

WORKING PAPER SERIES

Infrastructure Finance in the Developing World

Multilateral Lending Instruments for Infrastructure Financing

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The *Infrastructure Finance in the Developing World Working Paper Series* is a joint research effort by GGGI and the G-24 that explores the challenges and opportunities for scaling up infrastructure finance in emerging markets and developing countries. Each paper addresses a unique piece of the infrastructure finance puzzle and provides critical analysis that will give impetus to international discourse and play a catalytic role in the creation and success of new development finance institutions. The papers have been authored by top experts in their respective fields, and the process has been carefully guided by the leadership of both organizations. This work has important implications in the post-2015 environment, given the essential role infrastructure must play in achieving sustainable development. To this end, GGGI and the G-24 look forward to further development and operationalization of the contents of these papers.

Multilateral Lending Instruments for Infrastructure Financing

Stephany Griffith-Jones and Matthias Kollatz¹

1. Introduction

Multilateral development banks (MDBs) are especially well suited for infrastructure financing, as they can provide the long-term financing needed for infrastructure investment to become profitable, given the large scale of the initial investment and the long amortization time. Furthermore, MDBs can offer finance at a relatively low cost as they have very high credit ratings (typically as high as and sometimes higher than their member governments). Thus, they can borrow relatively cheaper on the international capital markets and pass on that cost advantage to their borrowers.

Before the North Atlantic financial crisis, private investors financed a fairly high volume of infrastructure in developing and emerging economies. Banks and other private investors granted loans with long maturities, which they then refinanced with shorter tenors on the capital markets. When the crisis emerged, the maturity mismatch turned out to be one of the causes of rapid contagion because refinancing was no longer possible. Eventually, many “good projects” experienced problems as well. Following the crisis, banks have reduced this maturity mismatch and new regulations will force them to do so even further. Though this is good for financial stability, it will reduce the supply of long-term private financing for infrastructure projects, especially in the short to medium term. This accentuates the “normal time” problems facing infrastructure finance in developing countries such as long tenors and big tickets, particularly in certain sectors and in low-income countries where risk is perceived to be high. This limitation of private lending, combined with the massive need for infrastructure development in the developing world as outlined by Bhattacharya and Holt in a

companion paper in this series, strengthens the case for both more and better financing by MDBs as well as the creation of new MDBs, such as the New Development Bank (NDB) and the Asian Infrastructure Investment Bank (AIIB).

MDBs face some restrictions in their ability to provide support to infrastructure (see the companion paper by Humphrey 2015), but nonetheless have numerous advantages in terms of financial terms, information, and ability to cope with risk, all of which can play a significant catalytic role. This will particularly be the case if MDBs move toward developing an appropriate mix of traditional long-term loans with other financial instruments to achieve project closure, such as equity investments, guarantees, or partnerships. MDBs have unexploited potential to ramp up the use of instruments that can leverage greater volumes of private sector lending. New MDBs, such as the NDB and AIIB, may find it easier to embed this mix of instruments from the start, whereas some existing MDBs are still struggling to move beyond the organizational culture and administration built around traditional loans. However, the developmental upside of non-traditional financial instruments is limited, and risks are significant. This paper reviews the use of different financial instruments at MDBs for developing the best mix to leverage financing for infrastructure provision in developing and emerging countries. Two parameters (maturity and scale) are simultaneously crucial for infrastructure development due to high upfront investment, long construction period, and long amortization time. Accordingly, financing by public banks and/or governments may be needed to overcome market gaps or imperfections, such as the lack of large-scale long-term finance.

In the past, a high share of infrastructure was financed by public budgets (mainly with grants), thus avoiding these problems. However, the demand for infrastructure cannot be served by budgets alone. In contrast, given the financial crisis since 2007–2008 and constraints on budgets in many countries across the globe, especially developed ones—which imply restrictions to aid flows—the share of investments financed by public budgets is expected to shrink rather than to increase. Furthermore, existing MDBs or regional development banks (RDBs), while playing a valuable role in funding infrastructure, can only finance a part of the vast needs for infrastructure financing of developing and emerging economies.

According to the paper by Bhattacharya and Holt (forthcoming), there are vast unmet infrastructure needs in both emerging and developing economies, which will constrain these countries' growth if not met soon and on a sufficient scale. Bhattacharya and Holt (2015) estimate the gap between current and required investment in infrastructure in those countries to reach US\$1–1.5 trillion per year for the core sectors only between 2014 and 2030.² The magnitude of the unmet needs provides a clear rationale for MDB activity to help fill this massive currently existing unmet gap in infrastructure financing.

According to the data in Bhattacharya and Romani (2013), public budgets contribute US\$500–550 billion p.a. in current infrastructure spending, the private sector contributes US\$150–250 billion, and the remainder is provided by national development banks, RDBs, and MDBs, mainly by long-term loans. The periodical Infrastructure Investor (2013)³ provides data for 2012 with private infrastructure investments of US\$265 billion (€190 billion).⁴ According to the research, 12% of the money was raised to provide loans, which results in 88% to provide equity and quasi-equity instruments (including mezzanine financing).

With these research data, we find (simplified) the following structure:

- 20% of the new infrastructure is financed by loans (development banks and a share of the private investments);
- 56% is financed by budget, i.e., mainly by grants, but by other instruments to a small extent only;
- 24% is financed by equity and quasi-equity instruments (private investors).

In the past, private financing mainly focused on telecommunications and a group of more developed emerging countries. However, this picture has now changed. For the first time, the global energy sector attracted the highest share of private financing (close to 70% including renewables) in 2012, leaving transport far

behind with approximately 20% share. One can expect energy investments to take the leading role in future as well.

