

Introduction

Infrastructure needs have come under the spotlight from various well-established analyses. Specifically, the Global Infrastructure Outlook report from the independent firm Oxford Economics (2017) puts the cost of providing infrastructure to support global economic growth while reducing the infrastructure gap between countries at \$93.7 trillion by 2040. Assuming that current spending trends continue, a cumulative value of global infrastructure investment is estimated at \$78.8 trillion by 2040. Thus, the current foreseeable scenario is that we will be left with a \$14.9 trillion infrastructure gap by 2040.

Over the next 18 years, emerging economies are likely to account for 40-50 per cent of all infrastructure related spending (McKinsey Global Institute, 2013). Three of the five countries most in need of infrastructure investment are China, India and Japan (representing 39% of global infrastructure investment needs). For China alone, the necessary investments are estimated at \$28 trillion, more than half of the needs in the whole of Asia.

Multilateral Development Banks (MDBs) in their natural role as development finance providers have the responsibility and capacity to address this issue. Having achieved initial success, MDBs are a well-functioning model for leveraging private capital. Undeniably, however, there is still a call for innovation in the roles and capacity of MDBs as current global infrastructure investments are insufficient to meet current needs. Rather than going to the regions with the highest infrastructure needs, 70 per cent of global infrastructure expenditure over the last 18 years has taken place in advanced markets (McKinsey Global Institute, 2013).

At the same time, global institutional investors' assets under management are growing in size (estimated at \$100 trillion) and investors are looking for innovative investment opportunities that match their long-term investment orientation and address the current low-yield environment and the excessive volatility experienced in liquid markets. With the appropriate profile of infrastructure investments, there is a clear opportunity to match institutional investors' resources with infrastructure investment needs. An appropriate profile would reflect a stable and transparent policy framework; a "value for money" offering; a structure with independent agencies without political goals; and a proven accountability to drive further local and global investor interest. However, constraints exist. Simply put, emerging market infrastructure projects are seen as too risky due to the technical nature of emerging market infrastructure projects. There are also geographical, preference-related and regulatory constraints.

For the purpose of encouraging dialogue, this paper recognises the potential for reinventing public-private partnerships (PPPs) with institutional investors, MDBs and asset managers acting as critical players. For the purpose of infrastructure spending, such innovation and collective cooperation is needed to address our critical infrastructure situation. Ultimately, institutional investors, MDBs and regulators have a responsibility to recognize this potential alignment of planets and act on it. For that purpose, relevant recommendations are given below.

Different MDB business models are being developed:

This paper briefly outlines various approaches developed by MDBs to tap into the vast pool of global long-term savings by better meeting long-term investor needs and attracting their funds to infrastructure assets (Arezki et al. 2017).

- **First-loss facility and equity co-investment.** When the European Investment Bank (EIB) takes part in a PPP, they provide project reinforcement at several levels, either through a credit enhancement scheme for PPPs financed with long-term project bonds, or since EIB has been allowed to provide equity finance, through an equity co-investment. EIB's involvement provides private investors with a first-loss cushion and/or a reputational benefit as by having a public sector partner in the PPP, the private investor is more inclined to uphold good practices given that they are interested in receiving future financing from the MDB. If the PPP is financed through a project bond, then other private investors may also find more security knowing that EIB has applied its rigorous due diligence standards. Another example is EBRD's Equity Participation Fund which works on a fixed allocation ratio with 30% of investment risk allocated to the fund. EBRD retains the remaining risk (70%). The expected portfolio return is a 15% internal return rate with a fund term of 12 years. One limitation is that the time horizon for return on investments is far too short. Thus this is closer to private equity investment patterns than to long-term investors for global infrastructure.
- **Guarantees from shareholder and own capital.** A reference point for EIB's innovative approaches to overcome market failures and mobilising private investment is the European Fund for Strategic Investment (EFSI). This fund benefits from a EUR 16bn guarantee from the EU budget (in case of any losses), complemented by a EUR 5bn allocation of EIB's own capital. The original goal was to mobilize public and private sector finance to support investment worth EUR 315 by 2018, and this has now been extended to at least half a trillion euros of investments by 2020. As the EFSI's financing operations feature on EIB's balance sheet, they are subject to EIB's due diligence and governance processes.
- **Repackaging of assets in standardised, liquid forms.** Securitizations have also been developed by the European Investment Bank with the creation of a renewable energy platform for institutional investors (REPIN). REPIN offers repackaged renewable energy assets in standardized liquid forms to institutional investors. Considering that such products encourage disclosure of the carbon footprint of individual projects, further investments are expected with the recent emergence of regulations, such as Article 173 in France, requiring institutional investors to consider climate effects.
- **Creating a development bank entirely dedicated to infrastructure investments.** The Asia Infrastructure Investment Bank (AIIB) started with a committed capital of \$50 billion with another \$50 billion in future capital commitments. While this may seem quite small, its maximum leverage ratio allows borrowing of up to 20 times the capital. With the higher projected leverage it is likely that AIIB will not just be issuing AAA rated bonds but also lower-rated bonds with a higher yield, which should be attractive to long-term investors in the current global low-yield environment.

Case Study: Asian Infrastructure Investment Bank

First and foremost, the fact that the AIIB is a new development bank offers the opportunity to build an MDB for the future. It is uniquely positioned to incorporate appropriate governance, organization, and policy frameworks based on lessons and reform efforts of existing MDBs.

The range of shareholders will offer the relative knowledge sources. It also plans to function as a sound and reliable partner to existing MDBs wishing to support regional clients, thereby offering ample room for participation.

Unconventional to most development banks, AIIB is solely focused on infrastructure financing. Although the total committed capital is quite low when compared to the likes of EIB for instance, AIIB benefits from a much higher leverage ratio allowance. AIIB may borrow up to 20x capital so that total assets amount to double those of EIB.

This model has received international respects with the announcement of UK, France, Germany and Italy all joining AIIB. Many initially worried that the bank would crowd out other MDBs. However, considering the total \$8 trillion needed in Asian infrastructure investments (Arezki et al. 2017), there is significant room as other MDBs don't have the balance sheet to address such high needs.

