7 Report with proposals for water pricing

Tariffs for water services can support consolidation, if properly set and if tariff reviews are adequately convened. The chapter focuses on depreciation methods for EU funded assets, decoupling consolidation from short-term harmonisation of water tariffs, and limitations to the role of water bills in financing of wider environmental policies.

7.1. Introduction

This chapter is Output 7 from the OECD project aimed at supporting the preparation of a roadmap for the consolidation of the water utility sector in Lithuania. As was noted in the earlier OECD Outputs,[1] further consolidation is viewed as a necessary feature of being able to deliver a sustainable and socially acceptable financing strategy for the future provision of water and sanitation services (WSS) in Lithuania.

The focus of this report is the arrangements for determining water tariffs in Lithuania. Consideration is given to the tensions that arise in the development and application of tariff setting processes between different policy concerns – including those associated with social and environmental outcomes – and some recommendations are presented. Attention is focused largely on four tariff setting considerations that look to be of particular importance to the development of pricing arrangements in Lithuania:

- The appropriate approach to providing for depreciation/capital maintenance in the tariff setting process
- The use of assumptions about water losses when tariffs are set
- The approach taken to disparities between the tariff levels charged by different companies and/or in different municipalities
- The extent to which WSS tariffs can be understood as funding wider environmental benefits.

The paper focuses on a specific set of issues related to how and when the tariff formula is applied. In relation to these issues, while there is some consideration of how incentives can be enhanced, the main focus is on how some of the policy priorities that have been considered in Lithuania could undermine incentives for efficient consolidation, and - given this - how that kind of negative outcome might be avoided. One of the key issue here is the policy focus on charges fully reflecting costs, which could be taken to imply that a depreciation allowance should be included in relation all assets (including EU funded assets): the Chapter sets out why an alternative approach to that (focused on the regulator providing conditional access to accelerated depreciation) would be preferable. Another is the policy focus on removing/reducing regional disparities, and it is highlighted that this could have an adverse effect on consolidation incentives.

A range of other issues that relate to tariff setting - and more broadly to approaches to economic regulation - are considered in Chapter 8, where a number of recommendations are presented in relation to benchmarking.

The current arrangements, and potential options for further development, are considered and assessed below in the light of relevant international experience. The relevance of considering international experience is enhanced by the fact that the overall economic regulatory framework for WSS in Lithuania shares a range of common features with those which apply in many other jurisdictions (for example, in terms of some of the responsibilities given to an economic regulator, and the broad ('building blocks') approach the regulator applies to tariff regulation).[2] Also, the broad question of how to meet WSS-related environmental challenges in financially sustainable and socially acceptable ways can be understood as one that all jurisdictions have had to, and will continue to have to, face to some extent.

At the same time, the feasibility and appropriateness of adopting different potential approaches will be heavily dependent on the specific circumstances that currently apply to WSS provision in Lithuania, and on how those circumstances have emerged over time. Given this, the report does not seek to provide a broad overview of international experience, as there would be a significant risk of such an overview being unhelpfully generic and of limited value. Rather, the approach adopted below is to focus attention on circumstances that apply, and the current and emerging challenges faced, in WSS provision in Lithuania, with international experience then drawn upon more selectively either to help highlight closely related experiences, or to illustrate potential options that look to merit particular attention.

In line with this, the report provides the following:

- An overview of some current and emerging challenges associated with the provision and pricing of WSS services in Lithuania that are relevant to the consideration of tariff setting options.
- A high-level overview of some of the proposed reforms (and reform objectives) that have been identified thus far.
- A brief overview of the current approach to setting WSS tariffs.
- A review of the current approach to determining the allowance for depreciation/capital maintenance requirements that should be provided for under the current tariff setting methodology, and the advantages and disadvantages of alternative approaches.
- A high-level consideration of some issues that are relevant to determining the appropriateness of assumptions with respect to water losses (including from leakage).
- A consideration of potential incentive issues associated with efforts to reduce price disparities between companies/municipalities.
- A discussion of how the use of WSS tariffs to fund broader environmental improvements can give rise to affordability and incentive issues that tend to emphasise the importance of broader regional consolidation (of one form or another), while at the same time potentially making that consolidation more challenging to achieve.

The final section of the report provides a series of recommendations drawing on the various assessments that are made throughout.

7.2. Current and emerging challenges

As was noted in Chapter 3, there is a significant level of agreement that the current arrangements for WSS provision in Lithuania are not sustainable.[3] There has been substantial investment in WSS infrastructure in Lithuania since its accession to the European Union, with this providing a wide range of benefits in terms of service quality and environmental protection. However, the delivery of these improvements has relied heavily on EU funding, with the Lithuanian Ministry of Environment identifying around 45% of WSS assets as having been created with EU funds.[4] The European Commission has indicated that financial support for the sector will be phased out, and therefore - looking forward - it will be necessary for a financially sustainable and socially acceptable financing model to be developed, based on prevailing – and expectations of future - WSS tariff revenues.

Substantial further investment will be required over time both to maintain (and where relevant replace) existing assets (including those assets that were funded using EU grants), and to enhance treatment processes where needed in order to meet current and future compliance obligations (for example, concerns over pharmaceutical concentrations may result in treatment requirements being introduced that aim to reduce associated risks of harm). This highlights the potential for significant tensions to arise over time related to the affordability and acceptability of associated WSS bill increases.

The severity of these tensions is illustrated by the Ministry of Environment's projections of the WSS prices that would be required – in the absence of efficiencies being secured through consolidation – for the sector to be financially self-sufficient. In particular, the Ministry's projections show that average prices in 2028 would need to be around ten times higher than current levels (as above, based the current industry structure) in order to be financially sustainable.[5] The scale of this projected price increase is driven by a number of key factors:[6]

- The need to maintain assets that were funded by EU grants.
- The need to maintain currently un-inventoried assets, and assets that are used for WSS service provision but currently owned by municipalities.

- The need for further enhancement investments to provide for compliance. In particular:[7]
  - The reconstruction of some wastewater infrastructure to provide for – and sustain - compliance with the Urban Wastewater Treatment Directive (UWWTD)
  - Wastewater treatment improvements in smaller agglomerations in order to improve the quality of water bodies (in line with Water Framework Directive (WFD) requirements)
  - Some drinking water infrastructure and treatment improvements to address quality issues (in line with Drinking Water Directive (DWD) requirements).

It should be noted, though, that this projection relates to average WSS prices across Lithuania. In practice, prices already vary significantly across municipalities – with the price in some areas more than 3 times that in others – and prices tend to be higher in municipalities with lower average wage levels.[8] Price disparities and affordability issues are expected to intensify as upward pressure is put on average WSS price levels.

Also, while the implications of the Covid pandemic on demographic changes remain unclear, pre-pandemic forecasts identified trends that would exacerbate the financial challenges to be faced. In particular, only one region in Lithuania (Vilnius) is forecast to have had population growth in 2050, and population is forecast to have declined by more than 50% in 2050 in 6 regions. Declining population levels can – absent other changes - result in relevant fixed costs being spread across smaller groups of customers, and can leave customers having to fund what has become over-sized infrastructure.

7.2.1. Consolidation and scope for efficiency improvements

The likely scale and nature of future investment requirements – as illustrated by the extent of the projected price increases referred to above - raises major concerns over the financial capacity of the WSS sector – in its current form – to meet the challenges that are faced. Alongside this, the current fragmented nature of the sector raises major concerns over the technical capacity of the sector to develop and deliver appropriate programmes of work in efficient ways. These concerns have underpinned the emphasis that has been put on the benefits that could be achieved through greater consolidation within the sector.

The economic characteristics of the sector (in particular, the scope for achieving economies of scale and density in the undertaking of relevant activities), and the fact that the WSS sector in Lithuania is still highly fragmented – with 64 public suppliers[9] serving a population of around 2.8 million[10] - strongly suggests that there may be scope to deliver substantial benefits through consolidation. This can be important for both the efficient delivery of services and planned investments, and the efficient identification and planning of future service and investment requirements.