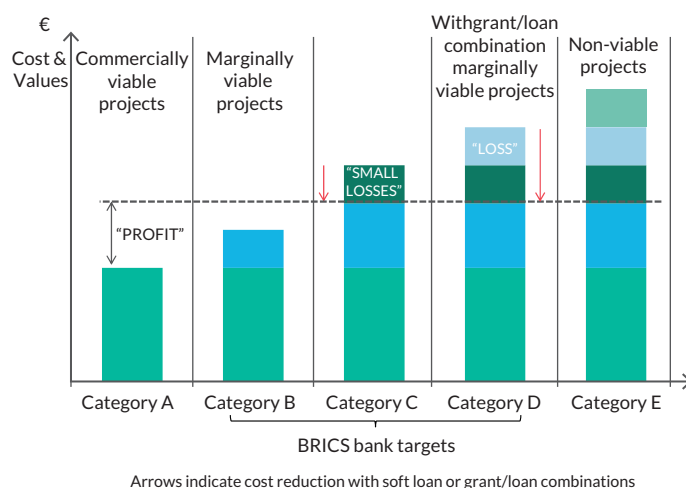
Following the internal logic of financial instruments, a prerequisite for a higher share of loans and equity instruments can be found in the identification of a higher share of viable infrastructure projects—or at least of viable components of infrastructure projects. The user fees for telecommunication fibers, tolls for bridges, ticket prices for public transport systems, and energy or water bills paid by firms or households form typical revenue streams for an infrastructure project. To the extent that these revenue streams outbalance the costs for operation and maintenance, a commercial return is generated. Thus, a part of the financing can be raised from private sources or development banks.

We find the following simplified typology of projects (Figure 1.1):

- (A) Projects that are sufficiently viable and profitable to attract private financing.
- (B) Projects that are commercially viable, but below private profit expectations. As discussed below, private profit expectations can be very high in developing countries, in large part as perceived (and not always real) risk is seen as very high.
- (C) Projects that are close to a break-even point, and could become viable with a low-intensity subsidy (e.g., provided via cheaper financing from a development bank).
- (D) Projects further away from a break-even point, which could be moved to a break-even point with a higher intensity of subsidy (e.g., provided by a grant/loan combination or a combination of grants with other financial instruments).
- (E) Projects far away from a break-even point, implying that grant financing is supposed to be the only way of financing. Grants will be made if the project has important social or environmental externalities.

The activities of the World Bank and the major RMDBs focus on the classes of projects (B)–(E), whereas other MDBs such as Andean Development Corporation (CAF), the European Investment Bank (EIB), and potentially new MDBs will focus on classes (B)–(D). The project class (B) may be of specific interest insofar as financing via the tool of an MDB may avoid any budget intervention at all. The same holds for (C) if the MDB's financial strength allows for favorable financing below market prices in the projects' respective regions, as is the case for CAF and EIB. Projects in category (D) could only be funded if developed countries provided grants, from special funds, e.g., with a climate mitigation purpose, such as for renewable energy projects.

Figure 1.1. Typology of Infrastructure Projects, Costs Compared to (Market) Values



2. Loans (Long Tenors and Big Tickets) and Equity

Against the background of investment needs in the core sectors of infrastructure, electricity (large part of overall investment needs), transport, telecoms, and water (the latter three together totaling to a large percentage), project classes (B)–(D) will be relevant to a large share of future investments in infrastructure. However, such project classes are related to reliable revenue collection systems, which might not be available or feasible in all sectors in all countries. Social support measures might be necessary where social problems would occur with regard to customer payment capacity, such as for low-income groups. These support measures have to be considered while planning the projects because they would require budget expenses and/or foreign aid from developed countries in the case of low-income countries, as the latter may not have space in their budgets for such subsidies.

One important criterion for choosing the mix of instruments and the scale, as well as the structure of capital to be adopted is that the MDBs should facilitate rapid and significant infrastructure financing. Another criterion is that, especially for banks whose capital originates in the savings of emerging governments themselves (and therefore of their citizens), unnecessary purely financial risks and therefore excessive public contingent liabilities should be avoided.

Extensive interviews reveal that the two limiting constraints, in terms of instruments, are availability of (1) long-term loans and (2) equity. According to World Bank estimates, approximately 15%–18% of all money being mobilized for infrastructure has a private component in the developing world, compared with approximately 25% worldwide. An estimated two-thirds of debt comes from public financial sources⁵ and approximately one-third of equity comes from public financial sources⁶ (interview material). We will first focus more on the two instruments of long-term loans and equity.

It is interesting to note that the CAF,⁷ which is the largest multilateral source of financing infrastructure in Latin America, has used the following instruments: (1) sovereign loans (over two-thirds), and (2) private sector corporate loans, private sector structured loans, public sector non-sovereign loans, and public–private partnerships (PPPs). CAF has used partial guarantees, A/B loans, and equity investments, although to a lesser degree. CAF also provides financial advisory services.

With regard to long-term debt, there is reportedly less willingness than in the past for private banks to provide long-term lending for financing infrastructure in emerging and, especially, developing countries. This is partly because banks are far less willing to assume long-term risk in those countries, especially, following the global financial crisis. This same pattern emerged after the East Asian crisis, when private lending/investing in infrastructure in developing and emerging economies significantly declined for quite a long time. Also, regulatory changes such as Basel III may provide further incentives for banks to prefer more short-term projects as well as those perceived as less risky. The envisaged regulatory changes reduce the banking sector’s lending capacity; therefore, loans for big ticket projects will be less available in the future as well. Furthermore, institutions such as mono line insurers—who used to take over risks against the payment of insurance premiums, so that projects could have higher ratings, and thus could be easier and cheaper to finance—have mostly all gone bankrupt.

Looking at the typology described above, one could expect with the historical financing patterns that projects in class (A) would be borne by the private sector, projects in class (B) would be financed by an MDB, particularly to the extent an improvement of the yield (or the relative yield) could be achieved, for example, by the lower cost of borrowing of an MDB, and finally class (C) fit cases where a grant/loan combination would put the project in the profit corridor requested by the private sector. However, this has now changed. Even class (A) projects will be financed

by the private sector fully only if there is lending capacity and if the restrictions on the big tickets⁸ do not apply. Otherwise, other actors, including development banks, need to fill this gap.

There is, therefore, a need for governments⁹ and development banks—including potential future MDBs such as the NDB and AIIB—to do more of the lending themselves and fund it through the capital markets. This makes a strong case for existing and new MDBs to continue emphasizing “plain vanilla” long-term loans to fill this important gap in the market, especially but not only in developing countries. Focusing more on simple financial products also enables MDBs to devote more creative energy to engineering and management innovations for infrastructure projects rather than financial engineering, which as indicated below has the additional problem of creating greater potential for risks. Such innovations could include “greener” and less polluting infrastructure as well as technical assistance for preparation and implementation.