AIIB has a unique solution to one of the key institutional investor concerns with infrastructure deals, being the lack of appropriate risk/return profiles. With the higher projected leverage outlook it is likely that AIIB will not just be issuing AAA rated bonds but also lower rated bonds with higher yield profiles. Higher returns levels should be attractive to long-term investors in the current global low-yield environment. Thus, the unique approach of AIIB offers institutional investors with an appropriate investment opportunity. At the same time, the mass scale that AIIB plans to achieve potentially allows the bank to fund much larger projects.

- **MDBs cooperating on bond issuance.** For a few years now, investors have increasingly been prioritizing climate-conscious finance, focusing on climate risks and green transition financing opportunities. Yet, they have found very few investment vehicles to meet these investment objectives. Green bonds have become an effective way to channel capital towards the energy transition. Emerging market green bond issuance is growing but still represents a small proportion of total outstanding green bonds: total green bonds outstanding totaled USD 118bn, of which 12% was in emerging countries (10% in China and 2% in India).
- **Setting up special purpose facility.** The World Bank Group launched a major new initiative with the global infrastructure facility (GIF), officially established in 2014. The World Bank has progressively recognized that there are untapped funding opportunities from private investors, which could help the World Bank respond to the huge demand it receives from member countries. There are two purposes to this initiative: to develop an exceptional talent pool to accelerate origination of new projects; and to relax its current tight funding constraints driven by its limited capital base (not expected to increase anytime soon). It was set up with a total capital of \$200 million which was destined to be leveraged with A+ rated debt held by private investors so as to finance potentially much larger infrastructure projects. The GIF planned to start with pilot projects amounting to \$2 billion.
- **MDBs working with institutional investors on bond issuance.** IFC decided to launch the Green Cornerstone Bond Strategy. Amundi was selected to launch the world's biggest green bond fund dedicated to emerging markets. The \$2bn target fund is aimed at unlocking private funding for climate-related projects. The green bonds selected will include substantial exposure to greenfield infrastructure projects and thus directly

address the infrastructure financing gap in emerging markets. Most of the money will come from institutional investors worldwide, which the fund will use to buy green bonds issued by banks in developing countries. The product is designed for institutional investors who will get “yield with impact”: capturing the emerging market debt premium (with risk reduced through IFC’s first-loss buffer) and benefiting from high portfolio diversification. These bonds will combine scale and ESG best practices through the first EM Green Bond Strategy.

Case Study: IFC’s Green Cornerstone Bond Strategy

IFC decided in 2016 to launch the Green Cornerstone Bond Strategy with the purpose of developing the green bond market in emerging markets by (i) injecting market demand with Amundi Planet – Emerging Green One and (ii) supporting issuers to bring more green bonds to the market, with IFC’s Investment Support Facility.

The philosophy is new and the structure innovative. It encompasses a pragmatic approach aimed at identifying the obstacles that investors and issuers are still facing with emerging market green bonds. Thereby the strategy will mobilize private capital to tackle the infrastructure challenges related to climate change in developing countries.

The coordinated development of the supply and demand forces for climate investment creates an ecosystem in which markets can be nurtured and sustainably developed. In the words of Lord Stern, IG Patel Professor of Economics and Government at LSE, the fund “promises to be a game changer with a unique product that combines attractiveness for investors and impact in emerging markets. Fighting against climate change requires financial innovation in order to help properly channel capital flows towards the low carbon economy.”

This is an example of MDB role innovation that kills many birds with one stone: it allows for investment in emerging markets (which otherwise would have involved an often unbearable level of risk), it benefits from banks functioning as an intermediary on green projects (with the benefit of due diligence process, risk diversification, transformation of currency risks, etc.) and it channels money towards the transition to a low carbon economy without damaging returns (as green bonds offer, per construction, the same level of risk as standard bonds).

Taken all together, the fund will address the needs of four key stakeholders:

For developing countries, it will facilitate the implementation of nationally-determined contributions (NDCs) arising from the Paris Agreement. By channeling capital from developed to developing countries, the strategy contributes to the critical contribution of emerging markets to global climate-conscious finance objectives, and through the use of banks as intermediaries, it finances projects on the ground (with banks playing the roles of aggregators).

For institutional investors, seeking adequate returns in the current low-yield environment, the fund secures higher bond yields from a diversified range of emerging markets with the added benefit of the first-loss protection offered by IFC, while ultimately achieving climate alignment through green bond investments.

From an issuer’s perspective, the Technical Assistance Facility (i) brings access to a larger investor base, (ii) gets people trained on green finance, (iii) improves the standards of

documentation and (iv) improves communication between teams, clients and policy makers. Overall, it will accelerate the shift of balance sheets towards a low carbon economy

For IFC, partnering with an asset manager enables them to leverage their core skills as a catalyst for the development of the private sector across the world, with the positive benefit of financing green assets, thereby also supporting Sustainable Development Goals (SDGs).

It is therefore a unique combination of a supply and demand offer underlining IFC's new 3.0 strategy: create markets with impact.

In this sense, by focusing on financial institutions' green bonds, this "PPP" between an MDB and an asset manager showcases the innovation potential of such a partnership to resolve the usual information asymmetries between emerging market infrastructure and institutional investors. Overall, an MDB equity investment of \$125M to launch a target fund of \$2bn achieves a x16 multiplication factor aimed at financing green bonds for an overall size of \$40bn (x20).

Considering the IFC approach, one must outline the possibility for such a private-public partnership model to become a market standard to be replicated to allow for further cooperation between asset managers and MDBs. It should be noted that standardization and the development of a real market will have at least three consequences:

- A **greater capacity to finance** more projects and gradually fill the existing gaps,
- The ability to develop financial products to **better manage the risks** associated with these projects,
- This will also make **MDBs embrace the role of enablers** rather than financiers of projects. MDBs have a specific ability to transfer knowledge, to transfer (and set) best practices, to help establish the necessary policy framework, to contribute to the design and implementation of projects, to provide support to private investors through their active presence, guidelines, guarantees etc. All this is quite important with regards to the countries involved (political instability, corruption, lack of visibility ... being potential drawbacks or hindrances to many projects).

Remaining obstacles for cooperation between private investors and MDBs

Both institutional investors and MDBs need to contribute to overcoming internal obstacles to scale up the size and number of such new generation infrastructure platforms. One must remember that these investment vehicles are disrupting the market, thus players need to accommodate them with new resources rather than old.

