areas.

134. In addition, in most areas pricing or tariff systems take account of affordability for low income inhabitants in the supply areas by providing either free consumption of basic quantity of water or preferential tariffs for a basic quantity of water per household or per inhabitant.

135. Block tariffs and prices are increasingly being applied in Europe which penalise higher level of consumption, especially – but not only – in water scarce areas.

[47] Conseil général de l'environnement et du développement durable (CGEDD) et l'Inspection générale de l'administration (IGA), Eau potable et assainissement : à quel prix ?, France, 2016
[48] See e.g. BDEW et.al. Profile of the German Water Sector 2015
[49] Observatoire national des services d'eau et d'assainissement, see http://www.services.eaufrance.fr/
[50] See https://circabc.europa.eu/sd/a/4fa04ec0-2b16-409a-b5b1-edbb6ffd6287/Benchmarking%20Report%202014-2015%20FINAL.pdf

Management of Sanitation Projects and Financial Flows

136. Sanitation investment projects are as a rule managed and implemented by the competent subnational authorities in the EU Member States, or by the service providers to whom they have outsourced the services.

137. In less wealthy Member States where infrastructure projects are partly EU-financed, strict ex-ante and ex-post controls and anti-fraud measures are required by EU regulation to avoid abuse and maximise cost-effectiveness of funds provided[51]. There would thus be little or no added value of repeating the control procedures in the European Commission. All expenditure of EU-funds is additionally subject to controls by the European Commission's audits and by the EU's Court of Auditors. This division of labour requires that the Member States dispose of the necessary administrative and technical capacity.

138. Putting in place strict control and verification procedures at national and subnational level has dispensed with the need for certification of projects by the European Commission and simplifies the question of transfer of EU funds to the Member States which take place on the basis of certifications provided by national authorities. The EU's role in project finance is thus reduced to its participation in the preparation and adoption of multilevel Partnership Agreements and Operational Programmes, to their monitoring and transfer of certified expenses under the Agreements.

139. For infrastructure financed through bank loans – from the European Investment Bank, national development banks or private, commercial banks – the coherence and financial viability of sanitation projects is part of the internal lending procedure of the banks.

Availability of finance – Private participation in investment?

140. By far the largest part of Europe's water infrastructure was financed before the 2008 global financial crisis. Much of the new infrastructure constructed after 2008 has been financed through transfers of public funds, e.g. from the EU budget to less wealthy Member States.

141. In the OECD region, 70% of public investment, including for water, relies on subnational governments and the EU is no exception in this respect. This not only raises the question of how to ensure the availability of the finance needed to renew and upgrade obsolete infrastructure in countries that have largely relied on public spending in the past for doing so, but are now implementing fiscal consolidation policies and can no longer afford it at times of economic crises or recovery. The question for the EU is therefore what are the likely future sources of funding. This has raised the prospect of possible increased private sector participation in the funding of water infrastructure for public water supply and waste water services.

142. Private participation in water infrastructure is not a novelty. There is a long history of outsourcing of water services provision in Europe, either through local government outsourcing the operation and maintenance of publically owned infrastructure through short term contracts. In some cases, infrastructure ownership and associated investments have also been outsourced on the basis of long-term contracts. However, the control, regulation and tariff setting has in countries with no dedicated central regulatory authority remained with local or regional authorities in accordance with constitutional arrangements in the individual Member States.

[51] For control and anti-fraud measures see Regulation (EU) No 1303/2013 of the European Parliament and of the Council laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund, OJ L 347, 20.12.2013, p. 310 ff

143. The main drivers for decisions to increase private sector involvement have been: 1) securing access to capital to invest (privatisation and concessions involving investment), 2) realisation of economies by putting services to competition (concessions and leasing), and 3) access to technical and engineering expertise in design and operation of the services (leasing and public private partnership companies).

144. The available estimates are that Europe will need a total additional investment of 22 billion € to reach 100% compliance with the Urban Waste Water Directive. But current estimates show that the need for investment to upgrade and renew infrastructure is significantly higher in the coming years, in the region of 30-50 billion € annually. These numbers may well rise once there is more clarity about the combined impacts of climate change, land-use change, demographic change, economic growth and the need for investment in the circular economy to meet the SDGs agreed in the United Nations. It is therefore also an issue of how to minimise investment needs exploring further low cost options and green and multi-purpose infrastructure in an industry which has worked to the same paradigm for more than 100 years and needs to innovate.

145. The entry of private capital in the sector may create important tensions between public policy objectives and private interests, due to asymmetries of political and economic power, information and capacities. Further tensions may arise between a desire for short term profits and the longer term need to integrate the sector with other services of general interest, such as water resources management and spatial planning, and the respect of human rights in the area to safeguard sustainable development and intergenerational equity.

146. The governance of the sector will therefore have to address these tensions. The further the governance of the sector is disconnected from the governance arrangements of the other sectors and services, the stronger will be the regulatory controls required to ensure that the sector delivers over a range of public policy objectives. Complete separation of the industry from environmental and water resources management, as is the case in England and Wales, will only work with very strong and independent regulatory bodies and a strong representation of civil society to deliver a sustainable development of the industry and affordable prices for services.