The capacity restriction of the commercial banking sector mentioned for project class (A) holds even more for projects in classes (B) and (C). The budgetary space of governments might be too restricted to subsidize interest rates, especially if in the form of a lump sum in the first year of the loan disbursement (calculated usually in net present value terms, i.e., the net present value of the interest rate subsidy paid to the development bank). As already mentioned above, class (B) describes projects offering a potential perfect win-win situation in which a simple financial product can make an infrastructure project happen by a development bank without budget intervention. Identifying those projects (and such projects fitting class (C) where the “soft-loan effect” of an MDB’s refinancing power to raise funds at lower cost on the capital market is sufficient to make it happen) should be one priority for MDBs. If those projects could be identified again, a strong case for “plain vanilla” long-term loans from a future Brazil, India, China, and South Africa (BRICS) bank can be made.

3. Technical Assistance

Two additional areas of MDB activity are also extremely important. One of these is helping countries and regions develop a project pipeline, for which they need project preparation facilities, especially in those areas where governments have limited expertise. International Finance Corporation (IFC) (2013) clearly argues that the availability of a stream of projects, preferably of a similar nature, attracts investors. Similarly, the Inter-American Development Bank (IADB) argues that it is critical to have a sufficient and predictable portfolio of projects for the private sector to invest. Indeed, pre investment is seen as the largest constraint in infrastructure investment instruments (interview material). The European Union (EU) dedicates a small part of the budget intervention for

infrastructure investments (mainly European structural and investment funds (ESIF)) for project preparation of large infrastructure projects in the EU’s new member states, where implementation capacity is considered as rather weak by comparison to the huge needs. It is interesting that in the World Bank (IBRD), regions have task managers who are sector specialists, and therefore are helpful for developing a project pipeline. Such a model could be adopted by a new MDB as well.

Another issue is whether instruments of MDBs should try to enhance national content in terms of the technology used. It is interesting that the credit policy adopted by the National Economic and Social Development Bank of Brazil (BNDES) favours the use of national technology through the concession of funding for national content infrastructure and for equipment.

An important role, especially in regional projects, can also be played by larger countries helping smaller countries with the technical support of a development bank, e.g., Eskom project pipeline in South Africa, linked to a major hydropower project in Mozambique (interview material). More generally, MDBs often provide coordination services, especially in regional projects, for example, making regulations compatible across countries, facilitating negotiations about prices, for example, of cross border sales of electricity (see Spratt, Griffith-Jones and Ocampo 2013). MDBs—including those currently being designed—are well placed to facilitate such collaborations between larger and smaller countries that are all MDB members.

4. New Partners

There is a need to try to attract new actors, such as pension funds, insurance companies, sovereign wealth funds, and possibly private equity—where more savings are concentrated than in the past—to provide more financing for infrastructure. However, a major problem is that such actors, especially those based in developed countries, think they require very high rates of return to invest in emerging and developing countries. This is problematic, as institutions such as International Development Association (IDA) and the African Development Bank (AfDB) are currently providing insufficient finance for infrastructure in low-income African countries in relation to their needs. Similarly, large gaps exist in Asia.

In an interview with a major European insurance company, it was argued that they would require a return of 25% annually to invest in infrastructure in developing countries, which is incompatible with the cheap prices essential for companies to be competitive and especially to poorer people using the infrastructure (Spratt, Griffith Jones, and Ocampo 2013). It may be possible to attract such institutional investors more easily to emerging economies, with lower return expectations perhaps—an area that needs to be explored further.

Furthermore, institutional investors are increasingly pressing governments and development banks to provide guarantees against many of the risks. Therefore, it is critical to educate, share experiences, and have a dialogue with private sector actors (especially new ones, such as pension funds), for example, regarding a realistic assessment of risks in both emerging and developing countries, and therefore lower their expectations of profits (interview material). Furthermore, emerging and developing countries need to explain the benefits of diversification, both across countries and regions, as well as across categories of countries. These benefits have become more evident during the global financial crisis, a period when developing and emerging economies have shown more significant growth, and have had far fewer financial problems, than developed ones. This dialogue with and education of the private sector regarding developing and emerging economies is a task that MDBs could do well, in coordination with national governments and other development banks.

Other northern institutional investors, such as pension funds, may be willing to be involved in infrastructure projects, but not at the start as they do not wish to take on construction-related risks. In this case, private banks and/or private investors (possibly with support from a development bank) could finance the project preparation and construction phases. Then, once the project is built, it can be refinanced by a product/mix of products, which could attract northern institutional investors. This could operate through an infrastructure debt fund, where investors buy into a portfolio of currently operating projects. However, as such a market has not properly developed for emerging and developing countries' infrastructure, other more direct mechanisms may also be needed (interview material).

Private equity investors, who may be valuable due to their willingness to come in during the early phases of an infrastructure project, pose the additional problem that not only do they require high returns, but they want them to happen in the short term, after which they want an exit strategy. This is incompatible with much of infrastructure investment unless the promoters of the project are able to sell the project once it is prepared and built (as occurring in the Bujagali Hydropower Project in Uganda, interview material).

A variation of the project bond instrument (see below) may become more relevant for projects where an exit strategy for (some) investors after the construction phase is envisaged from the beginning. If one or more key investors stick to their investment, and with this investment sufficient equity remains in the project, the remaining financing of some 60% of the investment costs could occur with the issuance of project bonds. After the construction is done and the project has begun operations, the risk is significantly lower and easier to assess; as a result, lower interest rates (good for the project) and lower risk (good

for a broad range of investors) may match private and public interests.

A positive element is the greater willingness of pension funds from emerging economies and developing countries to invest in infrastructure than their developed country counterparts. Indeed, such pension fund assets have been growing over the last few years, and while fiduciary duty remains the overriding objective, developing and emerging country pension funds are more likely to consider the broader socioeconomic context in which they operate. Furthermore, in most developing countries, the majority of retirement assets are linked to social security systems, and thus managed by government-controlled agencies. National pension plans can be leaders in infrastructure investment.

South Africa provides a very interesting case study of how regulatory changes are beginning to raise awareness and drive investment choices. The Pension Funds Act now requires investors to explicitly consider environment and social criteria in their investment decisions. This is encouraging them to invest in infrastructure valuable for the national economy and/or improving the population's living standards. As indicated by IFC (2013) and others, one important advantage of emerging markets compared to other markets is that as the pension fund sector is often at earlier stages of organization and governance, they are able to come together in a collaborative way to develop industry-wide tools for implementation, as in the case of South Africa. Arguably this leads to more efficiency, economies of scale, and much faster implementation compared to other OECD countries, where responsible investing practices have developed over a much longer period of time but in an uncoordinated fashion. As such, in the short-to-medium term, working with national development banks and emerging market-based pension funds to promote financing of infrastructure seems to provide promising opportunities. Sovereign wealth funds based in emerging markets are another important potential source of infrastructure financing.