Institutional investors are faced with four key tasks:

- **There needs to be a cultural effort to understand the benefits of the new partnership models.** Working with MDBs is not the day-to-day business of long-term investors and innovative projects run between MDBs and asset managers do not fit into their current decision-making processes or analytical grids. For example, providing a first loss absorption mechanism would transform a standard fund into a structured product which has a complicated reputation. Furthermore, investors would be

required to analyse the overall risks and not only the investment portfolio risks. Investors can also have very different ESG rules (exclusion of certain countries or industries like tobacco or coal) and must accept the homogenisation of their investments and the loss of specific guidelines. In order to resolve these “cultural issues”, institutional investors must engage in a dialogue with MDBs in order to express their objectives and constraints. For example, institutional investors require a high level of transparency, whereas MDBs are reluctant to publish the potential returns associated with providing guarantees or being in a first-loss position. Thus a global effort is needed to build new capacities. For institutional investors, the International Forum of Sovereign Wealth Funds or Sustainable Development Investment Partnerships could be leveraged to share good practice.

- **Institutional investors need to fully conceptualize their role as long-term investors.** The usual preference for “long-term” investment durations of 5-8 years needs to evolve into accepting 15-20 years. Considering the opportunity of illiquidity premiums, there is a substantial investment case for doing so. However, scaling could require revisiting the governance of many investors who are under the pressure of short-termism.
- **Institutional investors need to depart from the traditional ways of looking at asset allocation.** They need to throw out their very conservatively-defined asset allocation buckets, which often result in infrastructural platform investments being overlooked as they do not fit any predefined asset allocations such as fixed income, emerging markets, equities, etc. As a concrete example, infrastructure projects can be seen as an alternative to inflation-hedging or even to fixed income investments with an additional yield related to illiquidity. As an example, Amundi and EDF are combining their efforts to set up investment vehicles that will invest in infrastructures projects and stick with their investments in order to offer cash-flow visibility to investors.
- **Appropriate governance systems need to be set up.** Given that many institutional investors have layers of lengthy governance as well as investment approval procedures, appropriate internal knowledge bases need to be built up in order to facilitate the acceptance of such newly-developed investment opportunities.

MDBs, on the other hand, face specific challenges on their side:

- **MDBs must avoid any internal battles.** Major regional multilateral banks are considered by many – particularly in developing countries – to be dominated by the interests of non-borrowing shareholders and advanced countries. The political balance of power between the major advanced countries on one hand and emerging and developing countries on the other has not shifted to the same extent as has their relative economic weight in recent decades. In some cases, MDBs may have conflicting objectives because their shareholders themselves have conflicting goals.
- **Global, regional, and local MDBs must align their interests and objectives.** Collaboration across MDBs is often not the norm with competition still at play. It seems evident that a lack of collaboration has a direct impact on mobilizing investor interest, e.g. among institutional investors. As capital is a scarce resource, MDBs are more and more likely to become part of innovative initiatives, for instance proposing guarantee schemes where they share the risk of loss of capital. MDBs may have different objectives or scope – for instance global or regional focuses – but they are all aligned behind the Sustainable Development Goals adopted by world leaders in 2015. MDBs have the same DNA, which is to target market failures. Therefore, they should not compete but

rather act as a community, deploying capacities on specific innovative projects together. Ultimately, the same is true of the shareholders of MDBs. For too long, competition among MDBs has created knowledge silos and detracted from the most efficient use of public resources. There are, however, exceptions. Recently, two MDBs (EBRD and the World Bank's MIGA) worked together to create a complementary product to mitigate the risks and challenges faced by bond investors who want to invest in infrastructure projects in emerging markets. The deal concerned Elazig Hospital PPP, a project providing healthcare services to 1.6 million people in Elazig, a city of 350,000 in eastern Anatolia, and the surrounding provinces. MDBs should work together to harmonize products and pool them to create large, standardized and diversified asset offerings. As a consequence, institutional investors would face lower transaction costs on the one hand and would better assess risk adjusted returns on the other. Such collaboration should be expanded to the relationship of global and local MDBs. To leverage a bottom-up approach to strategic project building, local MDBs could be allocated the task of sourcing the related project pipeline.

- **MDBs want to leverage their capital to mobilize private investments, but they must accept and take adequate risks.** In practical terms, if guarantee schemes or first-loss instruments are a way forward for MDBs to do more with less capital, capital must be put at risk. There is indeed no free lunch: either MDBs must make a priority of protecting their capital or they must make a priority of leveraging it. MDBs must therefore accept to position themselves at the most critical part of the risk curve, something that the private sector is naturally reluctant to do. Most of the time, this would contradict the core objectives of those MDBs that are particularly adverse to capital-loss risk. It is not the case that MDBs should take inappropriate risks or be rewarded to a lesser degree, instead, the risk-averse culture of most MDBs needs to be revised, particularly when dealing with their own capital. MDBs must **accept the role of a first loss taker** (with the remuneration attached) in order to provide institutional investors with enough of a risk cushion to enter into projects while upholding their required rates of return. In that sense, MDBs must put their “skin in the game” to make investment vehicles credible and attractive for institutional investors. Such a paradigm shift would require an alteration in the shareholder mindset as well as a solid capital position to underpin capital adequacy ratings.
- MDBs must **evaluate their effectiveness in capital usage.** Most of the time, the activity of MDBs is measured through the assessment of the amount of total money engaged, e.g. through loans, whether sovereign or corporate, and/or through the total amount of concessional money engaged. This type of KPI is not appropriate for the kind of innovative structures discussed. For instance, a 100 million guarantee in a structure leveraging private money is not equivalent to 100 million of direct loans. Using MDB capital for guarantee purposes is not less of an engagement of capital than a traditional infrastructure loan. The positive externalities that come from such guarantees in attracting significant levels of private capital should be recognized as a key performance indicator. It must be noted that MDBs have reacted to this by proposing an appropriate methodology to record private sector finance mobilization in the 2016 Joint Report on the Mobilization of Private Finance By Multilateral Development Banks.
- **MDBs must develop the capabilities for an efficient governance framework.** As these innovative products are looking to make a developmental impact to address stringent

global targets, such as the Paris Agreement, MDBs must be able to skilfully analyse and approve such projects much more efficiently without the usual multiple investment committee approvals that are currently necessary. This requires a cultural transformation to align a project's approval time with efficient market practices upholding good governance principles.

