



DSOs' Access to finance

BARRIERS AND POTENTIAL FACILITATION MECHANISMS

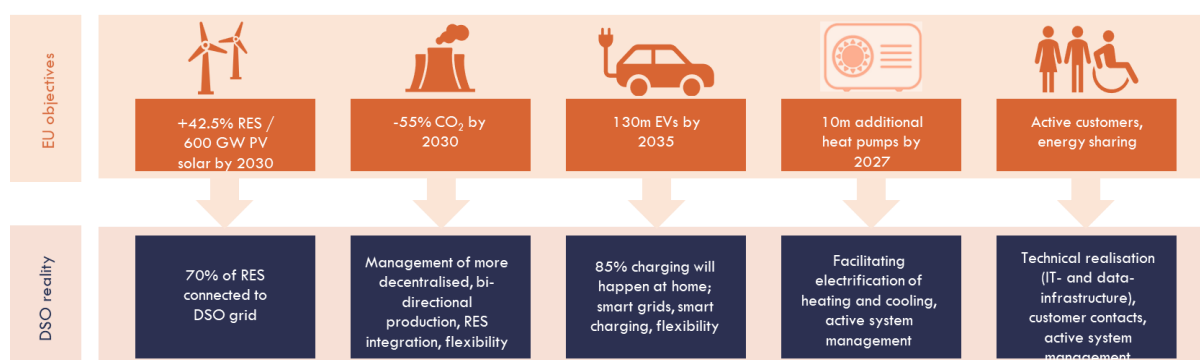
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Editorial note: This paper was developed by Task Force in Investment Funding and Finance to deliver on Action 9 of the Grid Action Plan (GAP), with the goal of providing options to facilitate DSOs' access to private funding. This paper was approved by DSO Entity's Board of Directors on June 12, 2025.

Prelude

The next few years will be crucial to ensure that the EU countries will be able to reach the ambitious net-zero goals set out by the European institutions. The invasion of Ukraine by Russia has underscored the urgent need of accelerating the energy transition, for reaching carbon neutrality and ensuring strategic independence for the continent. To achieve this objective, a few targets have been introduced:



By 2030, with a 42.5% increase in Renewable Energy Resources (RES) and 70% of total RES connected to Distribution System Operator grids, DSOs face a transformative challenge. This “generation” challenge is further amplified by a surge in demand for electricity coming, among other from the electrification of transport (with an estimate 130 million electric vehicles, with 85% of charging occurring at home and a surge on electric busses and trucks), of heating (with additional 10 million heat pumps by 2027) and large industrial process including data centres¹, all presenting an invigorating opportunity for DSOs to innovate and adapt.

To obtain these objectives, estimates suggest that between now and 2050, around € 55-67 billion/year of investments will be required to make the European distribution grid fit for the exponential increase in demand of electricity.² This volume of investment is well above the historic levels of investment in the sector which then brings the additional challenge of obtaining the necessary funding to deliver them.

Whilst it is crucial that DSOs can have access to permits, skilled workers and other crucial inputs, nothing will be achieved if they do not have a way to (efficiently) pay for these inputs. As part of the work in its Task Force on investment funding and finance, DSO Entity is considering the different approaches DSOs can use to efficiently deliver its financial needs. These approaches are considered in the diagram below:

¹ Data centers represented between 1.8% and 2.6% of the total EU electricity use in 2022. Estimate providing in, Kamiya, G. and Bertoldi, P., Energy Consumption in Data Centers and Broadband Communication Networks in the EU, Publications Office of the European Union, Luxembourg, 2024, doi:10.2760/706491, JRC135926.

² Eurelectric, 2024 Grids for speed. Available in https://powersummit2024.eurelectric.org/wp-content/uploads/2024/07/Grids-for-Speed_Report_FINAL_Clean.pdf

Introduction

To finance the investments network users require for a successful energy transition, DSOs will need a large volume of funds. As is the case with any company, DSOs have access to two main financing sources: either internal or external sources. When considering when to use each source, a simple rule is that all financing that cannot be covered by internal financing sources needs to be covered by external sources.

Internal finance refers to a company's ability to generate a surplus from its operational activities (the amount of money coming in is larger than the amount of money going out) and then use this surplus for investment activities.³

With regards to external finance, one can additionally differentiate between debt and equity depending on the rights the investor acquires.

In the case of debt, the investor is entitled to a (predefined) interest payment. Investors can also obtain additional rights such as the right to obtain assets used as collateral, the right to transform the debt into equity or other penalties in the case of delay/lack of payment.

In contrast, investors in equity are entitled to (a part of) the residual income the asset / investment / company makes. The payment of residual income is not guaranteed, and the equity capital is usually lost if the company fails. This implies that debt and equity have different risks and these different risks within the same company or asset class translate into different rate of return demands on debt and equity i.e., usually equity investors will expect a higher return to cover the uncertainty of their returns and for their risk of a total loss.

When considering this, however, one also needs to consider that the risk that is perceived by investors changes with the debt-to-equity ratio that is being used to finance a company. Companies financed mainly with equity will be generally perceived to be more expensive but also less risky. Projects or companies focusing on debt could be seen as riskier, since the debt needs to be repaid/refinanced after a certain amount of time. Also, the company or project needs to generate enough money to cover its operating costs and recurring interest payments. As a result, its cost will also increase as debt investors will anticipate this risk of failure and ask for higher interest rates. Considering these effects, economic theory shows that there is an optimal mix of debt and equity that minimizes the interest rate payment (or cost of capital) and does not create a substantial risk of failure.⁴

³ It should be noted that a regulated entity should be able to cover its costs (including its capital costs). For regulated utilities, an important element that drives revenues and is available as a source of internal finance is the depreciation included in the revenues. Temporarily the necessity of external financing might increase if the balance sheet depreciation (accounting depreciation) is higher than the one recognized by the regulator (regulatory depreciation) in calculating revenues as the financial account would recognise a revenue that is not realised in the regulated revenues (based on regulatory accounting) resulting in less income than assumed as a cost per period.

⁴ For example, the Modigliani-Miller theorem, often referred to as the M&M theorem, asserts that a company's value is determined by its assets and earnings, not by its capital structure (debt vs. equity). In other words, the theorem suggests that the way a company finances itself doesn't affect its overall worth.

This theorem, however, assumes that there are no distortions in financial markets and that all companies have access to the optimal balance of finances. However, this is not always the case, and some inefficiencies could arise as a result. To minimize financing costs and thereby protect consumers, it is important that DSOs can have efficient access to funding sources (in terms of equity and debt but also in terms of tariffs and regulatory frameworks) such that consumers do not pay for capital market induced inefficiencies.

To facilitate the identification of these potential inefficiencies, this paper will present some potential barriers and distortions that DSOs face when accessing different financial sources. Furthermore, this paper also identifies the characteristics of DSOs that should be considered in the development of potential mechanisms to address these barriers. Finally, some tools that could be used to facilitate this access are also considered.

1. Limitation on the access to finances coming from internal sources

A company's requirement for external funds (financing requirements) is the result of the interaction of the following elements:⁵

$$\text{Yearly financing requirement} = \text{net investments}^6 - \text{net profit} - \text{depreciations} + \text{debt repayments} + \text{dividends}$$

The financing models compare net profit and depreciation against **investments and debt repayments**. Therefore, the regulatory framework will play an important role as it affects several of those components.

Fast rising investments, insufficient profitability and limited depreciations lead to negative free cash flows in many DSOs...

Net profit is obviously an important parameter. If for example a regulatory framework provides for a net profit that is too low and not in line with the market, this limits the DSO's ability to finance its investments itself. A net profit that is too low also has consequences for the possibilities of external financing, which will be discussed below.