147. Traditionally, private capital has shown little interest in water infrastructure, among other because of the long time-horizons and political risks involved. Available information indicates that there is no need for public co-financing to stimulate private investment in the water sector, and that the most important conditions for attracting private investment in long-term infrastructure is a clear and stable institutional and regulatory framework, transparent bidding and award procedures, robust rule of law and absence of political intervention[52]. The key issue seems to be the ability to attract investors with a long-term investment horizon, such as institutional investors, e.g. pension funds.

148. While provision of water services under a private law framework provides advantages in terms of access to private capital and increased flexibility in relation to multiannual budgeting and staff management, it also brings risks of failing to attain wider public policy objectives because of tensions between immediate profitability and wider and more long term public policy objectives. Whether these risks materialise is critically dependent on strategic decisions taken about the future of the sector, including the governance and management arrangements for any private sector participation in service provision. The arrangements for how private investment might contribute to meeting the investment needs of the sector and who takes the strategic decisions about developments in the industry will therefore be of crucial importance for the EU. This is a politically very sensitive issue. Experience in Europe with reversal of privatisation of service provision in many cities – of which the most prominent are Berlin, Paris and Barcelona – shows that there is very strong popular support for strong and publically dominated governance of the water industry.

[52] Private Financing and Government Support to Promote Long-Term Investments in Infrastructure, OECD (2014)

149. Based on the European experience, partnerships with the private sector will require a high degree of public confidence in the business model for water services. Private participation will require more emphasis on transparency, integrity and anti-corruption measures, addressing the issues about asymmetry in information and capacity between the public authorities and private operators, and public confidence that the sector will prioritise long-term sustainability over short-term profits.

Other issues not yet fully tackled - Cost-effectiveness of Investments over asset life time

150. For solutions to water supply and waste water management issues to be cost-effective, it is essential that the solutions continue to be functional and resource efficient over the whole of the lifetime of the infrastructure assets which is often 50 years or more. It is therefore important not only that their operation generates income that can cover at least the operation and maintenance expenditure, but also that they are resilient to changes over asset lifetime in the environment in which they operate. To ascertain whether infrastructure investments are cost-effective, it has to be assessed whether it will still be useful in the conditions one may expect in 2070 and beyond.

151. However, although there is now a high degree of compliance with the Directives concerned, it has become clear that uncertainty about developments over the life time of the infrastructure – changes in future demography, climate and land use as well as economic development – may change significantly the conditions for its operation and that it will be necessary to adapt water resources management and the infrastructure to take account of the resulting changes in hydrology, pollution loads, the efficiency needs of a more sustainable circular economy (such as reducing leakage and improving energy efficiency) and the risks of floods and droughts. In EU countries water services and water security therefore cannot be taken for granted and there is a need to intervene on institutional setups and to review, adapt and upgrade infrastructure.

152. The bulk of Europe's water infrastructure was built before 2000, i.e. before there was a full understanding of the challenge posed by ageing infrastructure and climate change. It was only in 2008 and 2009 that EU guidance on how to take account of these challenges was agreed and published[53] and it was only expected to begin having an impact on River Basin Management Plans, beginning with the plans to be adopted in 2015 and subsequent plans. The understanding of the challenge is demonstrated by the fact that in a survey of cities carried out for the OECD in 2015, 92% of interviewees reported that obsolete infrastructure is a major challenge for water governance[54].

153. Current estimates are that in the EU investments of the order of 25 – 50 billion euros annually will be needed for this purpose[55] [56], but these figures could increase significantly as the scale of the challenge becomes clearer.

154. In Europe, the management of drinking water and urban waste water is already required to take account of human health and the requirements of water management and the aquatic environment. Future challenges will require this to continue. However, with the likely increasing water demand, changes resource availability, and increasing exposure to flood and drought risks, a more integrated approach encompassing adaptation to climate change and resource efficiency in a circular economy, building on synergies not only in the water sector, but more widely with developments in other sectors of the economy.

[53] Common Implementation Strategy for the Water Framework Directive, Guidance document No. 24: River Basin Management in a Changing Climate, European Commission (2009)

[54] 39 large cities were surveyed, see OECD, Water Governance in Cities, p. 35, OECD (2016)

[55] Report from the Commission to the European Parliament, the council, the European Economic and Social Committee and the Committee of the Regions, Eighth Report on the Implementation Status and the Programmes for implementation of Council Directive 91/271/EEC concerning urban waste water treatment

[56] Bluefield Research, Europe Municipal Water Infrastructure, see http://bluefieldresearch.com/research/europe-municipal-water-infrastructure-planning/

155. Large metropolitan areas have particular challenges, due to the concentration of many people and activities in relatively small areas, and are in many cases likely to be first movers in this respect. This raises challenges of coordination of policies (land use, energy, waste, housing, flood prevention etc.), of increasing awareness of people and involving them in decisions, and the management of the places where water is located[57]. Where they exist, metropolitan governance structures in larger metropolitan areas are particularly well placed to tackle all three challenges by ensuring coordinated policies inside the area, the involvement of citizens and the cooperation with rural and semi-rural areas outside the metropolitan area. This is an area which is still in development, but there are already a number of good examples. Metropolitan governance arrangements are in place in numerous cities in Europe[58]. Examples of policy coordination are set out in section 8.2 above and examples of the importance of mobilisation of citizens are numerous, e.g. in Bologna or Nantes[59]. Paris is a good example of urban-rural cooperation, where Eau de Paris has entered into a partnership with the Seine-Normandie River Basin Agency to encourage suburban communities and farmers to reduce the use of fertilisers and pesticides[60].