Finally, **regulators have the potential to accelerate the process by lightening the constraints on investors in relation to investing in infrastructure products as well as in emerging market debt.** Regulators should take a pragmatic and low key approach to identifying investor constraints. Many institutional investors (especially pension funds and insurance companies) can invest in investment-grade rated projects only. The vast majority of projects in emerging countries, and a fortiori in developing markets, are rated speculative-grade. In other words, most of the regulation was set up in a world of government bonds with high yields and low risks. Both assumptions have disappeared and a new approach to regulation is therefore required.

Conclusion:

The financing of infrastructure projects offers a rare opportunity to take advantage of the alignment of the planets in a world of many centrifugal forces: for the benefit of society in a world of massive transformation, urbanization and growth in emerging markets and for the benefit of investors that have to reinvent their investment procedures to adapt themselves to a low-yield environment. It requires us to revisit the way MDBs are being organized, to develop financial innovations, to develop new forms of PPPs, even in capital markets, and to revisit the regulation of investors. Public money will not be replaced by institutional investors but instead should be reallocated and focused in a pragmatic way in order to leverage private capital that will benefit society as well as institutional investors. Some prototypes already exist but they must be reinforced and scaled-up. For all parties involved, this will require courage, innovation, and leadership going forward.ⁱ

Appendix: Background

It is now well known and accepted that major global demographic trends, and in particular the very high urbanization rates create very large infrastructure needs. The vital importance of infrastructure is twofold.

Currently, the infrastructure projects in demand are vital to sustainability because they concern mechanisms for the survival of certain populations (such as access to water, education, health, etc.), while most infrastructure projects are also investments known to result in high productivity gains and high social rates of return. For example, Fernald (1999) found high increases in industrial productivity from expanding transportation infrastructure. Similarly, Donaldson (2016) and Donaldson and Hornbeck (2016) emphasized the social and economic benefits of rolling out nationwide rail transportation networks.

At the centre of this debate is the question of how to finance these infrastructure needs? States alone are not capable. In the case of emerging and developing countries, two natural actors are generally solicited: MDBs, and the private sector. But clearly, the volume of MDB investment and of private financing in infrastructure pales in the face of the overall needs. One key figure to have in mind is the overall cost of providing infrastructure to support global economic growth which currently amounts to \$ 94 trillion by 2040 (Oxford Economics 2017)

In parallel, the low yield or even negative yield environment¹ and a “secular stagnation trend” are creating a search for new sources of yields all around the planet generating a new appetite for illiquidity premiums. Such an offer would expectedly naturally attract private investors.

Instead, institutional investors are still facing some major obstacles to invest in such a very specific asset class (either due to regulatory constraints and/or due to risks related to the specificities of this asset class).

These different conditions are creating a striking call for innovation and to rethink the roles of the different players involved in order to allow an alignment of planets that will benefit both society and investors, paving the path for more sustainable financial system.

Demographics and urbanization catalysing an infrastructure gap

According to the UN’s population projections, there is a growing and aging population as by 2030 there will be 8.5 billion inhabitants, 9.2 billion by 2040, 9.7 billion by 2050, and 11 billion by the end of the century. The outlook for 2040, which is about 2 billion more than today, is an increase of almost 25% that will not be equitable across continents, countries, cities, and rural areas. Adjacently, the number of people aged over 60 will double by 2050 (2.1 billion) and more than triple by 2100 (3.2 billion).

Up until 2050, 99 per cent of population growth will come from countries currently considered "developing". More than half of the population growth between 2015 and 2050 will take place in Africa (1.3 billion vs 2.4 billion). Asia will come in second (+ 900 million). In 2009, the middle classes accounted for 27 per cent of the world's population, set to grow to

¹ As of Oct 2017, two thirds of all debt issued in Europe (from Government bonds towards High Yield debt) is yielding less than 1%. Source: Amundi, Bloomberg

60 per cent by 2030. 58 per cent of the middle classes lived in 'developing' countries in 2010, with an outlook of 80 per cent by 2030. By that date, more than 60% of the world's population will live in cities.

In response to these demographic trends and as far as housing requirements are concerned, most population growth will be centred in cities, precisely where the jobs are. For example, if the rural population is expected to be stable over the next 20 years, one can bet on an increase in the population of cities of almost 50%. According to MIPIM (2017), this phenomenon is particularly important in developing countries. In Nigeria, for example, the housing deficit is currently between 10 and 15 million units with a large focus on the low-income population. In India, the deficit is about 30 million residential units, emphasized by the trend in very large cities where about 1 million newcomers arrive every year.

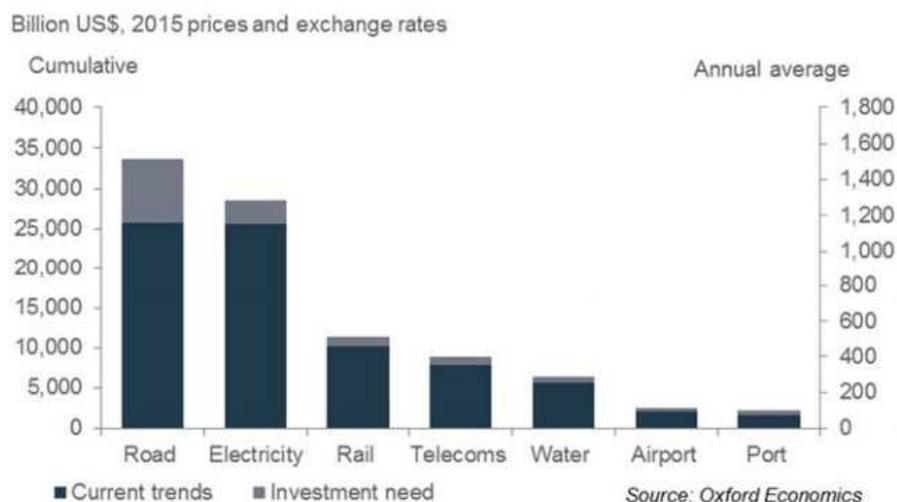
Let us not forget that the question of infrastructure is not only for the inhabitants, but also for companies. The ability to attract new businesses will depend on the ability to provide enough affordable housing and reliable infrastructure. An IFC-McKinsey report puts the unmet credit needs for all formal and informal micro, small and medium enterprises in emerging markets at \$2.1-\$2.5 trillion.