One of the issues to be solved for successfully involving pension funds from emerging and developing countries is the size and geography of infrastructure funds, especially regional ones. Successful infrastructure funds tend to be large in size, and therefore tend to be regional⁴⁰ more than national, but pension funds are in most cases, for example in Latin America, limited in their investment capacities in terms of jurisdiction and legal framework to national borders (interview material).

A concrete example of the design and promotion of a vehicle that allows the Colombian pension funds to invest in infrastructure, with the support of an MDB, is provided by CAF. It is designed to finance the new program (4G) of toll roads in Colombia. CAF expects that the size of this vehicle could be approximately US\$1

billion. CAF further believes the fund will be a debt fund, and probably different levels of subordination will exist in the different “participation shares” to provide pension funds with some level of credit enhancement for their participation. It is interesting that Colombia is revamping an old national development financial institution, a parastatal run by the government in a commercial way, with private participation to structure the concessions for infrastructure, as well as planning and monitoring. As the government cannot take on the debt and the local banks are already too exposed to construction companies, they are trying to develop subordinated debt or mezzanine financing (interview material).

This example shows a general trend for equity or close-to-equity products: the “market approach” for development objectives has moved into the direction of preferential remuneration schemes. Several funds in Europe (in many cases, including EU support) were set up in the last decade utilizing different classes of shares reflecting different risk appetites from core-equity down to quasi-senior loans. These funds are structured such that class A with equity risk is injected by the budget, class B with mezzanine risk by development banks, class C with junior loan risk by public or private impact investors, and class D with quasi-senior loans by patient commercial investors, with some conditionality on the payment of the interest rate. The fund manager brings in a small participation to class A and, if it were a bank, a broader participation to one of the other classes. There are many variants of this basic concept. A few examples are European Fund for Southeast Europe (EFSE) (mainly micro finance), Green for Growth (mainly renewable energy production), European Energy Efficiency Fund (EEEF) (mainly energy efficiency investments with a contracting approach), and Marguerite (mainly equity pieces for large infrastructure investments).

Certain investments in infrastructure—for example those conducted at the municipal level, either in cities or in rural areas—will find it difficult to raise private finance (interview material). In such cases, MDBs would have to find the least cost financing when going for a single infrastructure project, while ensuring good institutional approaches and practices; this does not relate much to new instruments, but to institutional approaches and modalities. A new instrument comes into play where (with technical assistance) projects are brought into a group realized in a certain period of time and (where necessary) in a certain order. An MDB could join forces with public or private banks specialized in providing financing to municipalities or with national development banks. The partner banks may rely on a sufficiently large credit line by an MDB for their projects to be shared by e.g., 50/50, so that large exposures or risk concentration may be avoided.¹¹ The MDB’s development input would comprise three elements: (1) risk taking, (2) technical assistance in due diligence, and (3) the push for standardization.

5. Unfunded Instruments

There is a growing interest in unfunded instruments such as guarantees, originating especially from the private sector (which is always looking to minimize its risk exposure in infrastructure while maintaining maximum potential for profit). Some experts from development banks also favor such instruments, in the belief that guarantees facilitate a more “efficient” use of capital. However, as it became apparent in the interviews, not a great deal of infrastructure financing has occurred through guarantees, with, for example, the International Bank for Reconstruction and Development (IBRD) since 1994 having only provided approximately 50 guarantees. Similarly, the Asian Development Bank and the IADB has offered limited infrastructure financing, whereas the AfDB has offered none at all.¹²

One example of an ingenious guarantee instrument developed by the EIB has had a limited uptake. The Loan Guarantee Instrument for Trans-European Networks—Transport TEN-T (LGTT) was developed for transport projects taking (some) traffic risk during the initial operating period of up to five (or in exceptional cases up to seven) years. It is essentially risk sharing on a tranche of debt. It takes the form of an EIB guarantee to enhance the credit rating of the traffic project’s senior debt. The financial effect was expected to show either higher volumes of loans by the financing banks (“bigger tickets”), longer maturities than without the enhancement (“longer tenors”), or lower interest rates due to lower risk margins allowed by the enhancement. Originally planned as a large-scale instrument with a major impact, a rather limited implementation was reported until now. More than 50 projects were considered, six were signed, and most of them were significantly driven by EU governments to create pilot cases, rather than by market demand (for details, please see Appendix 1).

An interesting example of a successful guarantee by the IADB, reportedly a product more of a coincidence than of a strategy, involved the IADB providing a revolving guarantee for the Peruvian government paying the operator for the tolls on a road. If the government does not pay in 30 days, the IADB pays to a trust fund, which pays the concessionaire; the government then has 30 days to repay the trust fund or convert the amount to a loan with the IADB (interview material). This type of model could be successful for countries that do not have a record on PPPs and want to increase PPP use. It should not imply too much risk for the MDB, as the government has a strong incentive to comply as it will want to maintain its access to new MDB credit.

The EU—while having a positive stance on financial instruments, revolving funds, and the leverage created by this—at the end of 2013 decided on a new regulation that is significantly more restrictive on unfunded instruments compared to funded ones. The problem with unfunded

schemes is that often the guarantees are called in “bad times,” when it is difficult to raise funds to pay for them. The philosophy, therefore, is to prudentially restrict them. This should be understood as a consequence of—at least partly—very difficult experiences from the crisis years in Europe. One can summarize the basic ideas of the new regulation for the ESIF as follows:

- The unfunded instrument requires an additional ex-ante analysis that considers not only the expected loss but also the unexpected loss.
- The (only) scheme that is recommended and thus offered as a standardized financial instrument goes with a cap on the guarantee, restricting the maximum liability of the guarantor to a predefined share of the guaranteed portfolio, e.g., 20%.

Box 5.1. Example of Guarantee Schemes

One key instrument to control the liabilities of guarantee programmes is a guarantee cap. One example for this is provided in the first loss portfolio guarantee (for up to 80% of the first 20% of the portfolio bridging the event clauses for default). This capped portfolio guarantee for small municipal investment public works functions on a loan-by-loan basis. For a portfolio up to €100 million, the ESIF’s maximum payment is €16 million. In a prudent approach, this amount could be placed ex-ante by the public budget into a revolving fund under an MDB’s administration. If during the fund’s lifecycle, only a part of this amount was used to cover called guarantees, the remainder could be reinvested in similar new schemes. If the guarantee agreement with the intermediary included a payment of guarantee fees (likely to be lower than market fees for similar purposes), the payments could compensate (partly or fully) the ESIF’s payments and thus strengthen the scheme’s revolving function.