There can be different reasons why net profits can be too low. One example is a regulated WACC (Weighted Average Cost of Capital) which is lower than the actual capital costs, but also for example an allowed income that does not cover the actual costs incurred. In relation to the first of these effects (i.e. WACC lower than capital costs) is worth noting that based on NRA data, a recent report of the European Court of Auditors⁷ shows that the allowed return on equity has declined by more than 2%

⁵ For simplicity, taxation issues will not be considered in this analysis. We also consider working capital a constant, meaning that it does not influence the yearly financing needs as described here. However, one could certainly argue that higher investments also require more working capital.

⁶ Net investments = gross investments minus amounts directly paid by customers and (capital) subsidies.

⁷ See European Court of Auditors, 2025, "Making the EU electricity grid fit for net-zero emissions" as available in https://www.eca.europa.eu/ECAPublications/RV-2025-01/RV-2025-01_EN.pdf

between 2014 and 2022. This is most likely driven by non-forward-looking interest rate determinations that continue to reflect the lower rates from 2010 onwards. This development can be considered counterintuitive if DSOs are expected to increase their investment as it would make these companies less attractive to potential investors, i.e. companies could fail to obtain the funds they need to deliver the energy transition.

Another important parameter is **depreciations**. Depreciations are being undertaken to mirror the usage of the assets and the fact that the assets are being depleted through usage (e.g., a line that has been used for 15 years has a shorter lifetime and is less valuable than a new one). When considering depreciation, an important difference is between regulatory depreciation (i.e. the share of the RAB that is recovered via tariffs in each accounting year) and the financial depreciation (i.e. the reflection in the financial accounts of the company of the reduction in value of the assets). These two concepts can diverge (and they often do). As a result, if the regulatory frameworks only allow (very) low (regulatory) depreciation to be recovered from consumers per year (i.e. it assumes long lifetimes), then the DSOs are forced to pre-finance the investments for very long periods. Moreover, (very) long depreciation periods increase the risk of stranded assets, which again weighs on the possibilities for external financing.

Furthermore, sometimes depreciation is identified as a potential lever to smooth the effect of the energy transition on tariff. By linking depreciation to the evolution of demand, one could link cost recovery to the usage. However, this comes with some costs. First, as indicated above, it increases the risk of stranded assets and fail to recover the cost (i.e. if demand does not fully materialise) which could make more difficult to access external finances. Second, delaying the recovery of the costs requires that DSOs finance the asset for a longer period of time which would result in higher financial costs to be recovered from consumers. Therefore, this tool should not be considered as a solution without risks.

When investments rise quickly and sharply, it is logical that these investments cannot be paid from net profit and depreciations, resulting in a **negative free cash flow** (i.e. the company needs to spend more on (new) assets than it can recover from revenues during a period). However, this should be a temporary phenomenon. Ultimately, net profit and depreciations should reach the investment level (within a reasonable period), because of which the free cash flow will no longer be negative.

... leaving no room for debt repayments with internal funds and limited options for a sustainable dividend policy...

One consequence of negative free cash flows is that there are no internal funds available to pay off any of the existing debts, i.e. all **existing debt** needs to be **refinanced**. In addition, to deliver on new investments, the company would need to increase its debt even further. As a result, companies need to be able to refinance their debt in addition to finance the new investment.

Finally, shareholders regularly expect **dividends**.⁸ The portion of the net profit that flows from the company to the shareholders can obviously not be used to finance investments or repay debts (or only

⁸ Shareholder also profit from a raising share price (if it so happens) but they can practically only make use of that “profit” by selling the stock i.e., giving up the right to the residual income. They expect dividends as their

if investors can be convinced to add to their existing investments by reinvesting the dividends) which is a sensitive issue for every type of shareholder. This is also an important element in the search for external financing as the dividend policy can have important effects on investors' decisions (e.g. pension funds would normally invest in companies that provide dividends as they would require those payments to deliver their annuities).

... leading to a high dependence on external financing

Combining all these components, it is possible to identify the amount that companies will need to finance externally. Given DSOs' ongoing investment volumes and the long lifespan of the assets (i.e. slow depreciation), it is quite common that utilities have negative cash-flows. As a result, they dedicate significant efforts and resources to financing their investments using external funds.

This is not the only reason for accessing funding, however. In some cases, the approach to the calculation of the WACC could also provide incentives for regulated companies to increase the volume of debt. For example, if the NRA were to decrease the WACC, companies could increase their incentives to favour debt over equity to reflect this reduction.

One important point is that several of the components discussed above depend on the regulatory framework (e.g. net benefits and (regulatory) depreciation). For a company to have an efficient access to financial markets, it is crucial that this framework is predictable and supportive and provides stability for long-term investments. Otherwise, it would constitute a barrier to the efficient access to finance as 1) DSOs would be uncertain about the amount they need to finance using external sources and 2) financial providers would have less certainty about whether/when they will be able to recover their funds which would result in higher interest rates (if they lend at all).

Spain: Access to finance by small DSOs

An illustrative example of the challenges related to internal financing faced by those small DSOs by CIDE in Spain.

Given their size and turnover, many of the companies within CIDE are not required to have their accounts audited, which restricts their access to commercial financing (in contrast to larger companies that benefit from credit ratings). As a result, the cost of debt for these firms is significantly higher than that faced by larger, rated DSOs. In practice, they often rely on personal loans or mortgage-backed loans (in the case of real estate) to finance infrastructure investments—mechanisms that involve higher interest rates and less favourable conditions.

As a result, these distributors, which operate predominantly in rural areas, are characterized by a high dependence on equity capital. However, the assumptions used by the regulator when setting the WACC do not reflect their operational reality. On the one hand, it assumes a level of leverage significantly higher than what these companies maintain. On the other hand, because of the effect above, the regulator systematically underestimates the real cost of external financing they face.

opportunity costs of investing need to be covered i.e., by investing in a company they forgo the chance to invest in anything else.

This dual misalignment—both in leverage and in the cost of debt—results in a WACC that is considerably lower than what would be required to ensure their financial sustainability.

This not only limits their ability to generate sufficient internal funds for reinvestment, but also undermines the viability of their financial structure, particularly in a context of growing investment needs that are often not accompanied by corresponding regulatory adjustments.

This situation is exacerbated by delays in remuneration payments from the administration, generating cash flow uncertainty and forcing these companies to negotiate extended terms, ultimately increasing their financial costs. Taken together, all these factors severely hinder the ability of small DSOs to meet the capital requirements needed to address the energy transition without external support. Their experience highlights the urgent need for regulatory approaches and financial mechanisms tailored to more accurately reflect the specific characteristics and constraints of small-scale operators.

2. Limitation on the access to finances coming from external sources

When considering access to financial markets, a basic pre-requirement is that DSOs will need to be able to pay the returns required by the market given their risk levels. Therefore, it is important that NRAs reach the right balance between protecting consumers / competitiveness and the capacity of the companies to obtain the funds they require to deliver their investments. Therefore, it is important to ensure that the allowed return on capital considers the reality of the market and the volume of funds the company needs to obtain. Furthermore, when considering how to protect consumers, NRAs need to take a broad view that consider that:

- Consumers and competitiveness are protected by ensuring they do not pay for unnecessary assets, but...
- they are also protected when they can access the services they require at each point (i.e. if by reducing tariffs, NRAs reduce the possibility that relevant services are provided, they would not be protecting consumers' interest) and
- the investment in the sector generates externalities which would bring additional benefits for the economy.

These limitations can arise from the capacity of the DSOs to participate in markets providing specific financial products or they could arise from characteristics of those financial markets in themselves.