Putting a figure on these overall demands has been the work of the Global Infrastructure Outlook report from the independent firm Oxford Economics (2017), which puts the cost of providing infrastructure, to support global economic growth while reducing the infrastructure gap between countries, at \$93.7 trillion by 2040. Add the Sustainable Development Goals (SDGs) of universal provision of clean water, sanitation, and electricity, and the total cost rises to \$97 trillion. Assuming the current spending trends continue, a cumulative value of global infrastructure investment is estimated at \$78.8 trillion by 2040. Thus, the current foreseeable scenario is that we will be left with a \$14.9 trillion infrastructure gap by 2040.

It must be noted that the investment needs vary considerably from one continent to another. Asia is expected to have the most investment by 2040, followed by America. For the period 2016-2040, the infrastructure investment needs amount to more than \$50 trillion in Asia, over \$20 trillion in America (of which EUR12 trillion in the United States), close to EUR15 trillion billion in Europe, EUR 6 trillion in Africa and EUR2 trillion in Oceania. Three of the five countries most in need of infrastructure investment are China, India and Japan (representing 39% of global infrastructure investment needs). For China alone, the necessary investments are estimated at \$28 trillion, more than half of the needs in Asia.

The majority of the global infrastructure investment gap is in the road and electricity sectors. As seen below, the investment gap by 2040 between the current trend and investment needs scenario is highly accounted for by the road and electricity sectors. Together these represent a gap of \$11.6 trillion. Proportionately, the investment gaps in the road and port sector are the greatest, with investment needs just over 30% than the estimated spending under current trends. Some 60% of the world's population does not have access to the Internet, 1.2 billion people live without electricity, more than 660 million people do not have access to safe drinking water (by 2025, 1.8 billion people will live in areas with absolute water shortages), and one person in three has no toilet or sewage disposal facilities. In addition, countries are faced with the urgent need to invest in infrastructure resilient to climate change, as well as in renewable and efficient energy.

Figure 1: Global investment requirements by sector, 2016-2040



Flows between advanced and emerging countries are insufficient

As outlined, the current and future infrastructure demands are heavily weighted towards emerging economies. Infrastructure needs range from 3% of GDP in advanced economies to 9% of GDP in emerging economies, and more than 15% of GDP in many least developed countries. (World Economic forum 2013).

Over the next 18 years, emerging economies are likely to account for 40-50 per cent of all infrastructure related spending (McKinsey Global Institute, 2013). A large concentration of this is on green field investments.

Issues such as the usual high indebtedness of developing countries constrain public financing for the infrastructure projects needed. Along with an excess of savings, very low interest rates and insufficient return on financial assets in advanced countries, one would expect substantial capital flows from developed to emerging markets, particularly for infrastructure projects.

However, most infrastructure investments are recorded in developed countries, marking the lack of capital flow from advanced to emerging countries. Taking the last 18 years by example, 70 per cent of global infrastructure expenditure has taken place in advanced markets (McKinsey Global Institute, 2013).

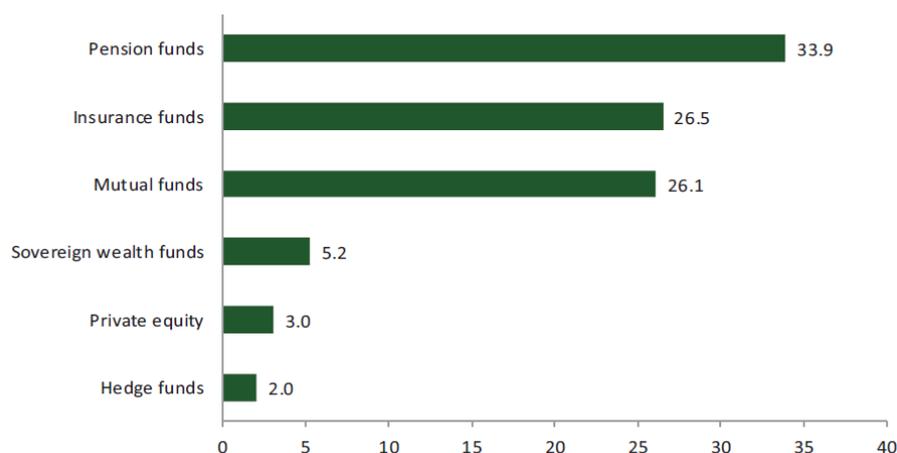
Syndicated bank loans were the financing norm for infrastructure projects but since The Great Financial Crisis, banks must adhere to stricter regulation under Basel III. As emerging market infrastructure projects are perceived with higher risk, developing countries are not receiving the financial flows to support their infrastructure needs. In fact, according to a recent global survey of banks by IFC, 27% of banks surveyed noted declines in their correspondent banking relationships in emerging markets. The challenge is most critical in Sub-Saharan Africa where 35% of banks reported a decline in these essential relationships—a major risk for countries' economies heavily reliant on imports.

Alternatively, infrastructure deals in advanced countries are better received by advanced countries' investors. With that in mind, developing products / structures / vehicles with the possibility to alleviate or skirt the constraints (duration, rating, guarantees, risk ...) and linking the public and private sectors is therefore inevitable.

Long-term investors have the capacity to fill the gap, but bottlenecks exist

To address the lack of public coffers available for funding infrastructure projects in emerging markets there is the significant capacity of institutional investor capital to fill the gap. Currently, institutional investors reach an estimated \$100 trillion in assets under management, dominated by pension funds as outlined in Figure 2. If institutional investors were to increase their exposure to infrastructure, \$2.5 trillion of additional investments is expected through 2030 (McKinsey Global Institute 2013).