This so-called prudent approach might be very helpful in a new MDB’s earlier phase of activities, such as those undertaken by NDB or AIIB. Infrastructure investments are always linked to rather high volumes, which stresses even further the potential danger of unfunded products. A future MDB could therefore work together with local public or private banks in the following manner:

- In the first step, the **expected losses** of the envisaged individual investments of the proposed portfolio are estimated by computing the difference between payments on first demand (if such a scheme is chosen) and the recovery rate achieved later.
- In the second step, the **unexpected loss** is estimated covering risks driven by more macroeconomic developments, asymmetric crisis shocks, and disaster risks, and so on.

- In the third step, a “**premium**” is estimated for the intermediary public or private bank to accept a cap. This premium would be a range, with the exact amount to be negotiated with the potential intermediary.

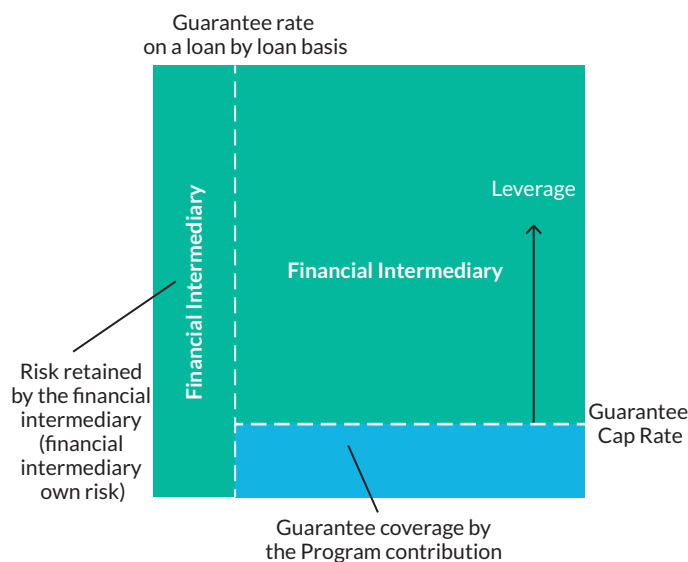
If the expected loss is 15% of a portfolio and the unexpected loss is 7%, the total risk is 22%. In theory, the body implementing the project has no further risks to cover. Only to the extent that administration is needed (which might be substantial) and that regulation requires capital underpins for the uncovered part (which is driven by regulation), costs accrue for the intermediary.

However, experience shows the need to consider further two steps:

- To align interest of the intermediary (at least partially) with the MDB, a piece of own risk of 20% should remain with the intermediary. This could be compensated by lifting the cap if appropriate;
- If a cap of 25% was agreed, the financial instrument’s maximum liability would be 20% of the entire portfolio. To achieve an agreement, the negotiation process might need to offer a premium beyond the calculated value of expected and unexpected loss. In the example, one could imagine a premium in the range of 1–3%. The main decision with such an approach is to implement the cap. Such a cap should be acceptable to partners in all cases of rather granular portfolios and where an experience from the past is collected in the relevant market.

In theory, such a prudential approach should result in unfunded instruments (such as guarantees) not showing advantages in respect to funded instruments (such as loans). Therefore, it is recommended to recheck whether the funded product could deliver the same infrastructure investments. If not, then an unfunded product remains the only way to achieve the objective.

Figure 5.1. Standardized Guarantee Scheme for ESIF (EU Funds) 2014–20



We are somewhat skeptical about very generalized use of guarantee instruments, both due to practical difficulties of implementation (reflected in the low numbers of cases) and the large scale of contingent liabilities they generate,¹³ while providing no potential for the public banks/governments to capture any upside. However, in some cases, guarantees (especially partial ones) can provide initial confidence for private investors to enter a new sector, with following projects then being done by investors without development bank guarantees. An example was the World Bank's guarantee to the first PPP in the Vietnamese power sector followed by four more projects, carried out on a stand-alone basis by the private sector, based on the success of the initial experience (interview material).

Guarantees against risks should be clearly limited to avoid unlimited contingent liabilities being assumed by an MDB. It is also important to fund guarantees at least partly ex-ante as often problems arise—and guarantees are called—when crises occur, i.e., at times when MDBs find it difficult to raise resources on the markets or from governments. The new approach of banking supervision with the so-called stress tests moves in this direction as well. A stress scenario would include a certain percentage of guarantees being called under a situation where the access to the capital markets might be difficult—and therefore a liquidity buffer (or a buffer of quasi-liquid products) would be required. To establish such a buffer some prefunding seems to be appropriate.

Furthermore, the experience of the EIB and other development banks indicate that guarantees are less problematic if they are given to a very diversified portfolio of, for example, numerous small and medium-sized enterprises (SMEs), where in most periods, idiosyncratic risks are diversified, except in very extreme crises situations. For infrastructure with far fewer and far larger projects, idiosyncratic risk (if one or two very big projects fail) may majorly impact any contingent liabilities, as there is no massive other share of portfolio to compensate for this. Therefore, guarantees for infrastructure are far more risky for MDBs than guarantees against first losses in SMEs. If guarantees are given for infrastructure, the already mentioned need to be prefunded in a significant proportion, approximately 50%.

6. Proved and Tested Instruments vs. New Instruments

Alternative or complementary routes of encouraging private investment into new sectors or new countries also exist. This can involve an MDB or other agencies showcasing successful and profitable investments in developing and emerging economies that they have funded, and thus indirectly encouraging private investors (this has been the case both with IFC and Norfund, with the latter's experience discussed in Spratt, Griffith-Jones, and Ocampo 2013).

There seems to be a strong case for simple MDB instruments, such as long-term lending, which would be

co-financed by private lending and equity. Alternative instruments, which potentially can provide more leverage, de facto are complicated to arrange and may in the short term actually deliver very few transactions and thus very little volume, as has been the experience of other MDBs such as the World Bank, EIB, and CAF (based on our experience and interview material). Furthermore, they often may force the public development bank to take excessive risks, though this can be reduced by adopting a funded approach, as discussed above. Finally, transactional costs tend to be higher with structured loans or other more complex instruments, so it seems clear that small projects should be avoided when using such instruments. Therefore, an initial focus should be “plain vanilla lending.” However, there is a case to introduce some more sophisticated instruments on an experimental basis, to learn from experience and then to scale them up—if successful—in a later stage.