There are a range of ways in which consolidation may provide opportunities to improve the efficiency with which services and planned investments are delivered, including potentially through:

- More efficient labour resourcing for, and scheduling and financing of, planned work such as enhancement projects (for example, the provision of new treatment technologies), asset refurbishments/replacements, and routine monitoring, repair and maintenance activities. Consolidation may allow for the smoothing over time of (through the use of a more coordinated approach across areas), and enhanced technical capabilities in relation to, what might otherwise by ‘lumpier’ requirements that are more difficult to finance and manage.
- More efficient approaches to managing unplanned/reactive work, such as may be required to address pipe bursts, sewer collapses, and other relevant incidents. The efficiency of these types of activities can have a significant bearing on a number of dimensions of performance, such as leakage, for example, by improving response times and capabilities.
- More efficient procurement of, and management of the cost risks associated with, inputs such as energy and chemicals.

- More efficient provision of customer-facing, administrative and support activities, where scale can offer considerable opportunities for both cost savings (e.g. through reduced duplication) and quality improvements (e.g. through the introduction of improved information provision processes).

The above list can be understood as largely taking service provision requirements and investment plans as given, and focuses attention on some potential ways in which the efficiency of delivering those requirements might be enhanced through consolidation. However, the likely scale and nature of the future WSS investment requirements in Lithuania makes it critical also to consider efficiency questions in relation to the identification and planning of future requirements. Importantly, there are likely to be different ways in which policy objectives associated with environmental requirements and service quality/access targets could potentially be tackled, and the decisions over which approaches are selected can be expected to have long-term implications for the cost, quality, and/or environmental consequences of service provision.

Determining the appropriate approach to the development and use of tertiary treatment processes – such as those used to reduce phosphorus concentrations in wastewater discharges – may be particularly challenging. Tertiary treatment can be very costly to introduce (in particular nitrogen removal), and the 'cost per population equivalent' of introducing and operating such processes can increase steeply (including by many multiples) as the size of the relevant treatment plant falls.[11] Given this, decisions related to the introduction of such processes can have a particularly marked bearing on costs in areas which are less densely populated. Also, the adoption of a given approach may have the effect of 'locking-in' a service provision model – and the funding implications associated with it - for many years, including, for example, because of the infrastructure maintenance or ongoing chemicals procurement costs that will be associated with some approaches.

Consolidation (of one form or another) may provide opportunities for significant efficiency benefits in relation to the identification and planning of appropriate responses to environmental requirements. This is particularly so because there may be significant benefits associated with the assessment of options in more coordinated ways across broader geographic areas, and because the effectiveness of options identification and appraisal processes may be heavily dependent on the availability of appropriate technical expertise, and this can be much more difficult to provide for at smaller scale (that is, there can be significant economies of scale in the provision of relevant technical expertise). These factors could have a substantial bearing on the efficiency of the approaches adopted in a range of different ways. For example:

- Beneficial opportunities to increase scale may be identified in a context where (as was noted above) unit costs can fall steeply as plant size increases (such that tertiary treatment may be introduced at one larger plant, rather than separately at two or more other plants, following appropriate network development).
- Alternative treatment approaches – such as those which use 'natural capital' solutions - may be identified as preferred given estimates of 'whole-life' costs and other sustainability considerations.
- There may be opportunities to explore whether the introduction of costly 'end-of-pipe' treatment options can be avoided (particularly at smaller sites) by delivering equivalent environmental outcomes in other ways. It is common, in a range of jurisdictions, for WSS companies to seek to contract with farmers in order to get them to adopt practices, which result in reduced concentrations of potentially harmful substances in water catchments. This kind of catchment management approach can, in some circumstances, provide substantially less costly ways of improving environmental outcomes than the introduction of relatively small-scale, complex tertiary treatment processes.[12]

There may also be significant benefits from adopting a broader (more consolidated) geographic perspective when other policy objectives are being considered. For example, the costs of increasing access to public WSS systems can be expected to differ markedly between areas, including - importantly - because of population density considerations. This may also point to there being particular benefit in effective options identification and development processes being undertaken when efforts are being made

to achieve relevant policy objectives in areas with relatively low population density. That is, 'traditional' approaches (such a network extension) may prove very high cost on a per customer basis, and thus alternative approaches – including 'non-physical' network approaches – may merit careful attention.[13]

7.2.2. Affordability, acceptability and deferral risks

As was highlighted above, the bill impacts associated with appropriately addressing future capital maintenance and enhancement requirements may be considerable. However, the potential scale of these bill impacts will affect the affordability and acceptability challenges that can be expected to be faced if seeking to proceed with such plans. Given this, there is a material risk that appropriate investments may be deferred if the bill impacts of proceeding with them is viewed as likely to be 'too great'. This kind of deferral of investment might follow an explicit decision, based on an assessment of impacts, and consideration of relevant priorities. Deferral, though, could also emerge more passively, through understandable localised efforts to avoid, or at least limit the size of, bill increases (which may involve giving relatively limited attention to plans that could – if acted on – result in significant upward pressure).

The broader point here is that future tensions associated with bill affordability and acceptability will have to be addressed one way or another. If it becomes viewed as not feasible to increase charges sufficiently to fund investments that have otherwise been identified as necessary/appropriate, and if external sources of funding (such as EU or central government grants) are no longer available or are insufficiently large, then some scaling down of investment costs will be required. Addressing the efficiency issues highlighted in the above sections can be viewed likely to be critical in this context, as it can help reduce investment costs through efficiency improvements (i.e. by doing more 'now' for a given bill impact). The alternative in such circumstances is to scale back costs by cutting back on the scope of what is being delivered through deferring investments (i.e. doing less 'now' and leaving more for 'later').

There is typically some flexibility available in terms of the scheduling of capital maintenance over time and (subject to the legal requirements to which they may relate) the timetable for delivering enhancements. This can provide some degree of 'slack' such that a strategy of deferral may have little impact on efficiency considerations for a period. Also, given the extent of recent asset installations in Lithuania under the EU funding arrangements, a period of slack is in any case to be expected ahead of some growth in the need for more significant capital maintenance levels. However, extended periods of deferral can themselves potentially generate significant additional problems and efficiency challenges. In some circumstances, this may manifest itself through increased incidents of asset failure, which may then be costly to address. However, because of the long-lived nature of many WSS assets, there can be a significant time lag between significant asset degradation occurring and failure incidents arising. While this time lag can provide significant benefits in terms of the continuity of service provision in the short to medium term, it can also mean that potentially significant asset degradation can have occurred in a way that may be relatively non-visible for a number of years.

These considerations may raise only limited concerns when maintenance is viewed on an asset-by-asset basis. However, broader concerns typically relate to the potential for such deferral decisions to result in a broader and overall (regional, or sector-wide) capital maintenance 'backlog' that it is then not feasible or economic to address in a timely manner. A deferral approach can therefore result in significant problems being stored up for future years in inefficient ways, as instead of adopting a relatively 'smoothed' approach to the management and delivery of maintenance requirements over time (and across the relevant asset portfolio), it may result in clusters of lumpy requirements that may then be significantly more difficult to address, in terms of both cost and availability of resources and capabilities. Given this, addressing efficiency issues of the kind highlighted above can be viewed as likely to be critical both in order to try to help address bill affordability issues, and – in doing so – to help limit the extent to which deferral tendencies might generate additional problems to be addressed in future years.

The scale of the potential bill increase projections that the Ministry of the Environment has identified suggests that considerable bill affordability issues may arise even if only a portion of that increase were to be applied. However, large increases in charges for public services typically also raise broader legitimacy and acceptability questions for customers, that go beyond immediate issues of affordability, and – in line with this – it is common for regulated public service providers to have to show how they have tested and taken account of the acceptability of bill impacts that may be associated with their plans. This raises broader questions and challenges over how the purposes and outcomes (in terms of improved services and environmental conditions) of bill increases are communicated to, and response to the views of, customers over time, in ways that can help support the delivery of appropriate investments.

7.3. Planned water services sector reforms

The Ministry of the Environment has been developing reforms aimed at addressing the challenges the WSS sector faces. The following first sets out, and provides some initial comments on, the objectives the Ministry has identified, before describing – in broad terms – the main changes the reforms are currently envisaged as including.