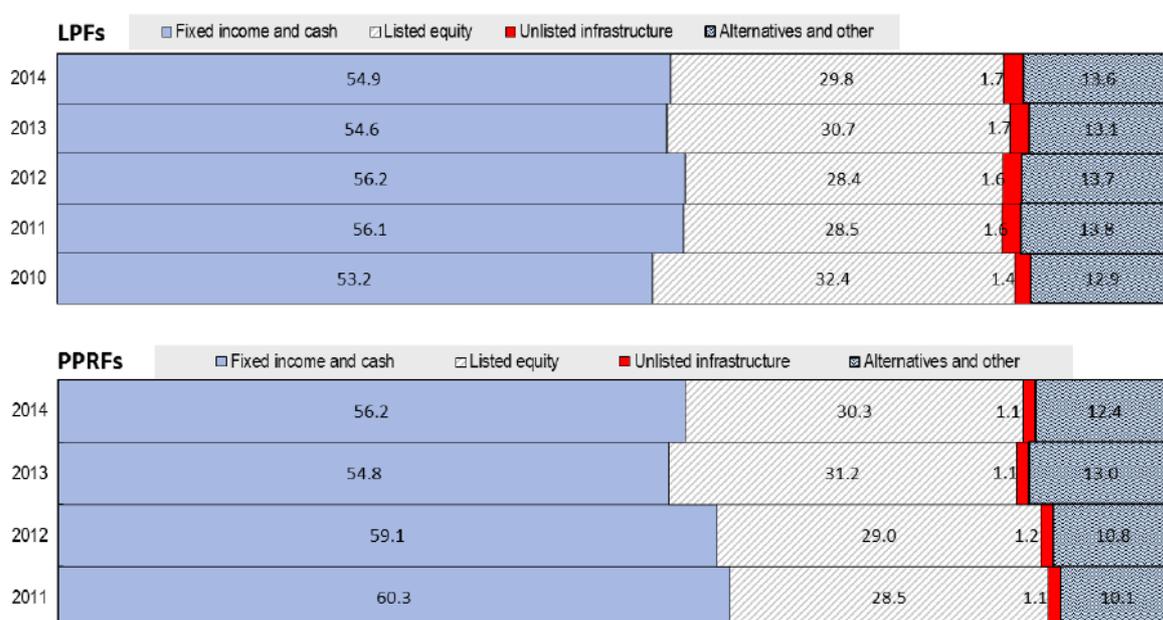
Figure 2: Global assets under management (\$trillion, 2012 end)



Source: City UK (2013)

Taking the historical average asset allocation of large pension funds (LPFs) and public pension reserve funds (PPRFs) by example, infrastructure investments are limited with most resources locked in fixed income, cash, and listed equity. The findings from the OECD Annual Survey of Large Pension Fund Survey suggest the existence of constraints facing institutional investors when it comes to the infrastructure asset class.

Figure 3: Historical average asset allocation of LPFs and PPRFs 2010-2014, % of total assets

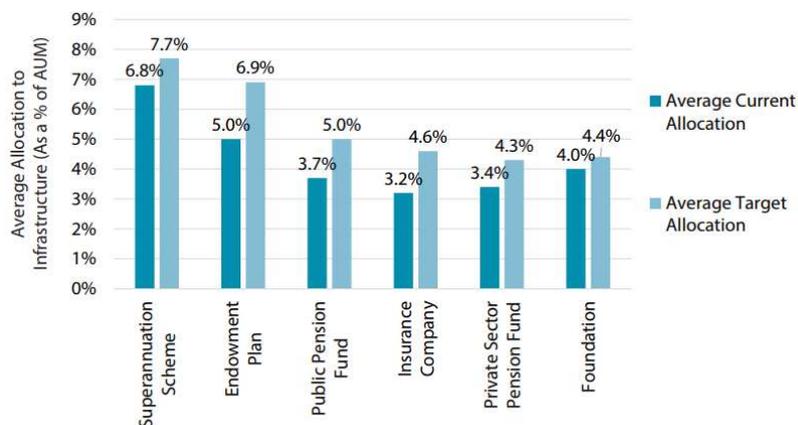


(Source: OECD)

Despite this, there is outstanding willingness from institutional investors to increase their exposure to the infrastructure asset class. A 2013 OECD survey notes that 38% (\$32 trillion) of the \$85 trillion held by all institutional investors who participated was in publicly traded equity, with the remainder held mainly in fixed income securities (Celik, S. and M. Isaksson, 2013). Thus, large percentages are invested primarily in government bonds and other fixed income securities. With the low-yield environment and the excess volatility experienced in liquid market, infrastructure investments offer an illiquidity premium considerably associated with greenfield projects. Taking the long-termism of institutional investors as a simple example, infrastructure assets are a natural fit for institutional investors as the assets generate cash flows for many years.

A CityUK survey (2013) found the majority of institutional investor surveyed to express willingness to increase their allocation to infrastructure. For instance, insurance companies have voiced interest in investing into long-term assets to match their long term liabilities. Industry surveys by LP Perspective (2014) and Preqin (2016) found that 38 percent of investors surveyed feel a lack of deal flow as a constraint to infrastructure investments, while 48% expected to increase their infrastructure exposure in 2016 compared to 2015. In that sense, taking the preferences of institutional investors into account, the current level of institutional investor infrastructure investments is limited (seen in Figure 4) with a potential to grow.

Figure 4: Institutional Investors' Current and Target Allocations to Infrastructure



Source: Preqin (2017)

To increase such exposure levels, outstanding bottlenecks need to be addressed. Simply put, infrastructure projects are unique in their risk profiles as they involve the participation of multiple agents, a complex chain of tasks and multiple information asymmetries threats. This mainly relates to the high associated risks, information gaps, and limited regulatory capacity.

Emerging market infrastructure projects have technical specificities averaging higher perceived risk when compared to developed market infrastructure projects. Infrastructure investors face a wide range of risks in any country, but mostly in emerging countries, given long construction and payback timeframes. In developing countries – and in some emerging countries to a lesser extent, though – where governance and market institutions are weak or dysfunctional, individual project sponsors or investors cannot manage or hedge a large amount of risks. Just to name a few, these cover construction risks, completion risks,

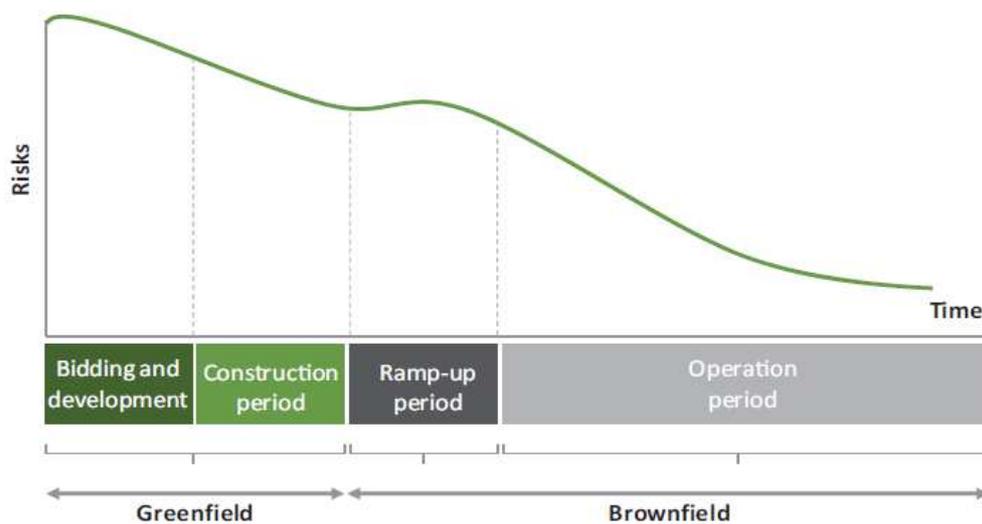
operational risks, transfer risks, macroeconomic risks, exchange rate risk, tax policy risk, legal risks, political risk, and regulatory risks.