2.1. Limitations arising from the DSOs' capacity to participate in markets providing financial products

There are essentially only two options for external finance: debt or equity. Many DSOs are financing their investment programs with additional (long-term) **debt**. Using longer term debt is sensible as the

capital will be bound in the assets for quite a long time. Locking in one interest rate for the whole lifetime would potentially create inefficiencies though as interest rates might be lower (but also higher) throughout the useful lifetime. DSOs use various debt instruments such as bonds that are bought by institutional or retail investors, private placements with institutional investors and traditional loans from commercial or institutional banks. DSOs that belong to a larger group can often also call upon intra-group loans which are available because the group holding refinances itself on the capital market and can lever its size to obtain better financial agreements. This is commonly complemented with a financial buffer in the form of short-term credit facilities (whether or not guaranteed). If it is impossible or undesirable to cover the entire external financing requirements with debt, an **equity** injection is basically the only alternative, apart from a few hybrid solutions that we will discuss briefly below. Each of these forms of financing comes with a specific cost.

Debt acquisition programs can be costly and complex for smaller DSOs

Accessing the debt markets would come with some transactional costs (e.g. contacting debt providers, negotiating the terms or provision of necessary information). These costs will increase with the complexity of accessing those markets (normally associated with the size of the amount to be borrowed).

To illustrate this effect, this paper considers some requirements necessary for setting-up an EMTN (European Medium-Term Notes). This program is complex and costly for small European DSOs that cannot rely on the capacity and know-how of a parent company or sister companies. Examples of these complexities are:

- Certain instruments de facto require a **credit rating** from an international rating agency, like Moody's or S&P, which entails a cost and complexity.
- The international institutional market is most liquid for so-called '**benchmark size**' issues of at least EUR 500 million, which can be too large for small DSOs

If an EMTN program is too complex and too costly, the DSO concerned needs to rely on bilateral credit agreements without having the benefit of a book building process in which debt investors are competing with one another.

The benefits of belonging to a larger group can be restricted

DSOs that belong to a larger group can also be confronted with restrictions. When companies are part of a group of DSOs and/or utilities, there are different business models / options how to access to finances. On the one hand, the group could lever its size to obtain centralised finances more efficiently. On the other hand, the group could decide to use the relationship of the different parts of the group with local financial providers to obtain more tailored financial products. Most groups will use a combination of these two extremes where they find their efficient level of centralised vs decentralised finances. From the group's perspective debt is debt tough i.e., if the subsidiary taking the debt is fully consolidated its debt is considered fully when assessing the group's overall financial performance and stability.

The regulation can, for example, demand a **ring fencing** of the debts (usually out of fear of alleged cross-subsidization). As a result, the financial situation of a DSO should be considered as a stand-alone

company. This has the advantage that it protects consumers from situations where the DSO is used as a source of finance for other activities that could put consumers of the DSO at risk of paying higher bills. However, it also complicates intra-group loans or at least limits the synergy benefits associated with them.

This also applies when ring fencing is not so much demanded between companies, but also between activities. DSOs with a multi-utility approach can be limited when it is made impossible for them to enjoy the synergy benefits of cash pooling systems across their activities for financial strength.

Legal and regulatory frameworks may hamper the possibility to strengthen equity

First and foremost, when debt levels rise too fast and an equity injection is deemed necessary, the **legal framework** must allow for the strengthening of equity. Legislative restrictions can limit or even prohibit the arrival of new shareholders (e.g. in Austria, there is a constitutional requirement that at least 51% of the ownership of the DSOs remain in public hands which limits the capacity of these DSOs to expand their equity)⁹. This puts DSOs in some kind of stalemate.

And even if the legislative framework allows for equity injections, a regulatory framework that prevents DSOs' from having a **profitability** in line with the market, makes it de facto impossible to attract additional equity, since both private and government investors will expect a sufficiently competitive return on their investment. After all, in most circumstances they will have to borrow themselves to contribute the funds and will therefore weigh the profit prospects against their own financing costs. Note that it is not enough for the returns to be in line with the market; the regulatory framework must also allow profits to be distributed (at least partly) to the shareholders.

Not only is the total return important, but also the **incremental return**. If investors are required to provide additional equity but the regulatory system does not provide additional returns (i.e. that additional equity is not used in new investments which would result in a grow of the RAB), they will have limited enthusiasm once that they either must contribute additional funds that do not lead to additional profit distributions or relinquish part of their profits to new shareholders.

Finally, investors in equity will require a transparent and predictable regulatory framework. A legal framework and/or tariff methodology that changes frequently increases uncertainty and thus reduces the attractiveness of the DSOs as an investment.

More specifically, the degree to which investments are translated into the **RAB** (Regulated Asset Base) in a timely manner is an important parameter, since the RAB forms the basis of the remuneration system in most regulations. Interventions by regulators who attempt to slow down the resulting RAB growth when investments pick up, jeopardize the growth potential of the DSOs and the associated returns on invested capital, which in turn leads to low returns per capital invested and therefore a low attractiveness for investors.

⁹ See Complete legal provisions for ownership structures of companies in the Austrian electricity industry, version of 21 March 2025 as available in <https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10007996&FassungVom=2025-03-21>

Regulatory frameworks could also affect the capacity to access debt and the balance between debt and equity

In addition to the effect of the regulatory framework on the acquisition of equity, it can also affect the acquisition of **net debt**. On the one hand, regulatory restrictions can prevent DSOs from taking on higher debt on the balance sheet, but on the other hand, regulations may also lack the necessary incentives to keep DSOs' debt ratios manageable and thus keep the financial ratios sufficiently favourable. For example, a remuneration of equity that does not conform to market conditions can lead to additional debt being the only realistic option, even if that leads to an undesirable deterioration of creditworthiness.

Equally, if strict regulation weighs heavily on the profitability of DSOs, this limits debt capacity as debt providers would consider the profitability as an indication of the capacity to recover their funds.

DSOs often face limitations when considering hybrid solutions

In addition to pure debt and equity products, there are also various instruments that are somewhere in between equity and debt. These instruments face some of the challenges discussed above once they are part debt and part equity, but they could face some extra difficulties.

If the regulatory framework and/or the circumstances allow, a DSO could consider issuing a **hybrid bond**. These bonds could take the shape of a bond that remunerate investors only when certain conditions are met. As a result, they can be placed in balance sheet as quasi-equity. It is a relatively complex instrument that may be difficult for independent DSOs of limited size to use. A hybrid bond is also more expensive than ordinary bonds. If the regulation does not follow the half debt/half equity logic or does not provide coverage of the extra cost incurred, additional costs will be borne by the shareholders. Finally, the hybrid market is often volatile, which brings with it uncertainty when refinancing is deemed necessary.

Another well-known instrument is the **convertible bond**. Many of the limitations already mentioned also apply to this instrument. The most obvious condition is that the legal and/or regulatory framework must allow the bondholder to become a shareholder at a given moment.

France: EIB financing of EDF

As heavy investments put a strain on the DSOs' leverage ratios, which could impact their external ratings and cost of debt, there is a growing appetite for hybrid bond issuances, due to their equity component. EIB has participated in hybrid bond issues in the past (such as with Engie and Red Electrica). For electricity DSOs, the track record shows, up to now, senior bond participations to be more frequent.

An example of this is EIB's participation in EDF's green bond issue under its green bond framework in June 2024¹⁰. With an €150m investment in the €3bn multi-tranche green bond, EIB's contribution represented 12% of the financing for the € 1.25bn senior longer-term tranche (20 years).