7.3.1. The objectives of the planned reforms

The objectives of the planned water services sector reform have been identified as:[14]

- Reducing the disparities of prices for drinking water supply and wastewater treatment services and social inequality for the Lithuanian population.
- Ensuring implementation of national and EU requirements to provide quality drinking water supply and wastewater treatment services to the population.
- Transforming the drinking water supply and wastewater management sector from highly subsidized to self-sustaining and financially viable (full implementation of cost-recovery) – all drinking water supply and wastewater treatment companies operate efficiently.

The Ministry's identification of these high-level policy objectives looks to be a very positive step, as the objectives align closely to the key risks and challenges that are faced. In particular, it is notable that:

- As was noted above, the Ministry's WSS price projections highlight the extent to which affordability and social inequality issues can be expected to intensify over time. Finding ways of appropriately dampening and otherwise managing such effects may be critical to the success and legitimacy of reform efforts that could be expected to deliver longer-term benefits (including – importantly – in relation to affordability). As is discussed below, however, the specific ways in which price disparity issues are addressed merits careful attention, as such policies can – depending on how they are designed –undermine some efficiency improvement incentives in undesirable ways.
- The objective of ensuring the implementation of water and wastewater quality requirements can be viewed as recognising the significance of the deferral risks of the kind described above. That is, one way in which tensions associated with bill levels could be addressed is through an (implicit or explicit) approach of undertaking (potentially much) lower levels of capital maintenance work than would be needed to maintain appropriate levels of asset health, thereby degrading the levels of service that can be provided over time and storing up substantial maintenance/replacement requirements for future years. Clearly identifying the implementation of quality requirements as a policy objective (as the Ministry has done) highlights the importance of tracking progress in relation to the meeting of such requirements. As noted in Chapter 5, the Ministry may be well-placed to adopt an ongoing role focused on monitoring progress towards the achievement of, and continued compliance with, environmental (and other quality-related) obligations.

- The third objective recognises both the need for the sector to become financially self-sustaining, and that providing for this will provide a transformation in the efficiency of service provision. Providing a framework that facilitates and promotes this transformation is therefore central to the planned reforms. It is important that the tariff setting arrangements are consistent with this, but its achievement raises a broader set of questions in relation to the approach to policy development and economic regulation that are also addressed in other chapters.

7.3.2. The main features of the planned reforms

The Ministry has identified three main parts to the reforms:[15]

1. Strengthening the regulation of services:
   - New criteria for licensed activities and service quality requirements.
   - Operating a mechanism that applies when a licence is revoked.
   - Strengthening the role of the regulator.
2. Ensuring that all costs are reflected in the price of services:
   - Review and apply pricing methodology.
   - Ensure that assets (infrastructure) are owned by the company.
   - Carry out an inventory of assets.
3. Making better use of economies of scale by encouraging consolidation at regional level:
   - Subsidies to a regional enterprise for infrastructure investments.
   - Pricing tailored to regional companies.
   - Reducing administrative burdens.

Some of these different parts of the planned reforms (i.e. where they relate specifically to tariff setting) are considered in the sections below, whereas other parts are considering in other chapters. In particular:

- Issues concerned with how costs are reflected in prices (part (2) above) are considered in this report, which reviews aspects of the current tariff methodology.
- Issues concerned with the encouragement of consolidation (part (3) above) are considered in Chapter 3, but also in the assessment of benchmarking approaches provided in Chapter 8.
- Issues concerned with strengthening the regulation of services (part (1) above) are considered in Chapter 3.

7.4. The WSS tariff methodology

The economic regulator for WSS services in Lithuania currently adopts a form of ‘building block’ approach to determining allowed price levels that has been widely used internationally over many years. In broad terms, this involves determining price levels in a way that would be expected to provide a reasonable allowance for:

- Operating expenditure (opex);
- Depreciation of a defined Regulatory Asset Base (RAB);
- A return on the outstanding value of the RAB in the relevant period; and,
- Relevant tax requirements.

This provides a flexible framework that looks well-suited to addressing the range of issues the economic regulator may face in Lithuania. In particular, its use can include and be supplemented with, a range of initiatives related to incentive regulation, including approaches that have been developed for cost assessment and recovery, and for incentivising aspects of service delivery.

This section focuses primarily on two specific issues concerned with how the tariff methodology is, and could be, applied that have been central to discussions with stakeholders:

1. The asset base used for tariff setting, and in particular, the approach to setting depreciation/capital maintenance allowances in relation to:
   - EU funded assets; and,
   - Assets that are used for WSS services, but that are currently owned by municipalities and/or not yet adequately inventoried.
2. Assumptions about water losses when allowed unit prices are being set.

Before considering these matters, however, it is helpful to note some of the key different roles that the tariff setting process typically plays in relation to WSS services, as the advantages and disadvantages of some of the different potential approaches discussed below can differ significantly in relation to different roles.

7.4.1. Different roles the tariff setting process can play

The following roles/objectives of the approach to tariff setting are particularly relevant to consider in the current context:[16]

- **Cost recovery**: consistency with the recovery of efficiently incurred costs. Importantly, under a RAB-based approach, this will include some recovery of capex which was incurred in (and has accumulated over) previous years, to the extent that it remains to be recovered from customers.
- **The Financeability of future investment requirements:** providing a realistic and robust basis upon which utilities could actually fund investments that are likely to be viewed as appropriate and desirable.
- **Efficiency incentives**: providing incentives to deliver appropriate performance levels at efficient levels of cost over time.
- **Allowing for affordable, acceptable and equitable bills**: while this can clearly raise broader social and political considerations, it is important to recognise the different implications that different tariffs setting approaches can potential have in relation to these matters.

The relevance of these different roles is considered further below.

7.4.2. The treatment of EU funded assets

The current position (as provided for in legislation) is that granted assets, including importantly a substantial portion of assets that were funded by the EU, are excluded from the asset base for tariff setting purposes. Specifically, that means they are excluded from the RAB when allowed tariffs are being calculated, such that there is no allowance included in tariffs for the depreciation of these assets, and no allowance included to cover costs of financing capital that was used to provide for them.

The situation in relation to financing cost is straightforward: the utilities did not fund the EU granted assets and so do not face ongoing financing costs in relation to that funding. Given this, one would not expect any allowance for financing costs associated with past investment in these granted assets to be provided for in the tariff formula.

However, the situation with respect to depreciation is less clear cut. Concerns have been raised over the extent to which the calculation method (which excludes granted assets from the RAB, including for the purposes of calculating depreciation allowances) can be expected to provide a sustainable approach to funding necessary investments, and in particular the levels of capital maintenance that can be expected to be required over time in relation to those granted assets. The Ministry of the Environment's price projections illustrate starkly the extent of the impact the treatment of this issue could have on bill levels.

Those projections imply that average bill levels would be around five times higher than their current level if EU funded assets were included in the RAB for tariff calculation purposes.[17]

In practice, however, identifying the most appropriate approach to this issue raises a number of different considerations. In order to highlight this, it is helpful to compare the current approach used in Lithuania to two other standard approaches that have been adopted in a range of other jurisdictions and regulatory contexts, such that 3 different potential approaches could be pointed to:

1. **The current approach**: this can be understood as providing for no depreciation/capital maintenance allowance in relation to EU funded assets, and assets owned by municipalities/not yet inventoried, but with some depreciation allowance provided for other assets.
2. **Providing an allowance for current cost depreciation (CCD) in relation to all assets used to provide the relevant services**: this involves effectively determining depreciation requirements based on a forward-looking assessment of the average annual financial contribution required to maintain assets in a condition regarded as appropriate to allow for ongoing service provision. This kind of approach is typically applied by estimating the Modern Equivalent Asset Value (MEAV) of all relevant existing assets (i.e. the cost of providing an equivalent asset/basis for service provision),[18] and using this MEAV value – rather than the relevant RAB value – as the basis for determining depreciation allowances. On this basis, while gifted assets would have a zero RAB value, a positive depreciation allowance would be included in relation to them based on estimated MEAVs and relevant asset lives. This is referred to below as a 'full CCD' approach.
3. **Providing an allowance based on an estimate of average expected capital maintenance spend requirements over a given period**: this approach (which has been used in England and Wales over many years in relation to water 'infrastructure' assets), avoids the need to estimate MEAVs or asset lives, and instead focuses more directly on estimates of the costs of maintaining the long-term condition of the network. Those estimates of 'infrastructure renewals' costs are then included in the tariff formula as though they were a form of operating expenditure (opex). This is referred to below as an 'infrastructure renewals funding' approach.