156. In areas where water resources are likely to become a limiting factor the attainment of economic, social or environmental objectives, decisions in Europe on public water supply and urban waste water collection and treatment would benefit from taking these issues into account already at the planning stage in order to ensure that the solutions chosen will focus on efficiency gains. The practical implications of such an approach would require 1) a focus on so-called 'non-revenue water', including network losses from leakage[61], 2) a focus on water efficiency in both domestic, public and commercial uses of water[62]; and 3) a focus on reuse of treated waste water as a resource for less noble uses (industrial, agricultural, irrigation and cleaning of public spaces etc.)[63]. Taking account of these elements will likely lead to efficiency gains ("doing more with less") and improvements of overall efficiency and cost-effectiveness. Europe has yet to apply to any significant extent scarcity pricing of water, but given the multiplicity of possible efficiency and reuse scenarios, economic instruments to better assign a value to water, pollution and waste water would probably be a useful step to ensure an optimal use of water resources in such situations[64] [65].

157. Many decisions about water infrastructure have in the past been taken on the basis of cost-effectiveness assessment. This approach has the virtue of simplicity, reducing the issues to identifying how to attain a given performance target at least cost. However, a more integrated approach with optimal resource allocation will require the assessment of costs in relation to benefits of infrastructure construction and operation to capture benefits in other areas than the performance on human health and water quality where treated waste water is discharged. Increasingly, therefore, analysis impacts and of costs and benefits

[57] See OECD, Water Governance in Cities, Chapter 5: Governance Instruments for Urban Water Management, OECD 2016.
[58] See e.g. OECD, op.cit., Table 5.1
[59] See e.g. OECD, op.cit., Box 5.9
[60] See e.g. OECD, op.cit., Box 5.6
[61]The European Commission has published Reference Documents on Good Practices on Leakage Management (Report, dissemination plan and case study report), European Union (2015)
[62] The EU Ecodesign Directive 2009/125/EU which makes mandatory requirements to energy related products includes under its scope water using equipment to which requirements are made. Also, EU Rural Development Programmes can support water-saving equipment for use in irrigation, see Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005
[63] The CIS has adopted Guidelines on Integrating Water Reuse into Water Planning and Management in the context of the WFD (2016) and is currently carrying out an impact assessment with a view to for a legislative proposal to be published in 2017, see http://ec.europa.eu/smart-regulation/roadmaps/docs/2017_env_006_water_reuse_instrument_en.pdf . Spain has developped a draft plan for reuse of water: Ministerio de Medio Ambiente y de Medio Rural y Marino, Plan Nacional de reutilización de aguas - versión preliminar del plan, Madrid, diciembre de 2010
[64] Denmark currently collects a tax on water distributed through public networks of 0,79 € per m^3 (2,74 R$) where the tax on losses above 10% cannot be passed on to customers – see Bekendtgørelse af lov om afgift af ledningsført vand, Lovbekendtgørelse nr. 962 af 27/06/2013
[65] Around 2009, Spain developed a plan an ambitious plan to increase the reuse of treated waste water in areas of water scarcity and drought stricken areas. The plan was never finalized as, due to the financial crisis, the necessary investments could not be funded with public money and water prices were too low to attract private investment.

will have to inform decision making in the area of drinking water provision and urban waste treatment plans and projects.

ANNEX II: EUROPEAN EXPERIENCES IN THE PROVISION OF DRINKING WATER AND SANITATION SERVICES

The case of France

Provision of water supply and urban waste water services and their compliance with EU Drinking Water and Urban Waste Water Directives in France is the responsibility of its 37 000 Municipalities which have an average population of about 1 800 inhabitants. The National Government is responsible for enforcing compliance with the requirements and for reporting on compliance to the EU. When waste water infrastructure is established, local State administration is responsible for checking that the requirements are met and issue the abstraction permits and discharge licences for treated waste water.

Municipalities have been incentivised by the State to create joint associations/ventures to provide the waste water and drinking water services to improve technical and administrative capacity by taking advantage of economies of scope and scale. This has reduced the number of service providers from 37 000 to 24 000 supplying an average of 2 800 inhabitants. There have so far been no specific incentives in place to promote the establishment of such joint municipal ventures/associations. However, municipalities that do not comply with the requirements are exposed to financial penalties as a result of enforcement action. As a result of a recent administrative reform, service provision will in the future be provided by only 1 200 suppliers, each supplying an average of almost 60 000 inhabitants.

Capacity building in municipalities and in joint municipal associations or ventures is supported by River Basin Agencies via the funds raised by the application of water charges by the Agencies. This support can rise to 80% of the expenses in this respect.

Local State administration authorise and check that urban waste water requirements are met are also responsible for developing and implementing River Basin Management Plans, ensuring consistency between urban waste water treatment levels and water resources management. River Basin Agencies have also promoted and contributed to the financing of measures to improve coherence of water and sanitation policies, e.g. by supporting financially investments in measures such as the establishment of jointly managed multi-purpose reservoirs serving for public water supply as well as other water uses, reductions of water leakage from public water supply networks and reuse of treated waste water in water scarce regions . The Agencies are required to consult on their planning and major initiatives with River Basin Committees consisting of public authorties and stakeholders. Municipalities have statutory representation in both the Boards of the River Basin Agencies and in the River Basin Committees.