The EIB's "Green Bond Purchase Program", debuted in October 2023 with Valeo¹¹, aims at scaling up the use of capital market instruments for financing EU Taxonomy-aligned green investments. As such, the Promoter of the underlying financed projects have to commit that the EIB proceeds are indeed used for this purpose. In EDF's case, these financed electricity distribution investments in France.

EIB's investment in green bond issuances expands the issuers' green investor base and diversifies funding sources. It also has a strong crowding-in effect, attracting long-term financing from public debt markets for green investments and providing an enhanced level of visibility over the success of the issuances.

2.2. Limitations arising from characteristics of the financial markets

The size of the banking market a DSO has access to could affect its investment possibilities

Linked with the difficulties to accessing debt finances as identified above, it is important to consider that the **size of the national financial systems** that DSOs can call upon can also constitute a barrier. The bond markets are organized on a continental level, but the markets for traditional loans at **commercial banks** often still function on a national level. To address this issue, the European Commission has launched its "Savings and Investments Union" initiative.¹² However, a potential barrier to that integration is caused by the asymmetries of information between national and foreign banks about national clients. The complexities of the energy sector, regulation and the shareholder structures of the DSOs are all elements that can make foreign banks reluctant to finance DSOs with which they are less or not at all familiar, or at least to do so under sufficiently attractive conditions. The same limitation applies for retail bonds.

By definition, these (national) restrictions do not apply to international **institutional banks** such as the EIB (European Investment Bank). The key question for both national and institutional banks, however, is how they can meet the growing aggregated need for bank debt by utilities in the overall economy (i.e. by DSOs as well as utility sectors).

Furthermore, when considering loans, banks also face regulations about risk exposure. Therefore, considering the volumes that will need to be financed, banking regulation itself might become an obstacle. This is the case as banks are obliged to manage their (credit) risks – inter alia also the so-called counterparty risk i.e., de facto any single bank only lends a fraction of its overall credit

¹⁰ [France: EIB invests €150 million in EDF's €3 billion green bond issue on 11 June 2024](#)

¹¹ [Valeo Automotive Green Bond Framework](#)

¹² For further references see https://finance.ec.europa.eu/regulation-and-supervision/savings-and-investments-union_en

outstanding to a single counterparty to avoid that a failure of any credit or counterparty challenges the financial health of the financing bank itself.

The regulatory framework uses financial assumptions/requirements that could distort financial decisions

In addition to the points discussed above, the stability of the regulatory framework is part of the risk assessment undertaken by rating agencies, banks and investors. Therefore, DSOs need to have a transparent and predictable regulatory framework that guarantees that costs can be recovered in full and on time via the tariffs.

Credit rating requirements and methodologies could affect the financial structure of the company

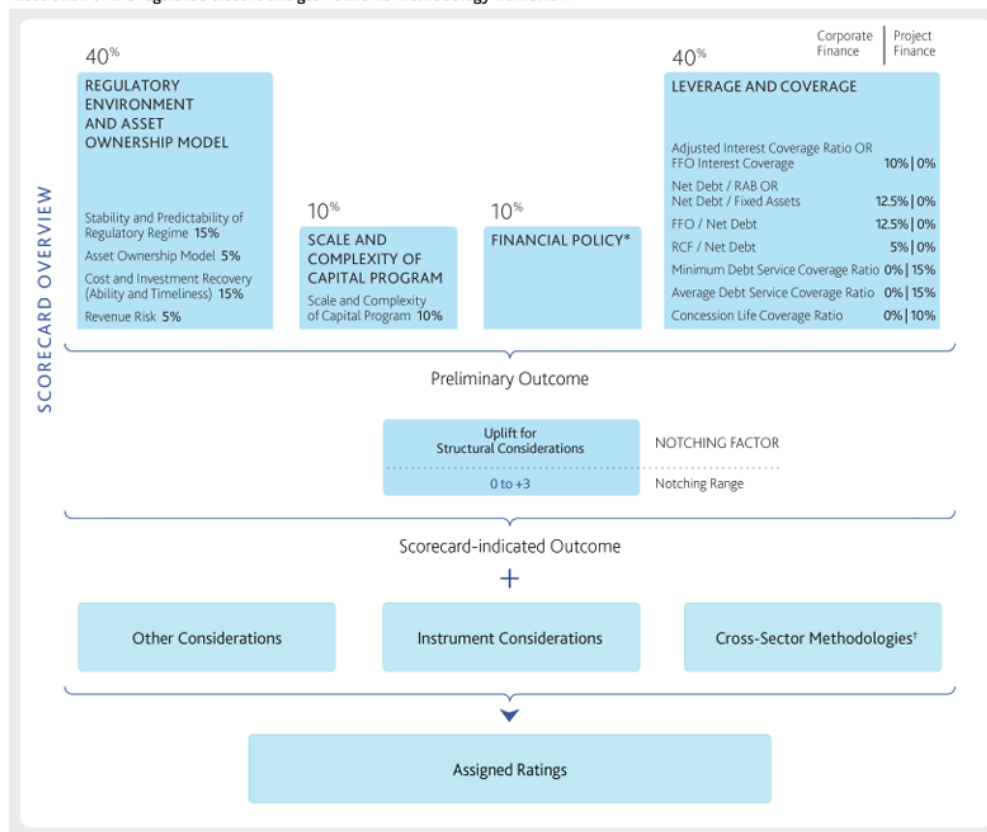
Even large DSOs that can rely on large, robust financial systems have their limitations. Banks and bond investors as well as equity providers have one thing in common: they keep a very close eye on the financial ratios of DSOs, with (operational) cash flows, net debt and the relationship between the two taking centre stage.¹³ These ratios are crucial in the assessment of creditworthiness by international rating agencies such as Moody's and S&P.

Therefore, keeping these ratios is important for companies to have efficient access to different finance sources. As a result, companies could modify their financial decisions to ensure they keep the necessary ratios. To illustrate these potential effects, the diagram below shows that a summary of the approached used by one of these rating agencies (Moody's in this case) of the methodology they use to assess the creditworthiness of a company:

¹³ Another KPI that is often used and communicated by companies as a financial target is the ratio between debt and EBITDA. Companies that have a strongly regulated income are considered to have a highly stable EBITDA therefore they can "afford" a bit more debt per EBITDA than mixed utilities as the income from retail activities is considered to be more volatile.

Exhibit 1

Illustration of the regulated electric and gas networks methodology framework



* This factor has no sub-factors.

† Some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

Source: Moody's as available at <https://ratings.moodys.com/api/rmc-documents/386754>

In addition to considering, as discussed above, the regulatory environment where the company operates, it also considers financial ratios about leverage and coverage. For example, the amount of net debt that can be maintained on the balance sheet for a certain credit rating is highly dependent on other parameters, like FFO (Funds from Operations) and RAB. So, if a regulatory framework limits the cashflows and/or the RAB-growth (e.g. investments caps in Spain), this limits the amount of net debt that can be used to finance investments.

In addition, credit rating agencies could need to reconsider their methodologies to ensure they consider the characteristics of the energy sector in Europe. For example, the existence of national guarantees or specific public funding should be considered when evaluating the risk of the DSOs.