It is notable that in a simplified long-term steady state context (where it is assumed that there is no enhancement, technological change, etc.), these approaches – on average - could be expected to result in the same allowance for depreciation/capital maintenance being included in tariff levels.[19] This is because, if (current cost) depreciation allowances have been set appropriately, then one might expect them to be equivalent to the average level of capital maintenance requirements over time, when we consider a simplified steady state context. However, when we move away from this stylised view to consider some of the practical challenges and circumstances that are typically faced, there is scope for the outcome of these different approaches to be far from equivalent. This is highlighted below by considering how the current approach used in Lithuania, and these two alternative approaches (a full CCD approach, and an infrastructure renewals funding approach) can be viewed as performing in relation to each of the different roles/objectives of the tariff setting approach that were identified above.

Cost recovery

All three of the approaches can be viewed as providing a coherent basis for cost recovery. In particular, they all provide a basis for the recovery of expenditure associated with capital maintenance, although the mechanism used differs in each case:

- The current approach used in Lithuania provides for cost recovery over time by adding capital maintenance spend to the RAB, such that a depreciation and financing cost allowance would be provided for under the tariff formula in future years until the relevant expenditure is effectively fully depreciated (and can thus be viewed as having been fully recovered). Also, it should be noted that the approach can be understood as consistent with providing for cost recovery associated with past capex, to the extent that there are residual amounts that stand to be recovered. That is, from

a cost recovery perspective, the use of a zero RAB value for granted assets aligns with the fact that there are no outstanding amounts to be repaid in relation to those assets.

- Applying a full CCD approach would involve the same standard RAB addition approach being adopted as under the current approach, and thus provides for cost recovery in the same way. The overall levels of depreciation provided for would be (much) higher than at present, but this higher level (which is considered further below) does not relate directly to cost recovery considerations.
- The infrastructure renewal funding approach provides for cost recovery more directly by treating relevant capex (or at least an estimate of it) as though it were opex. This approach therefore avoids the need for cost recovery through RAB additions and subsequent depreciation (and financing cost) allowances, as the relevant investment requirements (or a smoothed estimate of them over a defined period) are funded directly from customer charges. Using this approach, relevant RAB adjustments would instead be limited to reconciling differences between actual infrastructure renewals spend, and the forecast level that had been provided for in prices.

The Financeability of future investment requirements

The three approaches differ significantly in terms of the conditions they provide for the financing of future investment requirements. In particular:

- The current approach provides a clear framework that can - in principle - be used to underpin the financing of new investment requirements, with that investment being funded to a large extent though borrowing against expectations of future additional tariff income that the RAB-based approach provides for. However, a key question concerns the extent to which – in practice - companies can be expected to be able to finance those investments that have been identified as appropriate, and to do so on sufficiently reasonable terms. In particular, over time, capex requirements can be expected to exceed the overall level of depreciation allowances, potentially by a large multiple. This implies that, under this approach, considerable levels of borrowing be required to support appropriate investments, with this raising questions over the likely borrowing capacity of different utilities, and the extent to which they are likely to be able to secure sufficiently favourable terms.
- The full CCD approach would (assuming it could be implemented) greatly increase the cash receipts of utilities, and in doing would either remove or considerably reduce borrowing requirements. The improved cash position this would result in may allow for more favourable borrowing terms to be secured, reflecting the stronger financial position of the relevant utilities.
- The infrastructure renewal funding approach provides a means of fully funding expected capital maintenance requirements from customer charges, and thus borrowing requirements would be limited to those associated with managing deviations between actual and expected requirements.

In line with the above points, concerns over financeability provides one key reason why some change to the current approach may be appropriate.

Efficiency incentives

The approach taken to the determination of depreciation/capital maintenance provisions in the tariff formula could potentially have a major bearing on the effectiveness of incentives to improve efficiency. The reasons for this include the following:

- Under the current approach, utilities would need to make the case for any new investment requirements (including capital maintenance) that would involve charges having to increase as part of the regulatory charge review process. This provides a clear basis for the scrutiny of identified capital maintenance requirements and of the efficiency of the cost forecasts associated with them. The need to finance capital maintenance through borrowing under this approach, can also be

expected to focus attention on the potential for costs to be identified by the regulator as not having been efficiently incurred, as the ability companies have to service the debt they build up will be dependent on the extent to which they are able to actually add the capex they incur to the RAB. These factors can be viewed as tending to intensify the extent of focus one would expect to be put on efficiency assessments over time, because it may not be feasible for utilities to make progress with necessary capital maintenance unless they have performed adequately in regulatory review processes (in terms of demonstrating that there plans should be viewed as efficient).

- Adopting a full CCD approach could markedly change the financial landscape within which utilities and the regulator operate, and in doing so has the potential to materially weaken efficiency incentives. The primary reason for this is that – in the short- to medium-term at least – adopting a full CCD approach could have the effect of substantially relaxing the financial pressures that utilities might otherwise face. This follows because the depreciation allowance it provides for may exceed the actual investment requirements utilities face, with this then effectively providing additional financial headroom when costs are being managed.[20] While - in principle - this financial headroom could be used to build up a financial provision for when higher capital maintenance levels are required, there may be a material risk that headroom instead is effectively used to insulate the utility to some extent from the pressures for efficiency improvement that it may otherwise face. That is, there is a risk that the better financial position utilities would be in as a result of applying a full CCD approach would tend to allow a greater degree of deferral in relation to the achievement of efficiency improvements. The potential for this kind of efficiency incentive issue to arise (and how it might be mitigated) look to be key matters to be addressed if the adoption of some form of full CCD approach was being contemplated.
- The infrastructure renewal funding approach would not be expected to generate the kind of undesirable incentive effect described above, as securing the scope for raising additional funds through customer charges would remain (as it is at present) dependent on utilities adequately identifying the investment requirements to which it relates. Some dampening of efficiency incentives may arise as a result of utilities not having to raise funds from lenders (and thus convince those lenders of the credibility of their funding arrangements), but the approach maintains a clear link to – and a clear basis for regulatory oversight in relation to – identified capital maintenance requirements, rather than relying on separate CCD assessments based on existing assets.

Allowing affordable, acceptable and equitable bills

When the affordability and acceptability of bill impacts are being considered, relevant features of the three approaches include the following:

- Under the current approach, EU funded assets (or at least their value) – in relation to which no depreciation provision is included in tariffs – would over time be replaced by 'new' assets, the value of which would be added to the RAB, such that a depreciation provision would then be included in tariffs. When this replacement/renewal process is complete, the current approach would have effectively become a form of full CCD approach. This highlights the importance of timing considerations. That is, while the current approach can be viewed as already providing for convergence to a full CCD approach over time, the long-lived nature of many WSS assets is such that this convergence may only be achieved over a number of decades. The gradual nature of the associated adjustment to tariffs can be viewed as likely to have significant benefits in terms of the affordability and acceptability of bill impacts, at least in the short- and medium-term. As was noted above, however, there are separate questions over whether the associated tariff profiles provide an adequate basis for the financeability of identified investment requirements.
- By contrast, the introduction of a full CCD approach would involve a substantial immediate increase in tariffs (as illustrated by the Ministry of Environment projections referred to above). The extent of the affordability and acceptability challenges likely to be associated with such an approach (to the

extent that it would be feasible at all), would be expected to result in considerable attention being given to the adequacy of the justification for such a change, and in practice a number of potentially important limitations can be pointed to. The determination of depreciation allowances inevitably involves a range of approximations and assumptions being used, and their reliability and appropriateness can raise significant questions, including:

- **What assets values would it be appropriate to use?** This may be particularly important in a context where the identification and development of different, more efficient ways of providing WSS services look to be critical to the achievement of a financially sustainable set of arrangements, and where demographic changes may mean that the inherited set of service provision solutions may differ markedly from those that are likely to be most suitable going forward. Given this, there is a risk that valuations associated with existing assets may provide a poor basis for assessing appropriate CCD levels, and may materially overstate relevant asset values.[21]
- **What asset life should be assumed for depreciation purposes?** The assumed asset life will have a substantial bearing on the scale of the depreciation provision that is implied (under a straightforward straight-line approach). However, relevant asset lives can be difficult to predict, and there is a risk that understandable tendencies to try to adopt relatively conservative assumptions (in line with standard accounting considerations with respect to prudency) could result in the use of assumed asset lives that are unduly short (in that they may materially understate the scope for relevant assets to have longer economic lives). A relevant point here is that – given the financial pressures that appear likely to be faced in relation to managing future investment requirements – there may be significant benefits associated with efforts to extend the economic life of existing assets, including through the analysis of the risks of different types of asset failure, and the potential role that lower cost alternatives to 'full' asset replacement/refurbishment could play in the mitigation of those risks.