With regard to the balance between debt and equity, the overwhelming majority of MDB financing should be provided through debt. However, there may be cases wherein the provision of some equity or of guarantees against certain specified risks is important to comfort the private investor in infrastructure. Two caveats seem central. If risks are assumed, for example through guarantees, these risks should be clearly specified; ideally, they should not involve commercial risk (as this is classically considered the type of risk that private borrowers and investors should assume), but focus more, for example, on regulatory risk, which is more clearly linked to government actions. Investment in renewable energy is crucial for development banks to assume regulatory risk as potential private investors in this sector worry that regulations or broader policies, such as feed-in tariffs, may make the project less or not profitable. Governments or development banks are therefore very well placed to provide such guarantees. A development bank's commitment to guarantee a minimum level of feed-in tariff, for example, may be desirable.

However, other routes can be found to provide comfort for private investors. According to interviews with private investors and lenders, one such important route is co-investment or co-lending by one or more public development banks. What seems to count most is not the extent of the development bank's involvement or through what modality, but the fact that it is involved at all—the so-called “halo effect.” The “halo effect” is significant, and in addition, such products complement national export-credit schemes. Indeed, exports could be boosted through risk sharing between an MDB and national export-credit agencies.

Possible useful instruments for financing infrastructure could be either guarantees of a development bank or co-financing for the later periods of loans. Financing by the development bank phases in when the commercial lending ends; as a result, the tenor of loans is extended

beyond what the private banks are willing to lend. As these instruments have been used by the IBRD and other development banks, useful lessons can be extracted.

We now present new product ideas currently under development that can address three specific issues:

- Financing construction risk;
- Large infrastructure projects in a new distribution of labor between public and private money (project bonds);
- Allowing the investor (MDB) to benefit from the upside, if projects are successful.

6.1. Construction Risk

Guarantees or equity stakes by an MDB may be particularly desirable during the construction phase, when risks are higher. The IBRD is using partial risk guarantees to help cover construction risk, for example (interview material). However, an MDB's direct loan fully or partially financing this phase of the project and/or an investment by the local government may also be a good and simple option. Pragmatic combination of instruments suited to individual circumstances is desirable, as also stressed in interviews.

A key to achieve project success, especially in the construction phase, is a successful institutional capacity that is corporatized. In this sense, the example of the New York Port Authority was given in interviews, which has the capacity for repeat projects and diversification, which allows scaling up. The New York Port Authority is a corporatized parastatal that is a joint venture by the states of New York and New Jersey, overseeing regional transportation infrastructure and operating like a corporation. An MDB could, working with local governments, play a key role in creating or improving such an institutional capacity.

More generally, a major constraint identified by existing development banks—for example, the IADB for Latin America—is lack of institutional capacity (interview material). This was partly attributed in the Latin American case to drastic structural reforms undertaken in the 1990s, which completely dismantled many countries' planning capacity. According to the IADB, this in turn leads to a lack of planning, complex procurement rules and procedures, bottlenecks in execution capacity (especially for construction phases), skill shortages (especially for public sector engineers), and overdeveloped controller agencies. MDBs can help to deal with these type of problems by supporting institutional development, which would make the project's construction phase more efficient and make investment more attractive for the private sector.

6.2. New Distribution of Labor between Private and Public Financing

The idea of projects bonds is rather straightforward, but implementation is challenging. After the so-called monoline insurers (especially American International

Group (AIG), the largest insurance company in the world) disappeared from the market or went bankrupt during the crisis, their function should be replaced to the extent needed and desirable. The monoline product was very ambitious, and it turned out to be too ambitious during the crisis. A project was rated (e.g., BBB-) and then upgraded as a whole with an insurance (against the payment of an insurance premium) to AAA. The project enhanced by such insurance became an easy investment for institutional investors not familiar with the respective sectors, because the insurance covered basically all the project- and sector-related risks. However, an AAA rating is not really necessary. Most institutional investors require investment grade only—and in practice are content with A—as a solid investment grade. Some institutional investors feel comfortable with BBB if the project is financed by an experienced development bank, such as the EIB. Similarly, new MDBs can build up such a reputation over time.

For the time being, project bonds are in a pilot phase at EU level and in MDBs. Project bonds retain some of the ideas of LGTT (described above); however, they develop it much further. For example, LGTT was restricted to transport projects only, while the project bonds will be open for all infrastructure investments as of 2015.

Project bonds are designed to attract private investors to infrastructure projects (Figure 6.1). By adding to the equity invested in the project by the promoter, a mezzanine tranche of financing aims to enhance the project's credit worthiness for the financing consortium. As the mezzanine tranche is subordinated (junior) to the senior loans, the risk covered by the senior loans will be lower than without it. In the case of difficulties, the equity piece and the mezzanine piece take the first hits. If these two buffers were sufficient to cover the difficulties encountered, the senior lenders would not be affected at all by these difficulties. The mezzanine piece could be provided in a funded approach (as a subordinated or junior loan) or in an unfunded approach (as a guarantee which if drawn results in a junior loan).

The credit enhancement results in an improved project rating of A or BBB+ in the investment grade range. Such a long-term investment could be interesting for insurance companies, pension funds, and other investors on the capital markets, which are obliged to invest in investment grade products only.

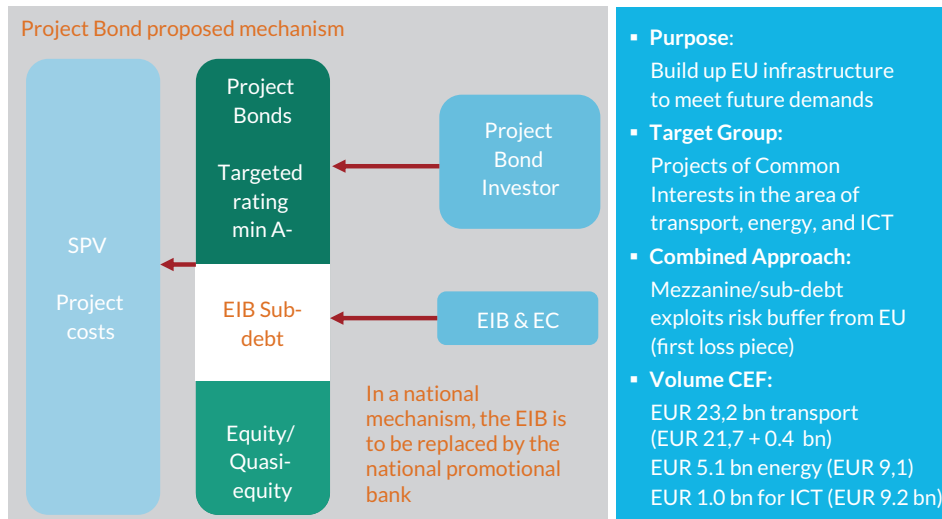
Supporting such a mezzanine tranche with budget resources mitigates all project risks, such as delays in the construction or cost overruns in planning and construction.