With these risk perceptions in mind, there are also geographical and regulatory preferences which biases investors for OECD projects versus non-OECD projects.

Differing investment time horizons also have a role to play as due to constraints on duration investors tend to select projects with durations below 7/8 years while infrastructure deals tend to hold over a 20 years duration.

It is not only the general investment environment in emerging markets that threatens such infrastructure projects, but it is also the simple nature of the projects available for financing. Most projects in developing countries are greenfield (projects that are under development) versus brownfield (projects that are already built and operating), thus they are perceived with higher risks (as seen Figure 6). The higher risks are usually related to construction, regulatory, demand risk, as well as longer payback periods. Considering this, the risk profile of infrastructure projects in emerging and developing countries are heavily biased.

Figure 6: Risk profile development of an infrastructure asset



Source: World Economic forum, for illustrative purposes only

Addressing these bottlenecks will require updating national and regional regulatory frameworks along with new financial products to provide asset owners with appropriate guidance and security.

If the bottlenecks are not addressed, society will continue to be challenged by today's low forecasted growth, low employment, population congestion, as well as continued high exposure to climate-change related disasters.

Linking the public and private sectors is inevitable: MDBs have key role to play

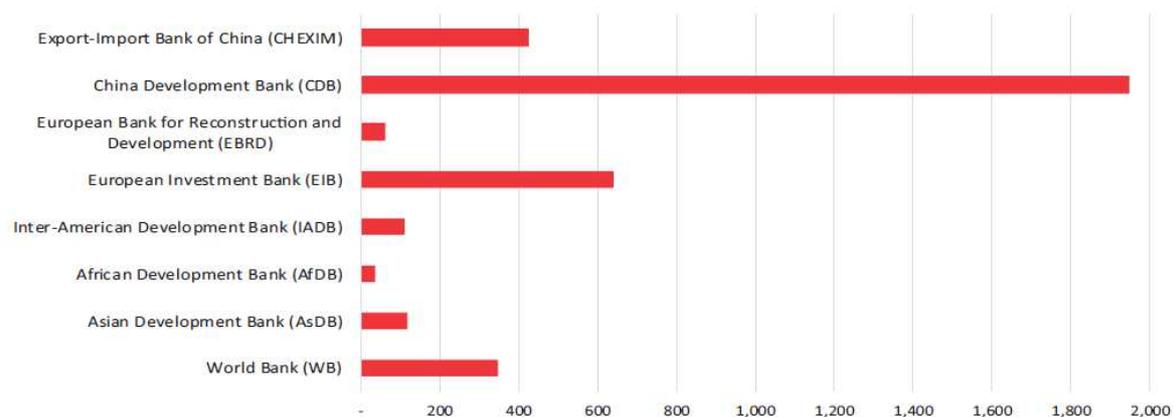
With public finances constrained and outstanding private capital waiting to be moved away from low-yielding fixed-income assets, Multilateral Development Banks (MDBs) along with asset managers can act as the mobilization key in reshaping public-private partnerships (PPPs) in infrastructure.

MDBs have undoubtedly played a crucial role in supporting economic development and fighting poverty over the past 70 years, namely since the creation of the World Bank. Notably, in regards to infrastructure projects, MDBs have been able to mitigate political risks given their international governance structure and strict due diligence standards they impose in the origination of new infrastructure projects to guarantee the project's sustainability. The traditional mandate for development banks has been to offer financing to projects that could not attract private funding, but had a high development impact.

One striking example is the role played by China Development Bank that has helped the Chinese urban development. The model combines the creation of a special purpose vehicle by a municipality to be financed by CDB as a senior long-term lender as well as from other commercial banks (on a subordinated basis) to finance the infrastructure and real estate associated. CDB and the SPV would put in place mechanisms to benefit from the real estate appreciation. With limited resources, CDB is deploying a balance sheet that is 6 times bigger than the one of the World Bank.

There is only one problem: MDBs are facing limited funding (as seen in Figure 7).

Figure 7: China's national development banks in context. (Assets \$bn)



Source: Bank annual (financial) reports; and IMF staff calculations. Direct links to the data sources: China CHEXIM: <http://english.eximbank.gov.cn/upload/accessory/20168/201682417629732745.zip>; China CDB: <http://www.cdb.com.cn/English/bgxz/ndbg/ndbg2015/201608/P020160831675498298329.zip>; EBRD: <http://www.ebrd.com/documents/comms-and-bis/print-financial-report-2015-english-pdf.pdf>; EIB: <http://www.eib.org/attachments/general/reports/fr2015en.pdf>; IADB: <https://publications.iadb.org/bitstream/handle/11319/7555/Inter-American-Development-Bank-Annual-Report-2015-Financial-Statements.pdf?sequence%47>; AfDB: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Annual_Report_2015_EN_-_Full.pdf; AsDB: <https://www.adb.org/sites/default/files/institutional-document/182852/adb-financial-report-2015.pdf>; WB: <https://openknowledge.worldbank.org/bitstream/handle/10986/22550/WBAR2015FinancialStatements.pdf>.

Despite relatively small contributions of shareholders in capital, MDBs have been able to raise additional financing from private sources. For example, the World Bank's non-concessional International Bank for Reconstruction and Development (IBRD) lending window has cumulatively lent US\$586 billion between 1945 and 2013, based on total paid-in contributions from shareholders of only US\$13.4 billion. Thus, the MDB model is undeniably a good model. It is evident that MDBs have much more impact than the volume of loans, as many observers have frequently highlighted. MDBs can play important catalytic roles to attract private investment in at least three other ways (Chelsky and Morel 2013):

1. They help establish the necessary policy framework;
2. They contribute to the design and implementation of the project; and
3. They provide support to private investors active presence and guarantees.