Put differently, there is a risk a full CCD approach could be applied in a way that effectively assumed customers should be paying to maintain (and over time renew) the current service provision model, in a context where substantial changes to that service model are considered likely to be required (including through some different forms of consolidation) in order to allow for lower costs of provision.

- The infrastructure renewal funding approach could also raise major affordability issues when new investment requirements are identified, as those requirements would be funded 100% from bills (as though they were opex). One feature of this approach is that such bill increases would only arise where new investment was being undertaken (rather than simply because of a decision to include a provision, as under the full CCD approach), and this may assist with efforts to improve the acceptability of the change, as it may be more straightforward to identify what the higher bills were funding. However, the often lumpy nature of capital maintenance requirements could give rise to significant bill volatility, with bills changing sharply to fund prevailing requirements, and this may raise major affordability and acceptability issues. Where it has been applied in England and Wales, an important feature of this approach has been its application to companies with relatively large and diverse asset bases, such that capital maintenance requirements can be managed across that portfolio in a way that allows bill impacts to be smoothed over time. However, the industry structure is more fragmented – as it is in Lithuania – the scope for managing bill impacts in this way (absent some form of consolidation – discussed further below) is much more limited, and as a result, significant bill volatility concerns can be expected to remain.

A broader issue that arises in relation to bill impacts is that of how inter-generational equity considerations should be taken into account. One view that could be taken here is that the full CCD approach (leaving aside the implementation and measurement issues noted above) provides an appropriate way of taking inter-generational equity considerations into account. In particular, it involves customers in a given period

paying an estimate of the financial value of the assets that has been 'used up' in that period, and as a result provides for what is often referred to as 'financial capital maintenance' over time. However, it could be argued that this view is unhelpfully generic, and gives no particular consideration to the specific circumstances faced in Lithuania, which include substantial EU funding of assets.

A different way of approaching this issue would be to consider how (and how much) different generations of customers should be expected to benefit from the EU funding of assets. In high level terms, the benefits of EU funding to current customers could be summarised under the following headings:

1. **Environmental and service quality benefits**: the EU funded assets enabled substantial improvements.
2. **Institutional and structural benefits**: the funding has supported – and continues to support – developments that can be expected to improve the robustness and financial sustainability of the sector.
3. **Financial benefits associated with tariff levels**: current tariffs are much lower than they would be if the improvements had been funded based on customer charges.[22] In particular:
    a. Depreciation is only provided for in tariffs in relation to a relatively small portion of the overall asset base, and in line with this, prevailing capital maintenance requirements have been relatively low given that significant proportion of assets were only recently installed using EU funding.
    b. The allowance for financing costs in tariffs is much lower than it would be otherwise, including – importantly – because the RAB is much lower than it would otherwise be.

It is clearly intended that the improved environmental and service quality levels ((1) above) are maintained – and where necessary further enhanced – for future generations of customers. That is, the EU funding provided for a significant step improvement, and there is a clear policy objective to maintain and build on that higher level of performance going forward.[23] It is also clearly an objective to try to provide for enduring benefits through institutional and structural reforms ((2) above), as can be seen from the Ministry of the Environment's planned water services sector reform (summarised in an earlier section). The more difficult questions – in terms of passing on benefits to future customers – concern financial benefits associated with tariff levels ((3) above), and this inevitably raises distributional questions for political consideration. In practice, the key issue can be viewed as concerning benefits associated with the allowance for financing costs, given - in particular - the size of the RAB. The differences – in this respect - between the three approaches to depreciation/capital maintenance discussed above, include the following:

- Under the current approach, the financing cost benefits associated the EU funding of assets can be viewed as fully allocated to the cohorts of customers paying WSS charges over the short- to medium-term. In particular, each time an EU funded asset is effectively renewed/replaced, the cost will be added to RAB, and – other things equal - the RAB would increase. As a result, the allowance for financing costs in charges would also be expected to increase (assuming the WACC remains constant, and ignoring the impact of enhancements that may result in further RAB increases). The size of the RAB would keep increasing over time (as EU funded assets that had not been in the RAB were replaced by newly financed assets that are in the RAB) until all EU assets had been renewed/replaced, at which point – in principle, at least - a steady state would be reached, where the value of RAB additions related to capital maintenance would be broadly equivalent on average to the annual allowance for depreciation. After this point (which would only be reached after a number of decades, give relevant asset lives and assumed depreciation periods), there would be no direct ongoing benefit to customers from the EU funding assets.
- By contrast, a full CCD approach can be understood – on average and over time, at least – as locking-in the RAB value that applies when the approach is introduced (other than where there is enhancement). That is, if the depreciation allowance is set in line with average capital maintenance requirements, then over time the RAB increase associated with capital maintenance (on EU

funded, or any other assets) would be offset by reduction in the RAB that would otherwise occur such that the RAB remains broadly constant (again, ignoring the effect of any enhancement investment that may take place). This approach, then, can be understood as fully locking-in the lower financing costs benefit of EU funding for customers in all future periods, as a result of the higher level of depreciation allowances that it provides for (as opposed to under the current approach where – as described in the above bullet – the lower financing cost benefit would unwind gradually over the next few decades as all EU funded assets were renewed/replaced).

- The infrastructure renewal funding approach can also be understood as locking-in the RAB value that applies when the approach is introduced (again, other than where there is enhancement), because capital maintenance is effectively treated as an operating expense and thus not added to the RAB at all. As with the full CCD approach, then, this approach involves fully locking-in the lower financing costs benefit of EU funding for customers in all future periods as a result of the higher level of depreciation/capital maintenance allowances it provides for.

Summary and consideration of hybrid options

The table below provides a high-level summary of the above assessments that is intended to highlight where the main limitations of the different depreciation approaches look to arise (shaded in orange). As can be seen, none of the approaches look to raise particular concerns in relation to cost recovery. The key limitation of the depreciation approach that is currently adopted looks to concern the financeability of future investment requirements, as the approach relies on utilities being able to fund capital maintenance requirements primarily through borrowing (with relatively limited cash provisions included in charges). In line with the comments above, the current approach does not look to have major limitations when considered in terms of efficiency incentives or allowing for affordable, acceptable and equitable bills.[24] By contrast, neither of the other two approaches raise particular financeabilty concerns (because of additional cash availability they provide for), but both raise bill affordability and acceptability issues. As was highlighted above, the full CCD approach also raises concerns over potential effects on efficiency incentives.

Table 7.1. Highlighting where the main limitations of different depreciation approaches look likely to arise

	Some key roles/objectives of the tariff setting process			
Different depreciation approaches	Cost recovery	Financeability of future investment requirements	Efficiency incentives	Allowing for affordable, acceptable and equitable bills
Current approach				
Full CCD approach				
Infrastructure renewal funding approach				

The differences in these limitations raise the question of whether hybrid approaches could be used to draw on the benefits of different approaches to some extent. In particular, the following hybrid options could be considered:

1. A hybrid of the current approach and a full CCD approach; and,
2. A hybrid of the current approach and an infrastructure renewal funding approach.