To cap the risk which is borne by the budget or the development bank, the financial instrument should not guarantee a project's entire financing (unfunded guarantees such as provided by the monoline insurers) and focus rather on a sufficiently thick tranche of financing to comfort the investor. A funded subordinated loan (or mezzanine) or a guarantee for the respective financing of

Figure 6.1. Project Bonds for Private Investment (EU Pilot Phase)

Example: Project Bonds for the Connecting Europe facility

Goal: attract private investors to big infrastructure (only budget is insufficient)



a commercial bank could serve this purpose. Even if the experience so far is limited, coverage of 15 to 25% of the financing seems to be sufficient.

Several difficulties play a role during the implementation:

- Some market players aim to transform the idea to the unfunded approach and restrict it to a guarantee for an overdraft facility, which comes in to play when cost overruns occur. This is not the correct idea; in such cases, perhaps a funded component (for the risk enhancement of the project) and an unfunded one for different purposes (here, the cost overrun only) may provide an answer.
- The prices for the project bonds are not known ex-ante, which is the senior loan part of 50–60% of the whole financing. Therefore, pricing is a very sensitive issue. After the first pilots have been completed, the first experiences on pricing are available, but more stable price ranges will not be known for quite a while yet. The better the knowledge regarding pricing when preparing the project and issuing the bonds, the more likely the project bonds will be successful. Any future or existing MDBs interested in the project bond approach should therefore collect data and provide information for the benefit of projects to be financed in the future. For Europe, this role is now taken by the EIB.
- The market's interest for project bonds is difficult to anticipate. The first pilot projects were more than three times oversubscribed. In the first phase of the bonds, however, the existence of an anchor-financier seems to be important. For Europe, this role is played now by the EIB, staying for the whole lifecycle of the projects.

If project bonds are successful, it would be a major breakthrough for infrastructure financing. With the project bonds as senior loan instrument, a broad spectrum

of investors will be attracted. Besides banks, institutional investors such as insurance companies, pension funds, and sovereign wealth funds could also invest in project bonds. Reliable due diligence before the investment and continuous support over the project's entire lifecycle are key investor requirements for a broader development of the instrument. MDBs can play a "midwife" role for the emerging and later for developing countries (as the EIB is currently playing for Europe), but standardization and involvement of other players is crucial to develop a market.

Parallel to the financial instrument project bonds, the standardization of project due diligence has started, as the following example shows: Munich Re and TÜV SÜD (based in Germany) have developed a standardized rating for projects of all sectors with four different investment grade values (from best in class to acceptable). They cover the following risk factors: macroeconomics, technology, natural hazards, execution, environment, and microeconomics (Munich Re et al. 2013). Provision of such external due diligence would help develop new ratings for project bonds that would be accepted by a broad range of bond investors.

6.3. Participating on the Upside

Generally, development banks could be considered an instrument to ensure that the public sector participates in the profit when the project is successful. The basic product of an MDB—long-term infrastructure loans—already ensures repayment because unlike a grant, the public resources are not lost. If the perceived risk is higher, one could establish junior loans (or mezzanine) together with an upside participation in case the project is successful. Such an upside participation could be a share of the project returns in the future; an alternative is for a top-up to the interest rate to be paid for a certain period of time. If the risk is of the highest type (equity risk), capital injection

could be established with a *pari passu* participation of the profits for a certain period of time or a permanent share of the project company for the future.

It seems reasonable that if an MDB contributes equity through capital or guarantees (and assumes risks), it should also benefit from the upside. This implies that if the project were to be particularly profitable, a proportionate part of the profits would be paid to the MDB. This would be an interesting innovation that could increase an MDB's ability to generate greater revenue, which in turn would add to existing equity capital and thus increase its future lending capacity. If instruments such as prefunded subordinated debt are used (for example, via project bonds along the lines discussed above), then this has the double advantage that the resources are funded *ex-ante*, and the MDB can capture any upside in profits if these emerge.

MDBs consider special purpose vehicles (SPVs)—where private finance is provided, but with the SPV responsible for equity—as useful tools. An example provided by the IADB is the Pacific Corridor in Latin America (interview material).

7. Conclusions

The case is very strong for new MDBs such as the NDB founded by the BRICS countries and the AIIB strongly supported by China, based on vast unmet infrastructure needs in emerging and developing countries. Whilst existing MDBs play a positive role in co-financing infrastructure, far more is needed to sustain growth in those countries. Utilizing a certain share of emerging countries' existing foreign currency reserves in a new MDB can be a strongly positive means to channel resources for the benefit of global growth prospects.

With regard to the most effective financial instruments for MDB activity, valuable lessons can be extracted from the experience of existing MDBs. The greatest needs are for large-scale, long-term loans, reflecting the size of the infrastructure projects and for equity instruments, with guarantees also being demanded increasingly by the private sector.

One important criterion for choosing the mix of instruments for MDB activity is that they should facilitate rapid and significant financing of infrastructure. Another criterion is that, as MDBs' capital originates in the savings of shareholder governments themselves (and therefore of their citizens), unnecessary purely financial risks and therefore excessive public contingent liabilities should not be created. Rather than excelling only in “financial engineering,” an MDB should excel perhaps more in real engineering to support countries and regions design and develop good infrastructure projects.

To fulfill these two criteria, simple instruments such as “plain vanilla” loans may be very valuable, especially for a

new MDB just beginning operations, as they will allow a rapid ramping up of lending and investing in infrastructure, as well as minimize risks for the MDB. If a new MDB can establish a good asset book and a good decision-making process, it has the potential to achieve a better rating than the average (or weighted average) of its shareholders. Building on this, the MDB could provide cheaper financing to projects in member countries compared with issuing sovereign bonds. This could and should be achieved with “plain vanilla” loans. However, other instruments, such as guarantees, may need to be developed to achieve greater leverage, especially after a time. Guarantees are safer from a development bank perspective if they are at least partly funded *ex-ante*, and if the risks for which guarantees are provided are clearly capped.