France complies 100% with EU requirements to collection of urban waste water, 90% with requirements to secondary treatment of waste water (performance problems with some plants) and >99% compliance with tertiary treatment requirements. For drinking water the compliance rates are 99.8% for larger supplies and 90-95% for small supplies. There are thus still improvements that need to be made.

Provision of drinking water and urban waste water services in France is primarily the legal responsibility of municipalities. The provision of both drinking water and urban wastewater collection and treatment can be outsourced to private undertakings, either under delegated management where ownership of assets remain with the municipality or through concessions where, in addition to management, ownership and renewal of assets are privatised. Based on data from 2015, 40% of drinking water in France was provided by Municipalities and 60% was outsourced to private companies by delegation or concession. For urban waste water collection and treatment, 60% was provided by municipalities while 40% was outsourced to private operators by delegation or concession.

France has no regulatory authority for the sector as Municipalities under French law are self-regulating. As a member of the EU France applies the polluter pays and user pays principles, and revenues from tariffs and prices should therefore cover all capital, operating and maintenance expenses. But social policies and equalisation between rural and urban areas are applied to ensure affordability. Tariff setting and approval of prices is always by the Municipalities, irrespective of whether service provision is public or private. No other authority can intervene in this area, but citizens have been known to express their disapproval of tariffs at municipal elections.

To strengthen transparency, municipalities now have an obligation to produce an annual report on tariffs and pricing and quality of their water related services. France has furthermore created benchmarking obligations and a web-based national observatory of water services (http://www.services.eaufrance.fr/) where consumers can compare the performance of water services in their local area with that in other areas.

As a general rule, service provision by municipalities is self-financed, although national or EU subsidies may be provided in the framework of regional policies in some regions which are in economic decline or transition. In addition, subsidies may be provided, e.g. for innovative or specially demanding measures, by River Basin Agencies financed by recycling revenues from water and pollution charges which are collected from all water users and polluters in the basin.

Enforcement actions against Municipalities can be brought either administratively or by public prosecutors in cases of breaches of legislation by municipalities and may result in financial penalties.

The case of Cyprus

Provision of water supply and urban waste water services and their compliance with EU Drinking Water and Urban Waste Water Treatment Directives is entirely with public authorities in Cyprus.

The Ministry of Agriculture, Rural Development and Environment and its Water Development Department (WDD) oversee the implementation of the requirements of the EU Urban Waste Water Treatment Directive, while the Ministry of Health oversees the implementation of the requirements of the EU Drinking Water Directive. The Water Development Department is the bulk drinking water provider and provides water directly to Water Boards, Municipalities and Community Councils, which, in their turn, undertake its supply to the consumers. Contrary to the supply of water for domestic use, water for irrigation is distributed to farmers, on a retail basis, through the Government water works and in isolated cases is also provided on a bulk basis to irrigation divisions. Sewage collection and treatment in the major towns is the responsibility of Sewerage Boards while in all smaller communities, the construction of the works is the responsibility of WDD. Upon completion of the works the corresponding rural Sewerage Board manages the works with the technical assistance of WDD.

The Ministry of the Interior is responsible for the administrative supervision of the urban Water Boards and Sewerage Boards.

Water is scarce in Cyprus. Average annual precipitation in the years 1971-2016 was only 467 mm and declining, with a very high intra- and interannual variation, while the Water Exploitation Index+ in 2016 was 73,1%. Due to the problems of scarcity, all urban wastewater is subjected to tertiary treatment to strict quality standards with a view mainly to reuse in agriculture or to a lesser extent for recharge of groundwater aquifers to manage sea water intrusion or for later abstraction for irrigation use. Water for reuse is distributed through a network different from that used for retail water for irrigation purposes. The incentives applied to ensure the uptake of water for reuse, is lower prices than the retail irrigation water price and information of farmers and the general public of the benefits of reuse. It is also important to note that treated water is a reliable water source, providing all year round availability.

Also, due the chronic water scarcity issues there is a programme requiring water supply systems to reduce losses through leakage from water distribution systems. In the urban areas losses have thus been reduced to around 15-19%. Investment to reduce leakage rates in distribution systems operated by Water Boards are self-financed, paid for through revenues from tariffs.

Drinking water infrastructure owned by Water Boards is self-financed, i.e. through revenues generated by the operation of the infrastructure. In municipalities the financing of infrastructure for water supply is also self-financed, while community councils often benefit from national funds thus helping to improve distribution networks efficiently. Sewage collection and treatment infrastructure is entirely self-financed and through loans from financial institutions such as the European Investment Bank (EIB) or the Council of Europe Development Bank (CEB) and all capital, operational and maintenance expenditure is recovered from tariff revenues.

There is no private participation in the financing or operation of these infrastructures. However, due to the scarcity of water in Cyprus, the Water Development Department buys desalinated water through public-private-partnerships which have 20-25 year concession contracts on a Build-Own-Operate basis.

Tariffs for water related services have to comply with State Regulations which provide detailed rules set by the State, in line with the EU Water Framework Directive. As Cyprus is an EU Member State, these rules require adequate cost recovery, taking into account environmental and resource costs. Tariffs for drinking water supply, however, provide for full cost recovery. Bulk drinking water supply tariffs are approved by the Council of Ministers. Tariffs of Water Boards, municipal authorities and community councils are submitted for approval with the assent of the Director of WDD to the Council of Ministers, the Minister of Interior and the District Officer respectively.