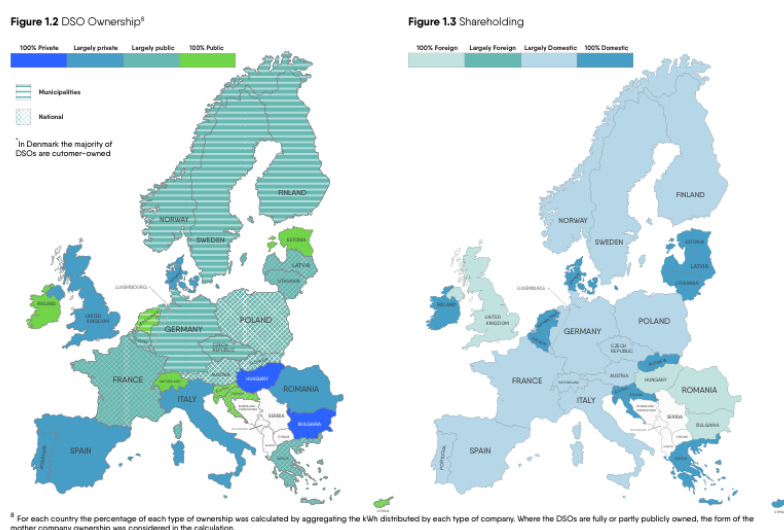
3. Characteristics of the DSOs and potential effects on finances

When developing measures to support the access to funding by DSOs, it is not only necessary to clearly identify the potential barriers but also to consider the intrinsic characteristics of these companies that could affect these barriers and the potential ways of addressing them. Therefore, this section will discuss some of these characteristics and the effect they could have on the financial operations of the company.

3.1. Ownership structure of the DSOs

The first of these characteristics is the ownership structure of the DSOs. As a result of their historic evolution, the ownership of the DSOs is quite heterogenous. In view of this heterogeneity and the impact it can have, this section considers two dimensions: public¹⁴ / private ownership and individual vs group DSOs.

To illustrate the heterogeneity among the DSOs in the different European countries, the diagram below shows ownership structure in the different countries:



Source: Eurelectric (2020) *Distribution Grids in Europe: Facts and Figures 2020*

This diagram illustrates significant differences between countries with some or all DSOs (e.g. those in Ireland, the Netherlands or Estonia) still being fully publicly owned, while others (e.g. Hungary or Bulgaria) where the majority of DSOs are fully privately owned. Furthermore, it also shows that among

¹⁴ When referring to public companies, this paper refers to companies owned by (local or national) governments. No explicit consideration is made to the effect that being a company floated in a stock exchange (commonly named public companies) will have to the capacity of a company to raise equity.

those that are (fully or partially) publicly owned, they can be either owned by one of more municipalities or by the central government.

In addition, another source of heterogeneity arises from the level of integration of DSOs. In some cases, DSOs are stand-alone organisations while in other cases they are integrated/co-owned by other DSOs or by a conglomerate of companies (e.g. conglomerate covering gas, municipal companies, electricity, water, etc). Being part of a conglomerate of DSOs and/or companies has the advantage of increasing the size of the company which could facilitate access to additional financing sources but, in parallel, it could also result in the need to compete for the limited resources of the company (e.g. a DSO owned by a local government could need to compete for funding with the water, transport or gas grids).

This heterogeneity could generate a number of effects in the capacity of the companies to access funding. Some of these examples have already been discussed above (e.g. potential legal limits to access debt, ring fencing requirements or DSOs belonging to a group that have access to centralised finance). However, another effect that has not been discussed is the **capacity and willingness to provide or accept new equity. This effect can be divided into two different parts:**

- **Dilution effect:** current owners could prefer not to dilute the control they have over the company by accepting external equity (e.g. DSOs publicly owned where there is not a will to privatise the activities). In addition to control, equity owners could oppose to increase the volume of equity or the balance between in equity and debt as that could deviate some of the dividends to pay new equity owners and/or lenders. Current owners use these dividends as their own financing source (e.g. local government could use those dividends as part of their annual budget and pension funds could require them to pay annuities to their members). Therefore, they could be unwilling/unable to accept a reduction in their returns to accommodate new equity owners.
- **Capacity effect:** current equity providers may not have the resources to provide additional equity (e.g. the public sector could be unable to direct additional taxpayers' money into these activities or private owners could be unable to divert the necessary cashflows into these activities).

3.2. The size of the DSOs

A second characteristic of DSOs that could distort the access to financial resources is the size of the company. This will be strongly linked to the point above as a small DSO could be member of a larger DSO group which could facilitate the access to funding, especially if the finances of the group are centralised.

The diagram below shows the number of DSOs (in 2020) in the different member states as well as the percentage of electricity being served by the largest 3 DSOs in the country.

Figure 1.1 Level of DSO concentration

	Country	Code	Number of DSOs	Number of legally unbundled DSOs
	Austria	AT	126	11
	Belgium	BE	16	12
	Bulgaria	BG	4	4
	Croatia	HR	1	1
	Cyprus	CY	1	1
	Czech Rep.	CZ	290	3
	Denmark	DK	40	10 ¹
	Estonia	EE	24	1
	Finland	FI	77	9
	France	FR	144	6
	Germany	DE	883	80
	Greece	GR	1	1
	Hungary	HU	6	6
	Ireland	IE	1	1
	Italy	IT	128	8
	Latvia	LV	11	1
	Lithuania	LT	6	1
	Luxembourg	LU	4	1
	Malta	MT	1	0 ¹
	The Netherlands	NL	6	6
	Norway	NO	119	7
	Poland	PL	184	5
	Portugal	PT	13 ¹	1
	Romania	RO	51	8
	Slovakia	SK	3	3
	Slovenia	SI	1	1 ¹
	Spain	ES	354	5
	Sweden	SE	110	6
	Switzerland	CH	630	0
	United Kingdom	UK	74	6
	Total		3339	165

¹ The figure represents the number of DSOs that are not part of a company with power retailing activities. All DSOs are functionally unbundled.

² Malta benefits from the exemption from the requirements of Directive 2009/72/EC: the Maltese Electricity Market Regulations require unbundling at an internal accounting level only.

³ In mainland Portugal 10 DSOs operate exclusively LV lines. Only 2 DSOs operate on the islands and do not have to be legally unbundled.

⁴ The Slovenian DSO – SODO d.o.o. – is leasing the infrastructures and services from 5 Distribution companies.

Low concentration	Medium concentration	High concentration	Very high concentration
Many small, local DSOs. The three largest DSOs usually deliver less than 50% of distributed power	A mix of DSOs, with the three largest accounting for more than 60% of distributed power	One dominant DSO (more than 80% of distributed power) and several local DSOs	One DSO company



Source: Eurelectric (2020) *Distribution Grids in Europe: Facts and Figures 2020*

This diagram shows the large disparity in terms of numbers of DSOs in each country and their concentration. This ranges from countries with one single DSO such as Ireland or Greece to countries with a large number of DSOs with low concentration (Germany being the main example). Intermediate examples are countries such as Spain with a large number of DSOs but with a relatively larger concentration supported by a fringe of small companies.

As with ownership, it is possible to identify different mechanisms that could distort the finance of the company depending on the structure of the market:

- Minimum volume required to operate in a set market: some financial markets/and or lenders will require a minimum size of funds that need to be raised (e.g. minimum size of a bond). Therefore, small companies are less likely to reach this minimum size.
- Complexity of accessing financial markets: some of these markets require high level of expertise to raise funds. Therefore, smaller companies or those who do not use these mechanisms often could lack the (access to the) capacity and knowledge to accessing to more complex forms of fundings such as stock exchange, complex funding, European funding, etc

All these effects, however, point in a similar direction, i.e. that smaller companies are more likely to have difficulties accessing to finances.