The first hybrid option can be viewed as adopting full CCD approach with a glidepath for its introduction. As was highlighted above, the current approach can already be viewed as gradually providing for the inclusion of a depreciation allowance for all EU funded assets in the tariff formula, but as that process is driven by asset refurbishment/replacement activity, it can be expected to take a number of decades before it is complete. An approach that involved movement to a full CCD approach more rapidly than this, but that

included a relatively lengthy glidepath period, might provide a way of sufficiently addressing limitations associated with financeability and affordability. In practice, though, it seems likely that the concern that the introduction of a full CCD approach decouples funding allowances from actual investment decisions, and as a result could have unwanted adverse consequences for the effectiveness of incentive regulation, would remain. More generally, it is notable that the introduction of a full CCD approach with a glidepath does not look to be a well targeted means of addressing the primary identified limitation of the current approach – the financeability of future investment requirements – as the basis for additional funding does not relate to future investment requirements (it relates rather to past investments that have already been made).

The second hybrid option - of the current approach and an infrastructure renewal funding approach - looks much more attractive, as it keeps attention focused on future investment requirements, and thus on the delivery of projects that can be expected to have tangible impacts on service and environmental quality. This option could be applied in a flexible manner that was adapted to the circumstances that were under consideration. That is, the base position could remain the current approach: with capital maintenance treated as new investment that is added to the RAB and funded through subsequent depreciation and financing cost allowances. However, there could be scope for depreciation on new investment requirements to be accelerated, where that could be shown to be necessary to allow for the financeability of the relevant project(s), and not to give rise to undue bill impacts.

From this perspective, the current approach and an infrastructure renewal funding approach can be viewed as sitting on a spectrum. The current approach includes no accelerated depreciation, whereas the infrastructure renewal funding approach includes fully accelerated depreciation: capex is fully depreciated in a single year and thus treated like opex. A hybrid approach would involve selecting somewhere on this spectrum between the two end points (such that there was some - but not full – acceleration of depreciation). There would be for this form of approach to evolve over time, and be adapted to differences in circumstances, so as to reflect the relative pressures and constraints associated with financeabilty and bill affordability/acceptability. For example, the current approach could be treated as the default position, but the opportunity to submit accelerated depreciation proposals to the regulator could be clearly highlighted, and expectations concerning the evidence that might be expected to support such proposals could be articulated (for example, in published guidance).

By keeping attention focus on the funding of future investment requirements, the approach could also be linked directly to the extent to which different forms of consolidation plans were being pursued, with greater scope for the acceleration of depreciation provided to utilities that develop such plans in a robust and credible manner. In line with the comments above, some forms of consolidation[25] may greatly enhance the scope for managing bill profiles over time as significant levels of capital maintenance come to be required in relation to what were EU funded assets. In particular, as well as potentially increasing the borrowing capacity of companies (and therefore their ability to fund future capital maintenance requirements without seeking additional revenues from customer charges through accelerated depreciation), consolidation can also allow for future capital maintenance and funding requirements to be managed across a larger and more diverse portfolio of assets, and thus allow for greater smoothing of associated work requirements and bill impacts. Regulatory decisions on the extent to which accelerated depreciation should be allowed could also take account of the utilities performance (i.e. evidence on the efficiency of its operations), with this providing a means of guarding against the risk that the allowing of accelerated depreciation could act to ‘soften’ the budget constraints that utilities would otherwise be expected to face, and dampen efficiency improvement incentives (in line with the discussion above). The use of incentive is discussed further later in this report.

7.4.3. The treatment of assets used for WSS services owned by municipalities and/or not yet inventoried

It will be important for there to be a clear identification and attribution of assets that are used for WSS service provision, but that are currently owned by municipalities and/or are not yet inventoried. This should

allow for a clearer allocation of responsibilities, and better accountability, in relation to the management and maintenance of the relevant assets over time. However, it is not obvious that this would be expected to have any RAB implications. That is, unless there was clear evidence to contrary, it does not seem obvious why there should be viewed as being any past investments related to these assets that remain outstanding, and that WSS customers should now be treated as responsible for paying off. The inclusion of a zero RAB for these assets would align with the view that there are no residual amounts which stand to be recovered from WSS customers in relation to past investments, and that attention in relation to these assets should be focused on forward-looking questions concerning the identification, funding and efficient delivery of appropriate capital maintenance requirements.

When considering the question of how depreciation/capital maintenance provisions in relation to these assets should be taken into account in the tariff formula, similar issues arise to those that were highlighted above in relation EU granted assets. In particular, as with EU funded assets (and in line with the summary position illustrated in Table 1 above):

- The main limitation of the current depreciation approach concerns the financeability of future investment, as the approach relies on utilities being able to fund capital maintenance requirements primarily through borrowing, with relatively limited cash provisions included in charges (because cost recovery is assumed to be spread over a significant number of years).
- Adopting either a full CDD approach or an infrastructure renewal funding approach would address this financeability concern, but would have significant limitations associated with the affordability and acceptability of bills. The full CCD approach may also have a broader adverse effect on incentives for efficiency improvements.

In line with the comments above, there looks to be a strong case for adopting a hybrid of the current approach and an infrastructure renewal funding approach. As above, the current approach could be treated as the default position, but the opportunity to submit accelerated depreciation proposals to the regulator – as a response to identified financeability constraints - could be clearly highlighted.

7.4.4. Assumptions about water losses

The treatment of water losses in the tariff setting process has been raised as a particular area of concern by the Lithuanian WSS industry association. We understand the association to view the assumptions that are currently applied by the regulator when setting the tariff formula as being too stringent, in particular given the extent of losses that can occur in 'internal networks' on customer premises (such as those within apartment buildings) that the association considers not to be the responsibility of water utilities. This raises a number of specific questions that go well beyond the scope of this project, and we have not considered – and make no comment on – questions of detail with the respect to the current approach. However, the issue raises a number of broader points of regulatory principle and approach - that have also arisen in other jurisdictions and sectors – that we do provide some high-level comments on.

An initial point of note is that is it common for regulators to seek to set challenging but achievable targets when focusing on leakage levels (and more generally water losses).[26] This raises a broader question over what factors, objectives, principles, etc should guide the determination of a challenging but achievable target in relation to water losses. These broader questions can be very important for the legitimacy of regulatory decision making, but they can also affect the nature of the engagement that occurs within the sector over time.

We understand the WSS industry association to consider that the regulator – in determining its assumed level of losses – takes insufficient account of something the association considers to be a highly relevant factor: i.e. (as was noted above), the scope for leakage on 'internal networks'. Irrespective of the specific merits of this view, it raises a potential source of concern as when regulatory assessments are viewed as unreasonable and unachievable, confidence in the overall regulatory arrangements can be diminished, and in such circumstances utilities can tend to adopt less cooperative and constructive approaches than

they might otherwise. This can result in significant resources being directed towards relatively unproductive activities, and tend to slow progress in the achievement of key policy objectives. While this raises general points concerned with regulatory approach, the apparent materiality of this issue (in terms of its potential impact as a result of charge determinations) suggests that there may be significant merit in seeking to resolve some of the tensions that look currently to be associated with this issue.

A key underlying issue here is the extent to which there is a shared (across the regulator, regulated companies and other stakeholders), accepted view of the current position in terms of actual leakage levels and – in broad terms – the factors that underpin them. To the extent it is not already being addressed by existing initiatives, there may be significant benefit - in terms of improving confidence in regulatory decision making - from efforts to better identify and clarify what is driving differences of view with respect to the underlying data on current levels and sources of water losses. For example, this could involve a consultation process that explicitly seeks to identify and – where possible using empirical evidence – evaluate the range of views that have been expressed on relevant factors. While such a consultation may be unlikely to resolve all material differences in view, it may be able to resolve some, and it can also provide a basis for explicitly showing where and how contrary positions have been assessed and taken into account.

One reason that this kind of process can be helpful is that regulators are often faced with relevant and material characteristics of the supply environments that different companies face, that can be expected to have both positive and negative implications for supply costs. For example, serving apartment blocks - rather than separate residences - can be expected to have some advantages from a WSS supply perspective (where a large number of customers are able to be served through a single connection point), that will sit alongside relevant disadvantages (including those that may be associated with leakage levels). Given this, it is common for factors that may be widely regarded as material to not give rise to any specific adjustment, because they are already viewed as being captured sufficiently implicitly, given the extent to which different factors (which when viewed in isolation would be regarded as material) can be expected to 'net off'. Stakeholders' perspectives of such trade-offs, however, may be heavily affected by the extent to which they have been articulated.