As regards irrigation water, tariffs for different uses (fresh water from dams and reused water from urban Sewerage Boards) are approved by the Council of Ministers, which also approves the environmental and resource cost tariffs applied for all uses and all water resources (including groundwater abstraction from private boreholes). Tariffs of Sewerage Boards are submitted though the Ministry of the Interior to the House of Representatives (Parliament) for approval. There is no independent regulator of water services. Respect of rules, including rules on tariffs, is overseen by WDD and the Ministry of the Interior.

The Cyprus water policy also provides the framework for public participation in water management in particular in the production of management plans. Furthermore the Integrated Water Management Law provides for an "Advisory Committee on Water Management" where representatives of all the water stakeholders participate. The "Advisory Committee" advises the Minister of Agriculture, Rural Development and Environment on issues related to the formulation of the general water policy of the Government, but the ultimate responsible body is the Council of Ministers.

The case of Spain

In Spain, Municipalities are responsible for providing and regulating drinking water and sanitation services, while regional governments are responsible for public health and control of water pollution. There are more than 8 000 municipalities (8,124) in Spain with an average population of 5 - 6 000 inhabitants and of which 84% have less than 5 000 inhabitants. Autonomous River Basin Authorities linked to national or regional governments are responsible for river basin planning, and normally also for authorisations for water abstractions and licenses to discharge treated waste water. Municipalities are assisted in their tasks by regional and central governments. In 2007, the Spanish Government adopted a National Plan on Water Quality: Sanitation and Wastewater Treatment 2007-2015. The Plan was adopted in response to an important backlog in implementation of the EU Urban Waste Water Directive which should have been fully implemented by 2015. A previous plan for the period 1995-2005 based on

agreements between the national Government and regional governments and 25% investment support from national government or EU funds had not ensured the necessary implementation. The new National Plan which had been prepared with the regions was much more specific on what was required in each region.

Before adoption by the national government, the National Water Council under the Ministry of the Environment, a consultative (not executive) body which has representatives of the most important stakeholders, i.e. regional and local authorities, river basin authorities, other government departments, water using sectors, experts and civil society at large, had been consulted on the plan.

The 2007-2015 Plan included funding of projects of national interest by the central government, a split of funding for compliance with additional treatment requirements in sensitive areas of 25%/75% between national and regional government, 50% national government funding for infrastructure in small agglomerations (< 20 000 inhabitants) integrating nature protection areas, and 50% national government funding for some of the investments to be made by government created National Water Companies.

It is the regional governments that identify the urban agglomerations which define the waste water collection and treatment obligations under the EU Directive and who ensure (with support from national government) the funding of the necessary investments.

Infrastructure Plans such as the 2007-2015 Plan are preceded by technical studies and financial appraisals, and are enforced by law.

Compared to the targets agreed under the Urban Waste Water Directive, compliance in the in Spain by the end of 2012 was close 100% for collection, 86% for secondary treatment requirements, and 72% for more advanced tertiary treatment. There is thus some way to go still before Spain reaches full compliance. The first Spanish plan for urban waste water (1995-2005) led to a degree of coverage of 77% as compared to a planning of 91%. The backlog was largely due to lack of coordination between the national and regional governments. The 2007 plan gave further improvements, in spite of the impacts of the 2008 financial crisis and further improvement towards complete coverage, especially for tertiary treatment, is expected in the next years.

While legal responsibility for the provision of services is always with municipalities, this is in some cases outsourced to publically or privately owned companies or to companies with mixed ownership. For wastewater treatment, direct provision by the municipality accounts for 6%, while public, private and public-private companies account for 65%, 21% and 8% respectively.

The national government has legal remedies allowing, in cases where penalties are inflicted for failure by subnational government to comply with EU-requirements, the recovery of penalties from the responsible subnational governments.

In 2009-2011 Spain developed an ambitious draft plan for reuse of treated waste water, having in mind metropolitan regions and agriculture in rural regions affected by water scarcity or recurring droughts. The plan which foresaw significant investments was never finalized because of difficulties in raising the funds needed as a result of the 2008 financial crisis. Water reuse has not grown as much as anticipated, inter alia because of insufficient water charging to provide an incentive for reuse.

In many parts of Spain, including larger metropolitan areas, there is service provision by municipal joint ventures (e.g. in Madrid, Barcelona, Bilbao, Murcia, etc.), encompassing several municipalities. The joint service provision is driven mainly by economies of scale and scope or improvements in the quality of service. The number of service providers is therefore about 2 500, as opposed to the 8 000 municipalities. In any case, it is a highly fragmented model.

Regulation of and data about the sector at national level are fragmented, given the absence of regional or national regulatory bodies. The Association of service providers (AEAS) collects data, but many of these data are reserved for members of the Association. As a member of the EU, Spain implements the polluter pays and user pays principles, and users of waste water treatment services pay the full operational, capital and maintenance costs of the services.

Although Spain has increasing issues of water scarcity and severe droughts, especially in South Eastern Spain, there are generally no specific pricing regimes (incentive or water security pricing) in place to deal with water scarcity or severe droughts.

The case of England and Wales

Since 1989 water supply and sanitation in England and Wales is provided by private companies, separate from local and regional authorities. There are 10 major water companies, each providing drinking water and sanitation services in areas which largely coincide with River Basin Districts established under the Water Framework Directive implementation, ensuring coherent geographical scales between water resources management and the provision of water services and the possibility of economies of scale.