3.3. Reliance on corporate finance

A last characteristic to be considered is that DSOs often rely on corporate finance instead of project finance. Contrary to TSOs (typically not part of a group or holding structure), which are able to undertake large separable investments (e.g. interconnectors), in most cases DSOs have focused on evolving their existing grids which has resulted in solutions that did not require fully new and separated investments but more adaptations of the current grid. In addition, DSOs are (more) often

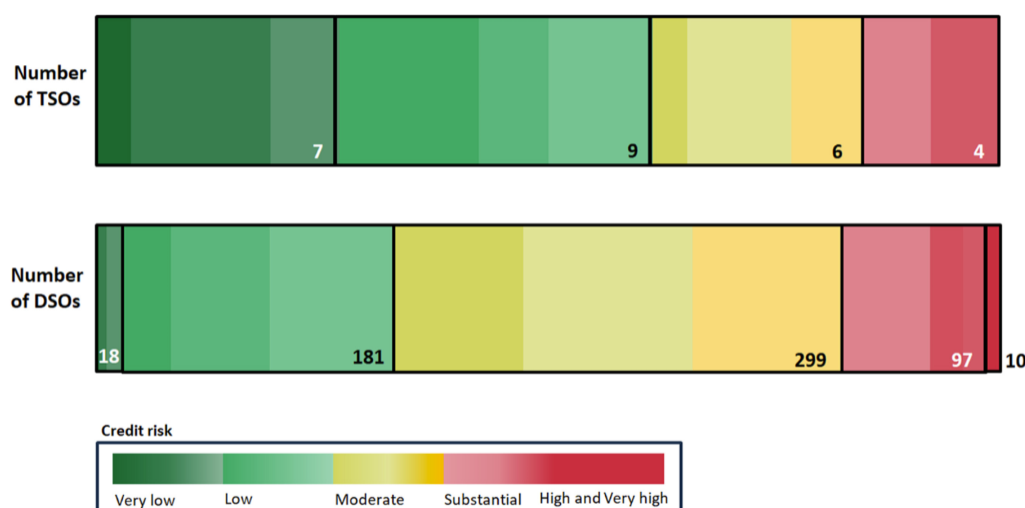
part of a group or holding of companies than TSOs. Therefore, as discussed above, DSOs can have access to additional funding sources as the centralised entity accesses financial markets and then allocates the financing between the different subsidiaries.

Furthermore, as discussed above, the size of the financial needs of the DSOs has also forced the use of this corporate approach. Following discussion with investors, a normal size of an investment ticket is in the hundreds of millions of euros. Therefore, most medium and small DSOs will not be able to access that finance source all together (once their whole asset base is below the expected ticket size). For some medium and large DSOs, however, it could be possible to access to these sources but always combining its investment to be financed as a whole. For example, in the Czech Republic, ČEZ received a 400 million loan from the European Investment Bank that they plan to use to cover a range of activities such as refurbish electricity networks, install remotely controlled energy-supply systems and build infrastructure that can integrate new renewable-energy sources such as solar and wind power.¹⁵

3.4. Current credit rating

As discussed above, the credit rating of a company plays an important role in their access to the debt market. Therefore, a low credit rating could constitute a barrier to the access to the debt market. In a recent paper, the European Court of Auditors considered the implied credit rating for 631 grid operators.¹⁶ In that study, they found that DSOs appear to have higher risk of being at a substantial to very high risk of defaulting on their financial obligations than TSOs as shown in the diagram below.

Figure 20 – Credit risk landscape: stable for TSOs, riskier for DSOs



Source: ECA, based on the most recent data available in the ORBIS database (2022 or 2023).

¹⁵ See <https://www.eib.org/en/press/all/2024-481-czech-electricity-grid-to-get-upgrade-with-eur400-million-eib-loan-to-utility-cez>

¹⁶ European Court of Auditors, 2025, Making the EU electricity grid fit for net-zero emissions. Available in https://www.eca.europa.eu/ECAPublications/RV-2025-01/RV-2025-01_EN.pdf

Of those considered, around 34% of DSOs (which together serve more than a quarter of the customer connected to the grid analysed) are in the lowest credit rating tiers. Therefore, accessing the debt market can be challenged by those low credit ratings. In fact, the same report indicates that to reinforce their balance sheets, grid operators are employing strategies such as selling non-core assets, recapitalisation or issuing hybrid debt securities.

When considering potential mechanisms to facilitate the access to external funds, it will therefore be important to consider the interactions between credit ratings and debt, i.e. an increase in debt that deteriorates credit KPIs would reduce the credit rating and a reduction in credit rating would limit and/or make more expensive the access to additional debt.

4. Main findings: a summary

- The legal and regulatory frameworks can constitute a barrier if they do not provide sufficient predictability on the revenues of the company and/or allow/facilitate attracting the necessary funds to either operate using internal funds or making the investment feasible and attractive to external investors.
- When the sum of investments per annum is larger than the amount of funds that is being collected from revenues in terms of depreciation internal finance is increasingly less an option i.e., external sources must be used to collect either additional equity or debt.
- Affordability (from the consumers' point of view) and financial attractiveness of a DSO (from an investors' point of view) are potentially conflicting targets. For instance, the NRA might opt for longer depreciation times to lower the revenues and thereby the fees consumers pay on a yearly basis. Following that strategy at the same time lowers the EBITDA generated and therefore can constitute a (debt) financing obstacle. If competitive fees or affordability are an issue some external financing options might need to be analysed (e.g., the German "Amortization Account" concept in hydrogen). These options, however, come at a cost and it is important to emphasize that risks involved need to be taken into account
- When considering the growth of the debt in a company, it is necessary to keep an eye in the amount of equity once those two components should maintain the right balance (as discussed above) to create an efficient financial structure.
- Solutions need to be developed using realistic assumptions about the environment where DSOs operate, i.e. from the size of the banking sector, the regulatory framework and the characteristics of the DSOs. Some mismatch might exist in terms of ticket size i.e.; most institutional investors look for larger volumes per engagement than necessitated by smaller DSO financing volumes.
- Attracting additional equity can be limited by the dissolution it causes in the profitability and the control of the current owners.
- More costly and complex debt mechanism could provide more efficient solutions, but they could be unreachable for some DSOs on a stand-alone basis. Therefore, potential solutions should consider these challenges, as well as those based on the characteristics of the DSOs in each member state.

5. Potential options for addressing financial barriers

Considering the potential barriers identified above and the heterogeneity of the DSOs (in terms of ownership, concentration, size and eventually access to financial markets), any mechanism that aims to facilitate the access to finance by DSOs should be tailored to the specific objective and the overall characteristics of the DSOs that are being targeted.

Therefore, when designing these mechanisms, the first step would be to identify the specific objective that should be achieved (i.e. what barrier one is aiming to remove). Once the objective is identified, the mechanism will need to be tailored to the characteristics of the DSOs and the framework where they operate (e.g. national laws and regulations).