New instruments, such as project bonds, are currently being developed on a pilot basis. These partly replace the role of private actors, such as the monoline insurers that went bankrupt in the crisis. They aim at “crowding in” insurance companies, pension funds, and sovereign wealth funds to invest in the senior debt of infrastructure projects. If successful, they could be another valuable instrument for new and existing MDBs.

Furthermore, instruments that allow an upside for the development bank if a project is successful are also of interest. This would allow the MDB to make profits that would be reinvested in future increased lending.

Experience shows that certain phases of infrastructure projects, such as the construction phase and final phases of projects (very long maturities), are particularly difficult to fund through the private sector. These phases seem to require special support from MDBs. This support can be an intervention to support the construction phase and the construction risk or to replace financing after the construction phase for the long amortization period.

The role of a development bank goes well beyond providing finance on a large scale. The “halo effect” (implying that the bank is participating in some form in the project, through loans, equity, or guarantees), the provision of coordination functions among different stakeholders, and the support—both financial and technical—for project preparation, at an individual level, but also for a series of projects, is also extremely valuable.

Endnotes

¹ We are very grateful to Amar Bhattacharya, Mattia Romani, Chris Humphrey, and Rachael Holt for their valuable insights and material, and Chris Humphrey for very good comments. We have also received valuable information from CAF, IADB, and BNDES. Jorge Madrazo and Edward Griffith-Jones provided excellent research assistance. Any mistakes are our responsibility.

- ² Other studies show that the investment in the broader group of sectors forming infrastructure is about twice as much as in the core sectors (see Oxford Economics “Building the future – Sizing the global infrastructure market,” forthcoming)
- ³ Infrastructure Investor, for the world of infrastructure markets, edited by PEI Alternative Insight, March 2013, p 49ff.
- ⁴ Core sectors. Considering the difficulties of data aggregation, the research data confirm broadly the estimate quoted above. It is somehow natural to find a result for 2012 at the upper end of the range found by Bhattacharya and Romani as the North Atlantic Crisis of 2008 and 2009 was partly overcome.
- ⁵ The loan financing altogether counts for some 20% worldwide.
- ⁶ Equity financing altogether counts for some 25% worldwide.
- ⁷ Since 2013, CAF has formally changed its full name to the Development Bank of Latin America, although it continues to refer to itself by the acronym “CAF”.
- ⁸ Large exposures are specifically regulated for banks. However, syndication of loans among several banks can ease such restrictions.
- ⁹ In such cases, no grants will be needed.
- ¹⁰ Region is understood here as a group of countries, such as Latin America or the EU, not as a region forming a part of a national state.
- ¹¹ Prudential limits imposed by regulations on size of exposures and on concentration are the most important bottlenecks for the banks. Thus, with the described risk sharing in many cases the restrictions of the limit system may be overcome. However, even with such a risk sharing in some cases the exposures could be still (too) high.
- ¹² For more in-depth exploration of the use of guarantees by MDBs, see Humphrey and Prizzon 2015.
- ¹³ Especially if not at least partly prefunded, see below.

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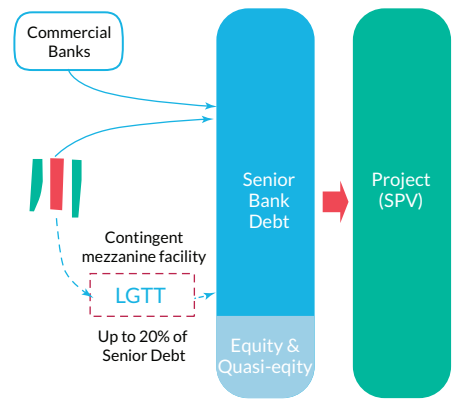
Appendix I. Guarantee Instruments for the Ramp-up Phase of Privately Financed Infrastructure

One example for a guarantee instrument for transport projects taking (some) traffic risk during the initial operating period of up to 5 (or in exceptional cases up to 7) years is LGTT. It involves risk sharing on a tranche of debt. It takes the form of an EIB guarantee to enhance the credit rating of the traffic project’s senior debt. The financial effect is expected to show either higher volumes of loans by the financing banks (“bigger tickets”), longer maturities than without the enhancement (“longer tenors”), or lower interest rates due to lower risk margins allowed by the enhancement. To some extent—down to a certain minimum threshold of traffic revenues—LGTT as a contingent credit line improves either the interest rate of the Project SPV for its loans or/and allows the financing consortium (which includes normally the EIB, but in theory, this inclusion is not at all mandatory) to take the big tickets needed given their capacity ceilings for risk bearing. From a more technical viewpoint, transport projects rather often have to face cost overruns, delays in construction, and slower utilization than originally expected. Thus, the “industry standard” expects a so-called stand-by liquidity facility (SBF) in addition to the usual project finance instruments, which forms a rather expensive part of the financial structure as no classical securities are available after the crisis. When the risk of a downside traffic scenario becomes clear, the SBF benefits from a guarantee from the EIB. All repayments to be made to the SBF’s outstanding amounts are done on a cash sweep basis—subordinated to the senior loans. If the guarantee is drawn, then the EIB becomes a subordinated creditor to the project. The guarantee instrument LGTT should cover up to 10% of the total senior debt including the SBF, but in exceptional cases also 20% could be envisaged.

Originally planned as a large-scale instrument before the crisis, rather limited implementation has been reported until now. More than 50 projects were considered, six were signed, and most of them were more driven by EU governments to create pilot cases than by market demand. The six projects were a high-speed rail in France, two motorways in Germany, one motorway each in Portugal and Spain, and one port in the UK.

Figure A1. LGTT as Guarantee-Based Instrument: if Guarantee is Drawn, the EIB Joins as a Junior/Mezzanine Lender behind the Existing Consortium of Long-Term Senior Lenders

- Loan Guarantee Instrument for TEN-T
- Specialized instrument jointly developed by the EIB and the EC
 - Provides contingent mezzanine debt, thereby protecting senior debt in projects exposed to traffic risk
 - Mitigates traffic risk during early operation protecting against traffic downside scenarios
 - Improves capital structure and senior debt credit quality
 - Lowers refinancing risk in Mini-Perms structures
 - Potentially allows for funding cost reduction





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