The industry is regulated by an independent economic regulator, Ofwat, directly responsible to Parliament and financed by the water companies via dedicated charges to their customers. The statutory regulatory requirements for environmental performance (water resources and environmental quality) are regulated and enforced by the Environment Agency (EA), and Natural Resources Wales (NRW) in Wales, and for drinking water quality by the Drinking Water Inspectorate (DWI). DWI is part of the Ministry responsible for the environment (Defra), while the EA is sponsored and managed under the overall control of the Ministry.

After a shaky start with widespread underperformance in the early 1990s, following privatization of the industry in 1989, there is now a high degree of compliance with the requirements of the EU Urban Waste Water and Drinking Water Directives.

Ofwat regulates prices and approves business plans of companies in 5-year cycles. It seeks to minimize price increases by requiring programmes of continuous efficiency improvements, so that bills are kept at or below the rate of inflation, but while still ensuring that the industry can live up to the statutory requirements to it. Investments are scrutinized for their resilience to changing demographic, economic, climatic and other conditions and their ability to perform across the whole lifetime of the assets. Defra publishes a 'Strategic Policy Statement' in advance of each price review, which sets out what it expects of Ofwat and the water companies. Statutory requirements must be met as cost-effectively and sustainably as possible. Non-statutory (i.e. discretionary) improvements, such as going beyond minimum standards for bathing waters, are subject to cost-benefit analysis and agreed between regulators.

The polluter and user pays principles are implemented for this sector so that revenues cover all capex, opex and maintenance costs as well as the contributions to Ofwat. All companies have social tariffs for low-income population. As companies practice uniform pricing policies, there are inherent cross-subsidies in the charges between urban and rural areas.

Regulatory requirements are monitored and enforced by Ofwat, EA and the DWI, each within their sphere of regulatory competence. All three regulatory bodies apply sanctions when breaches are found, including financial penalties. Recent changes to sentencing guidelines allow courts to levy fines for environmental breaches which relate to the turnover of the company. In March 2017 Thames Water was fined £20 million GBP for polluting the river Thames.

Benchmarking is used in a number of areas, including economic efficiency, service quality and environmental parameters, to identify good performance for use in decisions about approval of prices and to spur innovation in companies. Companies also have recourse to payment for ecosystem services to save costs, e.g. by paying farmers to take measures to avoid costly measures in the industry.

As the industry is entirely private, infrastructure needs in the industry have no direct impact on public budgets and there is therefore no need for financial coordination in this respect. Capital investments since privatization have been £126 billion, or about £5 billion annually. Infrastructure is financed by equity, e.g. from long-term investors such as pension funds, and by (bank) loans. Government departments assess the need for Nationally Significant Infrastructure Projects and sets them out in National Policy Statements, but it is for water companies to work the government policies into infrastructure proposals.

Business Plan development is put to public consultation and consultation with Customer Challenge Groups for each company. At national level, there is a Consumer Council representing users and monitoring the performance of companies.

The case of Germany

Provision of water supply and urban waste water services and their compliance with EU Drinking Water and Urban Waste Water Directives in Germany is the responsibility of its 12 000 Municipalities which have an average population of 6-7000 inhabitants. The Federal Government is responsible for enforcing compliance with the requirements and for reporting on compliance to the EU. When waste water infrastructure is established, the Federal States are responsible for checking that the requirements are met and issue the necessary authorisations.

Municipalities can, on a voluntary basis, create joint associations/ventures to provide the waste water and drinking water services to improve technical and administrative capacity by taking advantage of economies of scale. There are no specific incentives in place to promote the establishment of such joint municipal ventures/associations. However, municipalities that do not comply with the requirements are exposed to financial penalties as a result of enforcement action.

After reunification in Germany in 1990, there were twinning arrangements between “new” and “old” Federal States, with a view to building quickly the administrative capacities needed in the “new” States.

The Federal States that authorise and check that urban waste water requirements are met are also responsible for developing and implementing River Basin Management Plans, ensuring consistency between urban waste water treatment levels and water resources management.

Provision of urban waste water services always remain the legal responsibility of municipalities, while responsibility for provision of drinking water can be outsourced to private undertakings. The provision of both drinking water and urban wastewater collection and treatment can be outsourced to private undertakings. Based on data from 2012, 40% of drinking water in Germany was provided by Private Public Partnerships or private-law utilities, many of which however, were fully or partially owned or controlled by public authorities or, in case of some small supplies, by the users of the supplies. For urban waste water collection and treatment, also in 2012, more than 90% was provided by publically owned and controlled utilities, while less than 10% was outsourced to private operators.

Financial assistance to Municipalities is today limited mainly to Municipalities where the conditions are such that special measures are needed to ensure implementation of legislation and to Municipalities that innovate, e.g. by implementing expensive measures to remove micro-pollutants from urban waste water. This assistance is normally provided through special funds from revenues from water related charges such as the federal waste water charge where revenues are earmarked for use in water management. In the

period following German reunification, there was also support from both EU regional funds and German federal funds to support investment in infrastructure.

Germany complies 100% with EU requirements to urban waste water and has a compliance rate of 99.9% with drinking water requirements in large supplies and 95-99% in smaller drinking water supplies.