To illustrate these potential mechanisms, the table below identifies potential (high-level) mechanisms that could be used to achieve certain objectives (this table does not pretend to be the only solutions available to achieve those objectives):

Objective	Potential mechanism	Example of potential mechanisms
Increase the capacity to finance investment using internal finances	<p>To reduce the DSOs' need to use external funds, the regulatory framework should facilitate the creation of internal funds. This, however, does not necessarily translate in a need to increase the profit of the company (or reduce dividends). Any mechanism that can be used to incentivise DSOs to increase efficiency and/or innovation could have this effect if properly arranged. Examples of regulatory tools facilitating efficiency and innovation are:</p> <ul style="list-style-type: none"> - Benefit sharing mechanisms: By allowing that DSOs share on improvements in efficiency, these mechanisms would facilitate that DSOs can retail funds that could be used for additional investments. - Reward focused incentives: when companies are rewarded when delivering or surpassing set KPIs, these additional revenues could be used to finance additional investments. - Ensure recognition of assets in RAB: As indicated in our paper on Anticipatory Investments, in many regulatory frameworks there is a delay of costs being included in the RAB which results on DSOs being asked to finance those investments without consumers' contributions. As a result, that financing 	<p>Germany: Mechanism to smooth effect on tariffs – Amortisation account</p> <p>In Germany the construction of a national hydrogen core network (Kernnetz) on behalf of the German Federal Government is supported by the so-called amortization account which is financed via the (federally owned) KfW bank. By financing a new instrument - the amortisation account - KfW will be making a significant contribution to the implementation of this technology of the future. KfW is providing a loan for the amortisation account in the amount of EUR 24 billion.</p> <p>The core network is generally a regulated asset owned by multiple parties</p>

	<p>capacity is not available to invest in new assets.</p> <p>In addition, another method to increase internal funds is to increase depreciation. There are generally two ways to increase the depreciation inflow:</p> <ul style="list-style-type: none"> - cutting imputed lifetimes on the assets (i.e., depleting the existing asset base faster) or - increasing the asset value (accounting step-up¹⁷ that is recognized in regulation). <p>Both create a higher cash-flow i.e., more funds are being generated which generally increase the DSO's ability to invest. Some NRA who allowed DSO to generate more cash (by allowing step-ups on their asset-base for instance) have done so only under the prerequisite that the DSO guaranteed to invest the additional funds.</p>	<p>that is to be financed privately. The main purpose of the amortization account lies in capping future network fees, enabling the Federal Network Agency to ensure that the costs for users are affordable from the outset and hydrogen is not priced out of the market because of too high network fees. A compensation mechanism will finance the difference between the high investment costs of the core network operators and the low revenues from network fees in the initial phase. KfW will provide the necessary compensation payments for the amortisation account. As soon as the hydrogen core network operators' revenue from the network fees exceeds the costs, the additional revenue will be returned to the amortisation account.</p> <p>For the hydrogen core network, existing natural gas pipelines will be repurposed and new hydrogen pipelines built. Integrating potential hydrogen production sites and connecting key</p>
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¹⁷ Step-ups that were undertaken in the past almost always were based on the argument that privatization values did not represent the true value of the asset-base. Implying that the economic development of a region made the (existing) grid more valuable than previously anticipated. Some countries actively rule out this option e.g., Germany where § 6 (6) of the (soon to be replaced) Stromnetzentgeltverordnung explicitly defines that the residual value of an asset that has been in the asset base longer than its imputed lifetime is zero and that any revival of an asset value is forbidden.

		industrial centres will enable the industrial use of hydrogen as a climate-neutral energy source. Some 9.000 km of pipeline are to be included in the core grid.
Increase the equity in the current DSOs	<p>To facilitate the access to equity by DSOs, it is important to consider the current ownership structure and legal framework of the DSO and adapt the solutions accordingly. Examples of mechanisms that could be put in place are:</p> <ul style="list-style-type: none"> - Direct investment by the national and/or regional governments in publicly owned DSOs: In this case, public institutions obtain a share in the ownership of the company. Different measures can be put in place to address the issues discussed above. For example, this equity could be acquired without voting rights.¹⁸ - Direct grants/loans to current owners: Financial facilities could be created to allow current owners (i.e. local governments and/or private owners) to obtain grants or borrow funds with the compromise that those funds will be used to increase equity in DSOs (the equity in the DSO could be even used as a collateral to these loans). - “Aiming up” when developing regulatory returns on equity: Considering this risk, papers such as Dobbs (2011)¹⁹ showed that the risk of going too low in the estimate of the return on investment could have larger (negative) impact on consumers than its overestimate. As a result, some regulators have used an 	DSOs owned by public institutions would undertake this every time they receive an equity injection. These could be simple examples of direct investment by the national and/or regional governments. However, no mechanism has been identified that would facilitate these government bodies to obtain the necessary cash. Supranational institutions such as the European Investment Bank or the European Bank of Reconstruction and Development would not normally provide equity in the sector.

¹⁸ It is rather improbable that public authorities would forgo their voting right without asking for a compensation (on the contrary when the German federal government saved banks or energy importers lately it usually has been asking for quite attractive conditions /returns on its capital injections). So, if public authorities were to forgo their voting rights or grant a buy-back option to the original equity holders they would probably be asking for an “aluid”, i.e., guarantee dividend etc. creating a kind of subordinated debt of high priority.

¹⁹ Dobbs, Modelling welfare loss asymmetries arising from uncertainty in the regulatory cost of finance, Journal of Regulatory Economics, February 2011.
https://www.researchgate.net/publication/227347375_Modeling_welfare_loss_asymmetries_arising_from_uncertainty_in_the_regulatory_cost_of_finance

	<p>“aiming up” approach where regulators set the allowance for the weighted average cost of capital (WACC) above the expected or central estimate of the true WACC. This approach facilitates that companies acquire the external finance they require from the market as it de-risking the investment (i.e. they allocate a larger share of the uncertainty around the estimate of the WACC would remain with consumers).</p>	
<p>Reduce consumers tariffs by reducing financial costs to avoid problems of affordability (for residential consumers) and competitiveness (for business consumers).</p>	<p>Public funds could be used to reduce the financial costs faced by the DSOs with the objective to achieve a reduction in the overall tariff going to consumers. This could be done via solutions such as:</p> <ul style="list-style-type: none"> - Provision of cheaper access to debt: This could be done in a number of ways that would range from providing loans in better conditions than those in the market (e.g. lower interest rates, longer duration etc) to providing guarantees to lenders to mitigate the risk perceived by lenders; thereby lowering interest rates. - Use of regulatory tools to de-risk investments: Regulators have tools that could be used to de-risk future investments (e.g. mechanism to re-open the revenue allowance to account for additional (totex) costs). Therefore, these mechanisms could be used, as part of a predictable regulatory framework to mitigate risk which would result in lower financial bills for consumers and businesses. - Loans aimed at smoothing the effect of investment on tariffs for (specific groups of) consumers: These would not be social tariffs but situations where short-term increase in tariffs caused by, for example, investment taking place before demand fully materialise, could be partially paid by a financial facility which would recover these loans once that demand materialises and tariffs include the effect of the economics of scale. An example of this mechanism has been used to 	<p>Multi-lateral institution: Provision of guaranties to national banks to de-risk investments</p> <p>Multilateral institutions like the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB) have a number of tools they use to facilitate that companies (including DSOs) have more efficient access to finance. These tools can include:</p> <ul style="list-style-type: none"> • Incentive grants encourage entities such as financial institutions, governments and sub-borrowers to invest in a particular area. • Risk-sharing instruments, including guarantees, expand their investment outreach in countries or sectors where market conditions make financing