This may or may not be a relevant consideration in terms of how leakage assumptions are currently applied in a Lithuanian context. The broader point here is simply that, where successful, the use of the kind of consultation process described above can allow attention (and differences of view) to be focused on how the current position, and the identified drivers of losses, should be taken into account, rather than on what the current position is, and on what those drivers are. In doing so, it can help keep a greater degree of stakeholder attention on more constructive and productive questions.

When attention turns to this kind of 'how' question, articulating and testing reasoning through consultation can also potentially help encourage more constructive engagement with regulatory decision making (as well as most likely improving that decision making through the additional disciplines that it requires). It is common – in other jurisdictions – for 'boundary issues' to arise when leakage is being considered, as losses can be the result of leakage from pipes owned by water company customers, as well as from pipes owned by water companies themselves. This raises the question of the extent to which water companies should be held responsible for, and/or should face incentives in relation to, losses from pipes that they do not own or operate.

From one perspective, it may be viewed as straightforward that property owners should be responsible for losses that occur on their premises (and not be responsible for losses that occur elsewhere). For Lithuania, this perspective might imply that leakage from 'internal networks' (and its management) should not be treated as a matter for WSS companies, and its effect should be 'stripped out' of relevant assessments to the extent possible. However, levels customer-side leakage can have a material impact on a water company's costs of supply (to be recovered from all users), and therefore on the overall efficiency of the water supply system. It is typically important (and often central to their duties) for regulators to consider

how overall system efficiency can be improved, and this raises questions over what incentives should be in place to encourage such improvements, and who should face them.

From this incentive perspective, it is notable that WSS companies may be relatively misplaced to identify and respond to losses from pipes that they do not own. They may have much better visibility in relation to where losses are arising (given metering arrangements, understandings of typical usage and loss levels, etc.), and to their economic consequences - as the economic costs of losses may be much greater than would be reflected to customers through the WSS charges they pay.[27] Given this, regulators can be expected to look to water companies to actively seek to encourage reductions in customer-side leakage - alongside efforts to reduce their own leakage levels – where that can be expected to deliver efficiency savings.

As noted above, we have not considered the details of the approach that is currently applied in relation to leakage (that the industry associated raised concerns over). The broader point here is simply that while the ownership boundary is clearly relevant to the assessment of WSS costs and associated allowances when account is taken of leakage levels, it does not – in and of itself – provide a clear-cut basis for concluding how customer-side leakage should be taken into account. Rather, given the effects that customer-side leakage can have on overall WSS costs, and that companies may be relatively well placed to influence levels of customer-side leakage – there is a well-founded case for considering some regulatory incentivisation of WSS companies in relation to leakage from pipes they do not own.

7.5. Reducing price disparities and potential incentive issues

The circumstances in some municipalities raise the question of whether the relevant WSS utility is likely to be financial sustainable - based on charges paid by the customers it supplies – even with the sorts of efficiency improvements that might be achievable through consolidation. Future demographic changes and changes to environmental requirements may exacerbate these kind of financial sustainability difficulties in some localities, particularly where there is a significant expected reduction in the size of what may already have been a relatively limited customer base.

This raises the prospect of larger, more financially secure utilities being deterred from consolidating with smaller utilities that face serious financial sustainability pressures (now and/or on the horizon), because such consolidation might be expected to end up with them having to cross-subsidise the smaller companies. There may be some circumstances where that does not raise a material barrier to consolidation. In particular:

- If the financial sustainability issues are relatively modest, then the scope for efficiency benefits may be sufficient to outweigh them.
- There may be other social, reputational and strategic factors that influence the appetite that larger utilities have for consolidation. For example, a company may be willing to bear some degree of cross-subsidy as part of the development of its regional coverage and reputation.

More generally, however, concerns over the sustainability of the funding model of some smaller companies would be expected to act as a material deterrent to at least some forms of consolidation, including – importantly – the development of integrated regional companies that take on responsibility for serving the smaller company's area. This raises issues that are relevant to policy efforts aimed at reducing price disparities between different companies/municipalities. In particular, cross-subsidy issues may arise where the reduction or removal of charge level differences between areas is treated as a policy objective, and - as was noted above - reducing the disparities of prices for WSS services for the Lithuanian population has been identified as an aim of the planned WSS sector reforms.

It is important to note that it is common in many countries for there to be uniform WSS prices to consumers over relatively wide geographic areas. As service provision costs can differ markedly within those areas –

depending on factors such as proximity to water resources, population density/sparsity, and so on - this kind of regional averaging of charges can involve significant embedded cross-subsidies. This kind of cross-subsidy – at least in relation to consumer pricing - is often viewed as relatively unproblematic, providing that some more appropriate locational signals are generated in other ways (such as, through the charges that must be paid to connect new housing developments to existing WSS infrastructure).

However, in Lithuania, there are currently significant differences between the charge levels that apply in different municipalities. Given that context, it is notable that a policy aim of reducing charge disparities could itself act to dampen incentives for regional consolidation. In particular, it would imply that customers from areas that currently have lower charges would – following consolidation - have to bear at least some part of the cost of charges being reduced (or of charge increases being more muted) in other previously high-charge municipalities. Therefore, while the achievement of lower levels of price disparity between areas would be a policy aim that is not out of line with practice in many in other jurisdictions, pursuing that policy could potentially have material adverse consequences for consolidation incentives.

This suggests that allowing flexibility in the approach taken to price differences in consolidation proposals may be highly desirable. In some circumstances, it may be relatively straightforward (given the opening price level differences, relative sizes, customer attitudes, etc.) for companies to identify a mutually acceptable glidepath that provides for price convergence over a relatively modest period of time. However, in other circumstances, scope to focus only on efficiency improvements and to not provide for such convergence in tariff levels may be important for the feasibility of a consolidation plan, and to ensure that customers from the (initially) lower charge area would not simply expect to be worse off.

7.6. The funding of wider environmental benefits

A common tension that arises in the consideration of WSS costs relates to the difference between:

- The costs of providing the water and wastewater services to the relevant set of customers; and,
- The costs the relevant water company faces in order to meet applicable environmental requirements.

Equity issues related to the first bullet can be viewed as relatively straightforward. The long-lived nature of relevant investments can inevitably raise some questions concerned with intergenerational equity (i.e. how should costs be shared between current and future cohorts of customers). Beyond this, though, the WSS customers that receive services from a given company can be readily identified (for the most part), and are typically expected to bear the associated service provision costs (subject to acute affordability issues of the kind noted above).

Equity issues can become more complicated, though, when the costs of meeting environmental requirements are considered (as in the second bullet above). A common approach is to simply treat any costs associated with meeting environmental requirements as though they are WSS service provision costs, and therefore as cost that should straightforwardly be viewed as to be borne by the relevant set of WSS customers. In some circumstances, however, this may not result in a close alignment between those being asked to pay the costs of meeting relevant environmental requirements, and those who benefit from the requirements being met. That is, there may be significant positive externality effects.

The extent of geographic consolidation can be highly relevant in this context, as it can affect how closely aligned the group that funds specific environmental improvements is with the group that benefits from them. For example, wastewater treatment plants can face stringent and very costly phosphorus removal requirements that relate to concerns over nutrient levels in receiving waters. It could be viewed that these requirements have widespread benefits across the population, including benefits associated with the meeting of government commitments made in international agreements. If there was a small number of large regional WSS companies in Lithuania, then it may be that there would be little practical difference

between who bears the costs of, and who benefits from, phosphorus removal (with relevant costs shared across a broad range of customers from more urban and more rural localities). However, the fragmented nature of WSS service provision in Lithuania may mean that there is a risk of material disparities emerging between the set of customers who bear the costs of, and those who benefit from, some environmental protection measures provided by WSS companies.

The use of EU funds to support environmental improvements in recent years means that this potential source of tension will have been of limited relevance to date, as – to a large extent – the costs of meeting environmental requirements were not funded by the customers of the particular WSS companies to which those requirements applied (they were funded by EU grants). However, as those EU funded assets need to be maintained and replaced, and as other environmental requirements stand to be addressed, this source of tension can be expected to become more important over time.