Tariff setting and approval of prices in the case of waste water collection and treatment is always by the responsible public bodies (Municipalities or similar). For drinking water, private-law suppliers are always controlled by the Federal State anti-trust regulators while public-law suppliers can choose between the tariff-setting regime of the public authorities and the anti-trust regime applied for private suppliers. There is no ex-ante assessment by anti-trust authorities in Germany. Any intervention is ex-post, based either on complaints from consumers or as own initiatives of the authorities.

There is no independent economic regulator of the industry in Germany or its Federal States. The German water industry relies extensively on participation of service providers in voluntary benchmarking organised by the industry to drive improvements in economic efficiency, environmental performance and quality of service.

As a member of the European Union, Germany implements he polluter and user pays principles so that revenues from charges and tariffs cover all capital expenditure, and operational and maintenance expenditure.

Enforcement actions against Municipalities can be brought by the regulators in Federal States or the Federal prosecutor within their respective spheres of competence and may result in financial penalties.

The case of Denmark (1970s)

In 1973, the Danish Parliament adopted the country's Environmental Protection Law which introduced, inter alia, an obligation for all Municipalities to elaborate and adopt by 1976 collection and treatment plans for all domestic and other waste water generated in the municipality. The proposal for the law had been negotiated with the organisations of municipal and regional authorities before being proposed to Parliament.

The plans were required to undergo public consultation and submission to the regional authorities (responsible for the quality of fresh water resources and of coastal waters and for the licensing of waste water discharges) for assessment of compliance with the regional planning for water quality. The wastewater collection and treatment plans could only be adopted by Municipalities, once agreement about the plan with the relevant regional government had been obtained and the regional government had set its conditions for the approval.

Once adopted, the Municipal wastewater collection and treatment plans were binding on the Municipalities as well as on property owners and businesses, who were legally obliged to connect their wastewater to the sewers at their own expense. Oversight and enforcement of compliance with the plans was the responsibility of the relevant regional authorities.

In order to prepare the implementation of this requirement the Minister responsible decided in 1975 to request the Danish Environmental Protection Agency (EPA) to create a working group to prepare guidance to the Municipalities. The working group was set up with representatives of the EPA, national organisations of municipal and regional government and representatives of the national organisations of engineering consultancies and of the environmental industry.

With a view to the economic impact of the plan, the detailed guidance issued recommended early contact with the regional authority responsible for the quality of water resources and with local interested parties and that alternative solutions be assessed, including joint treatment systems with other municipalities, with a view to the public investment needed and that of the individual producers of waste water. It furthermore recommended to develop the plans in close articulation with the municipal territorial and economic planning and that sanitation be treated similarly to other sectorial planning, e.g. for schools and for social support, with projection s of annual expenditure for investments and operating costs.

In parallel to the issuing of guidance, the educational centre of the Local Government Association (in cooperation with the Environmental Protection Agency) offered training courses to ensure that municipal staff were fully equipped to carry out the necessary tasks to prepare the plans.

Denmark implements the polluter pays principle and the users of the municipal waste water collection and treatment systems are required to pay the full costs, for capital, operation and maintenance. However, there is also a system which ensures transfers from the State to Municipalities with structural economic deficits.

The case of Czech Republic

In the Czech Republic Municipalities have full responsibility for provision of drinking water and collection and treatment of urban waste water and ensuring that the services are as required by the EU Urban Waste Water Directive. These responsibilities are delegated through national law. The average population of the more than 6 000 municipalities in the Czech Republic is about 1 700 inhabitants. The Czech Republic has designated all of its territory as a sensitive area and therefore implements the requirements in the Urban Waste Water Directory for tertiary treatment on the whole of its territory, thus creating consistency between water resources management on the scale of river basins with the municipal scale of urban waste water treatment. The national level authorities are responsible for enforcing compliance with the requirements, reporting to the EU and for provision of subsidies to Municipalities for the implementation of the Directive.

Municipalities can, on a voluntary basis and based on mutual advantage, cooperate in joint ventures and thus improve the capacity and the ability to provide these services. Many municipalities use this possibility. There are no special targeted incentives from the state to promote such joint ventures. However, municipalities in which the services do not comply with the requirements are liable for penalties of up to 1 million CZK (R$130 000).

Municipalities can through concession contracts delegate the provision of the services to private companies, either through shorter term contracts to operate and maintain municipally owned infrastructure, or through longer term contracts where the private company takes over also the ownership of the infrastructure. About 2/3 of the urban waste water in the Czech Republic is collected and treated by private operators. In these cases, Municipalities remain legally responsible for the provision of the services to citizens.

Financial assistance to support investment in infrastructure in Municipalities has been provided, both from EU regional policy funds through Partnership Agreements and from national funds.

Compared to the targets agreed under the Urban Waste Water Directive, compliance in the Czech Republic by the end of 2012 - 8 years after the accession of the Czech Republic to the European Union - was 100% for collection, 98% for secondary treatment requirements, and 71% for more advanced tertiary treatment. For drinking water quality, compliance was 99.9% in large supplies and 95-99% in small supplies. There is thus some way to go still for urban waste water in areas where tertiary treatment is

required and there are quality issues in small drinking water supplies that still need to be addressed. According to the Czech Republic authorities, the reason for the implementation backlog for urban waste water is, among other, initially quite complex requirements under EU subsidy programmes.