	<p>facilitate the deployment of the hydrogen network in German. A more detailed explanation is provided below.</p>	<p>difficult for borrowers and potential co-investors.</p> <ul style="list-style-type: none"> • Concessional loans are available to extend tenors and grace periods. They can also be extended on below-market interest rates to enable more accommodating financing terms. • Concessional equity, where an equity provider agrees to accept a lower return for the risk undertaken or buys the equity at a less favourable price or on less favourable terms than commercial investors to mitigate risks of an equity transactions. <p>By facilitating the access to finance by DSOs, these multi-lateral institutions reduce the DSOs' financial costs facilitating the investment and innovation.</p> <p>An important challenge, however, is the difficulty that these organisations have to reach medium and small DSOs. Additional work is required to</p>
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		facilitate this access to all DSOs.
Facilitate the access to additional debt by reducing the debt in the balance sheet of the company	<p>One tool that could help to obtain this objective is the creation of Special Purpose Vehicle (SPV). SPVs are normally used to facilitate that companies can manage the risk in their portfolio of investments. These tools can take different forms but always with the objective to take some assets (physical or financial) from the balance sheet of the company while facilitating a capital allocation (i.e. the capital can be re-invested in other assets).</p> <p>One prerequisite for such a SPV to be helpful is that it must “disappear” from the balance sheet of the DSO or DSOs involved instigating it, as otherwise it does not create any additional financial headroom. To that end no control must be exercised over the SPV (i.e., the share of the DSO can be 50% max. or below). Provided a share < 50% exists the SPV should be consolidated at equity. If the other parties in the SPV would albeit ask the instigating DSO to enter a long(er) term usage contract for the assets that are being financed by the SPV the situation gets more complicated again. While such long(er) term arrangements do not need to be booked under some local GAAP systems in Europe they constitute a “Long term liability” in IFRS/IAS. Probably this liability is smaller than the debt position that would have been created by 100% DSO finance. However, this accounting provision limits the utility that can be generated from the SPV.</p> <p>Two potential examples of SPVs are:</p> <ol style="list-style-type: none"> 1- An SPV associated to physical assets: This SPV would develop and implement a project for one or multiple companies (e.g. the implementation of smart meters or other technical solutions for all relevant companies). In this case, the SPV could be the owner and operator of this asset. As a result, DSOs would be able to pull needs into one single company and then acquire the services. 2- An SPV associated to financial assets: This SPV would transform some of the 	<p>UK: Times Tideway Tunnel This project was initially promoted by Thames Water, the largest provider of water and sewerage services in England and Wales and the main/only potential user of the asset. Thames Water oversaw the design, planning and procurement prior to construction. In 2015, after Ofwat awarded them with a licence to finance, build, maintain and operate the sewer, an external consortium took over the construction of the sewer. To help the private sector to finance this project at an appropriate price for customers, Government provided a number of guarantees to the investors. To finance the project, the consortium used:</p> <ul style="list-style-type: none"> • Injections from the shareholders of £550m as equity and a £750m loan (potentially convertible on equity at system acceptance). The loan is subject to an 8% coupon rate, designed to provide a return on the full £1.3bn – resulting in an

	<p>assets of the DSOs (e.g. some of its RAB or revenues allowed by the regulator but that were not recovered on time) into bonds (securities) that are sold to other investors. Under this process, an external party (the SPV) acquires these assets and create bonds that are sold to investors. Therefore, this process would transfer the risk associated with the assets to investors who purchase the securities. This reduces the DSOs risks (and assets) and liberate their capacity to raise additional funds. (see an example in the box below).</p> <p>When designing these tools, it will be important to consider a number of factors such as:</p> <ul style="list-style-type: none"> • Experience: As indicated above, DSOs (specially the small ones) could lack the (access to the) skill, knowledge and contacts required to profit of such a financial tool. Therefore, they would need to be supported to clearly understand their usage. • Regulatory objectives: The effect of these vehicles could vary very significantly depending on their structure and the interaction with the regulatory framework. A whole discussion about this interaction is outside of the scope of this paper but, for example, an underlying asset used as a collateral for this vehicle should be removed from the DSO's balance sheet which would result on a reduction of the RAB. • Accounting standards: One prerequisite for such a SPV to be helpful is that it must "disappear" from the balance sheet of the DSO or DSOs involved instigating it, as otherwise it does not create any additional financial headroom. To that end no control must be exercised over the SPV (i.e., the share of the DSO can be 50% max. or below). Provided a share < 50% exists the SPV should be consolidated at equity. If the other parties in the SPV would albeit ask the instigating DSO to enter a long(er) term 	<p>effective rate of 4.6%.</p> <ul style="list-style-type: none"> • £3.3bn in long-term debt was secured via the markets to allow the super sewer's construction. <p>The whole cost of the sewer will be repaid over the long term by Thames Water bill payers</p>
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	usage contract for the assets that are being financed by the SPV the situation gets more complicated again. While such long(er) term arrangements do not need to be booked under some local GAAP systems in Europe they constitute a “Long term liability” in IFRS/IAS. Probably this liability is smaller than the debt position that would have been created by 100% DSO finance. However, this accounting provision limits the utility that can be generated from the SPV.	
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When trying to bypass several of these barriers in parallel, it is possible to combine different mechanisms. However, in that case it will be crucial to consider whether there can be interactions between the different solutions to remove potential negative effects.

6. Principles to develop mechanisms to facilitate the access to finance by DSO

- **Regulatory frameworks must be designed to consider the effect they have on the capacity of the DSO to attract and retain capital thereby delivering the necessary investment (which in the end are a major lever to obtain security of supply)** – When designing and implementing regulatory frameworks, NRAs should consider that they will affect the DSOs need of external finance (by determining the internal finances) as well as the capacity to attract these finances. Therefore, it is crucial that NRAs ensure that DSOs can have an efficient system to obtain all inputs they require, including their access to finances.
- **The capacity to access relevant inputs (including finances) should be considered in the development of investment plans** – when developing/reviewing investment plans, DSOs need to ensure that they have the capacity to obtain the inputs they require for the delivery of the selected options. These inputs range from building licenses to specialised workers, and it should also include the finances the company would require providing those investments efficiently.
- **While it should be an (implicit) target for the NRA to enable financing of the investment (plan), achieving net zero presents an extraordinary challenge that can imply the necessity to introduce additional financing mechanisms (for affordability reasons, limitations in attainable leverage etc.)** – DSOs should develop deliverable investments plans. As part of the consideration of whether a plan is deliverable, DSOs should consider whether they can be able finance the plan (based on their actual starting position).
- **Necessary and useful mechanisms include both (public) funding and mechanisms for creating an easier access to finance as well as combinations of the two (e.g., subsidized and especially guaranteed loans)** – when considering whether DSOs have access to finances, NRAs and public entities should consider potential mechanisms to deliver the necessary financial inputs. To protect consumers, they need to introduce mechanisms that facilitate this access. These mechanisms could include options that facilitate access to finance by reducing risks (e.g. de-risking the investment decision using uncertainty mechanisms or the financing option using guarantees), or facilitate affordability/competitiveness by reducing/ smoothing the amount to be recovered from consumers (e.g. via subsidies or public funds being used to synchronise the recovery of depreciation with the increase in demand of the assets).
- **Mechanisms for accessing finance should be tailored to both the objective to be achieved and the characteristics of the companies**– DSOs are very heterogeneous across a number of variables that include the size of the DSO (or the group of companies that procure the finances for the DSO), the ownership structure, their financial position (e.g. credit rating). Therefore, any solution should be tailored to account for these differences to ensure that it achieve the relevant policy objectives as well as the targeted DSOs.
- **Small DSOs seem to have the most limited capacity to access funding. As this is inter alia a problem of matching their financing needs to the average "ticket" size in the market, some form of cooperation will be needed. This, in addition, could create a portfolio effect, i.e. the overall risk premium faced by those companies could be reduced** – small (and to a less extend medium) DSOs will face more difficulties to access finances due to the constant

complexity of accessing those sources of funds. Therefore, it could be necessary to consider mechanisms and/or intermediary organisations to group their financial needs into minimum sizes required to participate in more efficient financial markets.

- **While at the moment a lot of funds are being acquired by the issuance of (additional) debt, the lack of mechanisms that facilitate the balanced access to equity in the long term could constitute important barriers for the long-term financing of the sector** – barriers to access equity could result on the incapacity to efficiently access to additional debt by DSOs. As a result, new mechanisms to access to equity (while protecting the interest of previous owners) should be developed to ensure the delivery of long-term investments.