In practice, the customers of a given company can be expected to both fund some environmental improvements that benefit others, and benefit from some environmental improvements that are funded by other customers (for example, as those other improvements may contribute to the achievement of national commitments, and in doing so confer widely dispersed benefits). The question arises as to whether the fragmented nature of the sector leaves some customers particularly exposed to funding wider benefits, and if that materially affects the financial sustainability of the relevant company. That might be the case, for example, if a company that served a relatively modest customer base was required to install and/or maintain tertiary treatment processes that – because of small scale – had a very high unit cost.

The starting point for Lithuania is again important here. That is, it is not unusual internationally to use WSS charges to fund initiatives that have a range of environmental benefits. But the fragmented nature of the WSS sector in Lithuania means adopting such an approach can potentially have significant distributional consequences: as there is a greater risk of misalignment between those who pay for, and those who benefit from, the environmental improvements being funded. Those distributional consequences may tend to imply that consolidation is very important (in order to more appropriately distribute the costs of environmental improvements) but also that incentives for such consolidation may be relatively limited.

In the Lithuanian context, a strong case could be made for some of the costs of achieving some of these environmental benefits to be covered through other means, at broader geographical scales, and independently from the water bill. Inspiration could come from a range of instruments in place in OECD and EU countries: they all ambition to make pollution costly for the polluters, in line with the polluter pays principle. They depend on the targeted pollution. In the case of agriculture, taxes on fertilisers can be appropriate; they best apply when fertilisers are purchased. In the case of industry and under some circumstances, extended producers' responsibility can be considered; this is for instance the case for pharmaceutical residues or other chemicals, which affect water streams and are not readily addressed through wastewater treatment. The recent workshops co-convened by the OECD and DG Environment on implementing the Polluter Pays principle in the context of the Water Framework Directive provides more evidence and examples (https://www.oecd.org/water/dg-env-economics-of-wfd.htm).

7.7. Summary and recommendations

This report has reviewed aspects of how prices for WSS services in Lithuania are determined, focusing on specific issues related to the tariff methodology that look to be of particular importance to the development of pricing arrangements. Overall, the report is consistent with and provides strong support for the broad set of reforms the Ministry of Environment has brought forward, and attention is focused on some specific options and issues related to how those reforms could be applied and implemented. As set out below, there are two main recommendations, and a recommendation that further consideration be given two issues as the tariff setting arrangements involve.

7.7.1. Recommendation 1: Retain the current approach to depreciation as the default position, but allow companies to submit accelerated depreciation proposals

This would keep attention focused on the funding of future investment requirements, and greater scope for the acceleration of depreciation could be provided to utilities that develop consolidation plans in a robust and credible manner. Regulatory decisions on the extent to which accelerated depreciation should be allowed could also take account of the utilities operational and financial performance, with this providing a means of guarding against the risk that the allowing of accelerated depreciation could act to 'soften' the budget constraints that utilities would otherwise be expected to face, and dampen efficiency improvement incentives, in undesirable ways.

7.7.2. Recommendation 2: Allow for some flexibility in the treatment of price disparities

It is recommended that flexibility is allowed for in terms of how price disparities between municipalities are expected to be reduced over time when consolidation options are adopted. Requirements for price convergence, or the expectation that price convergence may be introduced subsequently, may act as a deterrent to the bringing forward of some forms of consolidation plans (in particular those that would involve the agglomeration of companies across broader areas), as it may imply that some form of cross-subsidy will be introduced to the disbenefit of customers of the company that has lower prices initially.

7.7.3. Additional recommendation

It is recommended that further consideration is given to the following two factors in the detailed development and application of water pricing arrangements:

- When assessing the appropriateness of water losses assumptions (as part of the application of the tariff formula), consider the scope for WSS companies to influence customer-side leakage. As was highlighted above, companies may be relatively well-placed to help reduce levels of leakage (and the costs associated with managing them) even when that leakage occurs on networks other than those operated by the relevant WSS company.
- Consider the extent to which financial sustainability concerns (or the prospect of them arising) may be driven by requirements to fund broader environmental improvements that may have disproportionate effects on the prices paid in some WSS areas, and the extent to which this may undermine voluntary consolidation incentives and opportunities. To the extent that this is identified as a relevant feature in practice, give further consideration to the scope for, and potential, options that could allow the funding burden associated with meeting broader environmental improvements to be shared more broadly. Lessons can be learned from other European countries' experience, as captured in the recent OECD – DG ENV workshop on the Polluter Pays principle in the context of the Water Framework Directive (https://www.oecd.org/water/dg-env-economics-of-wfd.htm).

Notes

[1] OECD (2021), Reform of the water supply and wastewater treatment sector of Lithuania by consolidation of utilities: Output 3; featured in this report as Chapter 3.

[2] The Lithuanian economic regulator's approach to tariff regulation is considered in a later section.

[3] OECD (2021), Reform of the water supply and wastewater treatment sector of Lithuania by consolidation of utilities: Output 3 – Issues paper, p5-6; featured in this report as Chapter 3.

[4] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 6.

[5] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 7.

[6] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slides 6 - 7.

[7] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 3.

[8] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 4.

[9] Ministry of Environment of the Republic of Lithuania (2021) Consolidation strategy of WSS sector in Lithuania, slide 2.

[10] Acknowledging that water is supplied for 83%, wastewater is collected from 77% of population.

[11] For an illustration of this, see Figure 15 (p70) in: https://assets.publishing.service.gov.uk/media/5eda1e5ee90e071b734d2ca7/Northumbrian_Water_Reply_to_Ofwat_response_27.05.2020_NON-CONFIDENTIAL.pdf.

[12] A high-level overview of catchment management approaches that provides some early examples of its use in England and Wales can be found in this 2011 Ofwat document: https://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_inf_catchment.pdf.

[13] The relevance of alternative potential forms of consolidation is discussed further in the 'Incentives' section.

[14] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 10.

[15] The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 11.

[16] Note that the focus here is on the way in which the overall level of allowed prices is set (through the determination of allowed revenues and associated allowed average price levels), rather than on the detailed design of the tariffs that different customers will face (with this latter issue often addressed through consideration of the appropriate structure (as opposed to average level) of charges).

[17] Based on the increase in 2020 average bills identified as resulting from the inclusion of assets and EU funds as being €10.52/m3, from a starting point of €2.63/m3 (The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 7).

[18] This reflects the fact that it may be possible to provide an equivalent service in a different less costly way.

[19] Potential implications on financing costs are discussed below.

[20] In the short- to medium-term, CCD-based depreciation provisions may exceed actual capital maintenance requirements (given the relatively recent point in time at many assets were installed), and potentially by a significant amount. Where this occurs, the RAB would actually reduce over time (other things equal), and in principle – given the relatively low prevailing RAB values, and extent of EU funded assets – a negative RAB could result for a period, with utilities then effectively holding funds on behalf of customers for use in future periods.

[21] That is, in terms of the language used above, there is a risk that the MEAV of assets may be somewhat lower than currently recorded asset values, in circumstances where alternative, lower cost supply options could be used to deliver broadly equivalent services and service levels.

[22] The extent to which this is a realistic counterfactual is not considered here, as the focus on considering what benefits could/should be passed on to future generations of customers.

[23] See, for example, The Ministry of Environment of the Republic of Lithuania (3rd November 2021), WSS sector in Lithuania Reform Investments, slide 10.

[24] This is not to intended to imply that use of this approach would allow for all significant bill affordability and acceptability issues to be avoided. The point here is rather that the approach already provides for significant dampening of bill impacts.

[25] Some different forms of consolidation are considered in the incentives section below.

[26] The broader term ‘water losses’ includes leakage, but also reflects that there are some other sources of ‘losses’, such as where there is usage of water supplies that is unaccounted for (e.g. properties that are not registered for billing purposes).

[27] Put differently, water tariffs are unlikely to provide an effective signal to customers of the economic costs of leakage from the pipes that they own, and there is therefore a material risk that ‘customer-side’ leakage will – absent other interventions – remain inefficiently high, such that water supply volume requirements are inefficiently high.