Where services are operated by municipalities themselves, tariffs are set by these. Where private operators provide waste water services, prices are set by the Municipal authorities. Where private companies provide services, there is no system for ex-ante approval of prices. However, companies are subject to a general, national price regulation of water and waste services by the regulator (the Finance Ministry) which publishes the price regulation rule on regulated prices once a year. The rules describe how to calculate the prices, based on a break-down including only the related costs, taxes and a reasonable profit.

As a member of the European Union, the Czech Republic implements the polluter and user pay principles so that revenues from service provision cover all capital expenditure, operational and maintenance expenditure.

There is no independent economic regulator. Regulatory requirements to waste water collection and treatment are monitored and enforced by the Ministry of Agriculture and prices for services are regulated by the Ministry of Finance, each within their sphere of regulatory competence. The regulatory bodies apply sanctions when breaches are found, including financial penalties. If penalties are applied by the European Court of Justice, the Czech national authorities can recover the penalties where the issue is due to non-compliance with the national legal transposition of the Urban Waste Water Directive by individual municipalities.

The case of Romania

Romania acceded to the EU in 2007 and had to implement the 1991 Urban Waste Water Directive. In the accession negotiations, a timetable with milestones for the implementation of the Directive in the period until 2018 was agreed.

In Romania, Municipalities and Communes are responsible for the establishment and operation of systems for collection and treatment of urban waste water. There are in total about 3000 Municipalities and Communes with an average population of 6-7000 inhabitants. Many rural municipalities do not have the technical and administrative capacity needed to design, construct and operate waste water infrastructure, nor the administrative capacity to manage and outsourcing the tasks. In Romania, the infrastructure is owned by municipalities. 90% of all waste water treatment is also operated by Municipalities and Communes or their joint ventures, while 10% has been delegated to private operators (including Bucharest –the capital, and Ploiesti a large city 60 km from Bucharest).

Based on the experience gained in the implementation of the pre-accession program Instrument for Structural Policies for Pre-Accession (ISPA) and the Small and Medium-Sized Towns Infrastructure Development *Programme (*SAMTID), the Romanian Government and the European Commission agreed to establish intercommunity development associations for water and waste water and regional operators, at the level of the county ("judet" in Romanian), open to participation by Municipalities and Communes representing larger and smaller towns and rural communities. In each county, a regional operator was created around the water and waste water operator in the county capital.

This reorganization was supported by the European Commission to ensure the successful implementation of the financial programs intended to improve the water infrastructure in Romania. It approved applications for financing of the water projects on the condition that the applicants could prove

that they had financial, technical and administrative capacities to implement the very large projects and also to operate the very new and modern infrastructure.

From the Romanian side the reasons for supporting the establishment of regional operators, in addition to those related to the capacity to implement large projects and to operate the modern infrastructure, were the followings:

- Optimisation cost-effectiveness of the water infrastructure needed at county level, in order to make the best use of the available funds (one waste water treatment plant could be constructed to service several agglomerations where this is more economically feasible)

- Harmonisation of water tariffs between urban and rural area (a single tariff in the area covered by a service provider – in practice resulting in a cross-subsidisation from urban to rural areas, tackling the question of affordability in rural area)

Given that Romania in 2015 had a GDP of 57% of the EU average, the country has access to the Cohesion Fund of the EU with support of up to 85% of the cost of the investment in the infrastructure. The actual percentage depends on how it decides to spend its overall allocation from the Fund. In this respect, the decision was to finance very large projects at county level - the average cost for projects was about 100 million Euro. The remainder of the investment is covered, either by loans or by sovereign funds.

At the same time, the national government has put in place the obligations for Municipalities and Communes to establish the required systems and arrangements in order to receive the EU funds. Municipalities and communes not joining the Regional Operators have to finance the infrastructure needed from their own resources.

This establishes a situation where, at best, municipalities who do not participate in the intercommunity development associations miss out on important transfers from the EU while incurring all the costs of the infrastructure. Moreover they receive fines for not having established the necessary collection and treatment of urban waste water.

As a member of the EU, Romania applies the polluter pays principle and cost recovery as required by the Water Framework Directive. However, the national government has decided to make municipalities' access to EU funding for this infrastructure conditional on their joining the regional municipal cooperation organisations for this purpose. By virtue of the organization of service provision by intercommunity development associations, prices for services are equalized between urban and rural areas, thus ensuring that services remain affordable, also in rural areas.

Romania has a national regulatory authority for municipal services "Autoritatea Națională de Reglementare pentru Serviciile Comunitare de Utilități Publice (ANRSC)" (National Authority for the Regulation of the Public Services and Utilities), which carries out regulatory tasks, including defining the rules for the setting of tariffs and prices for both public and private provision of drinking water and waste water services and monitoring their application and regulate the regional operators.

That the system works is demonstrated by the fact that by 2012, 6 years after the accession of Romania to the EU, all the 41 counties have a regional water and waste water operator and 77% of the required secondary treatment plants were in place and operating correctly, while for tertiary treatment the

corresponding figure is only 38%[66]. While significant progress was achieved, there was therefore still an important backlog that needed to be addressed.

[66] Commission Staff Working Document SWD(2016) 45 final Accompanying the document Eighth Report on the Implementation Status and the Programmes for Implementation (as required by Article 17) of Council Directive 91/271/EEC concerning urban wastewater treatment