These are reflected in the standard techniques that MDBs leverage on to catalyse private partner investments consists of a limited toolbox.

The use of loan guarantees, which were supposed to be the main activity of the World Bank at the very beginning, began effectively at the turn of the 1990s. On top of the late start, they do not represent – still – a large portion of total financing operations undertaken by the World Bank Group, IADB, AfDB, AsDB and other MDBs. The reason is quite simple: guarantees are rarely funded (MDBs cannot do it as regard their balance sheet) or often considered too complex while MDBs sometimes perceived as not sufficiently transparent. Guarantees – booked on MDB balance sheets in the same way as loans – are usually offered in three different forms:

- *Partial risk guarantees* (PRGs), which cover risks to debt (loan or bond) repayment posed government action or inaction;
- *Partial credit guarantees* (PCGs), which cover all or part of the financial obligation regardless of the reasons for non-payment;
- *Trade finance guarantees*, covering a portion of a bank's portfolio of trade finance.

Loan syndication is a mature activity, with EBRD and IFC more active in that area. There are two types of syndication: 1) an A/B loan program, where the MDB is the lender of record and the external financier provides resources as part of the overall loan package via the MDB), or 2) a parallel loan, where the MDB and the external source conclude separate loan agreements with the borrower, on a project designed and administered by the MDB. As Humphrey (2015) pointed out, syndication offers numerous benefits: borrowers obtain much larger volumes of resources, external financiers can rely on MDBs' knowledge, and the MDB has the capacity to increase its development impact while using less equity capital.

Co-financing is similar to syndication, but for a portfolio of loans rather than by individual project. This strategy might be useful in some cases: indeed, unlike syndication, co-financing arrangements can involve sovereign loans. AfDB and IFC, among other MDBS, already used this facility.

Targeting instruments and targeting maturities to the portion of the investment most in need of multilateral support is a more and more utilized strategy. MDBs tend to consider this strategy as an adequate way to maximise the use of their own scarce financial capacity and the proper way to leverage private resources.

Risk-sharing facilities are also utilised. The basic idea is to look for an external guarantor – or several external guarantors – for a portion of the MDB's exposure. The EIB does it extensively for long.

Last, but not least, MDBs have also begun creating spin-off vehicles to attract investors. It is also a way for MDBs to exonerate from some internal constraints. Such a strategy may be vital taking into account the huge infrastructure investment needs compared to their own capacity, and it should be favoured in the coming years.

In total, the current level of long-term co-financing mobilized by MDBs from private investors and other institutional investors in all countries of operation was USD 163.6 billion in 2016.

Figure 8: 2016 MDBs private investor mobilization results

ALL COUNTRIES OF OPERATION		
From Private Investors and Other Institutional Investors (Long Term):	Total (US\$ billion)	Of which Infrastructure (US\$ billion)
Direct Mobilization	49.9	7.1
Indirect Mobilization	113.7	61.5
Total Mobilization = Cofinancing	163.6	68.7

From Private Investors and Other Institutional Investors:	Total (US\$ billion)
Direct Mobilization - Short Term	3.7

(Source: 2016 joint report on mobilization of private finance by multilateral development banks)

Even if the business model of MDBs is a good one, and even if the instruments available are effective, we must admit it is insufficient with regards to the amounts of finance needed and the capacity to attract financing of both public and private with a focus on institutional investors. There is still around a gap of US\$1 trillion per year between current spending and the needs for emerging and developing countries by 2040.

This topic at centre stage of the G20's/MDBs principles on crowding-in private sector finance “to foster effective approaches to maximize the mobilization of private sector resources through financial and management resources and innovation”. Six principles have been set, which cover:

- *Recognising the primacy of country ownership*: in short, countries remain responsible for the nature and composition of the support they seek from MDBs. In return, MDBs provide advisory and financing resources to their borrowing members;
- *Creating an investment-friendly environment*: Transparency, governance, regulation, standardisation, guarantees, pipeline of commercially viable and bankable projects ... all participate to an investment-friendly environment;
- *Expanding and standardizing credit enhancement*: more efforts should be devoted to expand and standardize instruments in the form of guarantees, insurance products, blended finance, equity investment, and liquidity backup facilities to enhance opportunities for private support of public objectives;
- *Prioritizing commercial financing*: when possible, MDBs have to pursue cost-effective, non-government-guaranteed commercial financing, in order to better contribute to the optimal use of scarce public resources;
- *Blending concessional resources and private capital*. MDBs have already established common principles for using concessional finance in private sector operations (blended finance); and
- *Reviewing incentives for crowding-in private sector resources*. MDBs will review and strengthen their incentives for crowding-in and catalysing commercial finance, and ensure that incentives do not reduce the focus on quality.

All the principles point towards the creation of a new dawn of financial platforms scaled to an adequate size to attract the overwhelming source of private capital to meet the infrastructure needs of the future.

PPPs offer an exclusive opportunity to do so. PPPs originated as a simple principal – agent contract, whereby the government would partner with a private infrastructure provider. This was in opposition to the 1980s publicly provided infrastructure services push which resulted in high levels of inefficiencies and underinvestment in maintenance and technological upgrades. Since then, the privatization of infrastructure through PPP has given much

attention to developing the optimal contract between the principal and the agent trading off risk-sharing and incentives. It is striking how little attention is devoted to the fundamental question of how to structure financing of investments under PPPs, how much should come from private sources and in what form and how much should come from public sources. Equally, there is not much attention given to expanding the usual bilateral contract between a private provider and a government agency.

Some exceptions are Dewatripont and Legros's paper (2005) emphasizing the role of a third party to monitor and improve the efficiency of contract enforcement. As per Arezki et al. (2017), the most obvious partner is a MDB whereby development banks can become originate and distribute banks for the PPP infrastructure projects bringing in new partners such as long-term institutional investors.

With that in mind, with the profile of a financial product innovator, asset managers as an intermediary are undeniably a source for MDBs to build a new model for infrastructure financing safeguarded against the associated risks for catalysing institutional investor capital.

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