

Insights on existing and new drivers for impactful infrastructure investments

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INTRODUCTION

In today's environment of volatile macro-economic policies and political swings, demand for investments yielding predictable and attractive stable returns is higher than ever. However, many low-risk instruments such as bonds continue to yield negative inflation-adjusted returns across Europe. Infrastructure may offer investors a balanced solution to manage these challenges. Infrastructure comprises physical assets which provide basic services required for a society to function, such as (toll) roads, electricity grids or power generation. These assets offer highly predictable revenues for multiple reasons; all income is contracted with reliable counterparties, sensitivity to economic cycles is limited as these assets tend to have monopolistic characters due to prohibitive costs of building competition and inflation protection is strong as infrastructure revenues are often linked directly or indirectly to inflation.

Three major trends have shifted infrastructure investing in recent years: the focus on the environment, society and governance (ESG) is growing, a global presence is essential for investing in public-private-partnerships (PPPs) and specialisation in renewable energy is key. On top of these trends, the key developments driving future investment demand are energy transition and digitalisation. In this article, we provide a

roadmap of each of these challenges and provide insights on how investors can deal with these challenges in practice to successfully deploy capital in infrastructure.

TRENDS IN INFRASTRUCTURE AND (RENEWABLE) ENERGY INVESTMENTS

Despite being a sector that is known for stability and servicing basic human needs, infrastructure investing has been subject to significant change during the last two years. Three impactful trends are forcing infrastructure investors to redefine their investment strategies. First, transparency regarding matters related to ESG is now a vital part of any investment strategy; second, the deal flow of the, formerly popular, PPP contract style is fluctuating; and finally, government incentives for renewable energy projects are downsized or removed altogether, resulting in projects becoming more dependent on market dynamics.

ESG TODAY CAN BE CONSIDERED AN INTEGRAL PART OF THE FULL INVESTMENT LIFE CYCLE

The effects of climate change are becoming ever clearer and weather extremes have become the new reality. Consequently, investors increasingly focus on ESG as a metric for decision making. This is not just driven by investment philosophy or philanthropy, it is rather the fact that climate change impacts

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infrastructure and energy assets in a real and tangible way. The risk profile of fossil fuel assets is increasing as the world is attempting to kick off from its coal and oil addiction.

Due to their long tenor and economic life, infrastructure projects are exposed to the climate, making climate resilience particularly relevant for investments. This does not only relate to physical risk, such as (thunder-)storms, flooding, heat, and drought, but equally to regulatory changes imposed by governments.

One interesting example of effective climate risk mitigation in practice has been implemented by American Roads, a transport infrastructure holding company that participates in the Detroit Windsor Tunnel. While Detroit may be positioned away from the coasts and has faced one of the driest climates of the United States, it is still exposed to extreme weather events which are exacerbated by climate change. In particular, flooding is a key threat to the city, which was clearly evidenced in the summer of 2020 when substantial portions of island Belle Isle were underwater for several days. American Roads are therefore building climate resilience into the operation of the Detroit Windsor Tunnel, which is the second-busiest crossing between the United States and Canada. This has included installing dewatering pump systems, designed to manage ground water, reduce flood risk and help thaw ice throughout the tunnel.

MAKING A POSITIVE CONTRIBUTION TO THE ENVIRONMENT AND STAKEHOLDERS NOT ONLY IS ETHICALLY THE RIGHT THING TO DO, BUT ALSO ENHANCES RETURNS IN THE LONG RUN

Beyond effective policy on a project level, we believe that making a positive contribution to the environment and stakeholders not only is ethically the right thing to do, but also enhances returns in the long run. Accordingly, we strive to invest at least 50% of the funds' capital in opportunities that categorise as at least one of the UN's Sustainable Development Goals ("SDGs"). More specifically, it is looking to promote affordable and clean energy (SDG 7), industry, innovation & infrastructure (SDG 9), sustainable cities and communities (SDG 11) and climate action (SDG 13). For example we put SDG 7 in practice through our investment in Dublin Waste-to-Energy, which treats waste so that it generates sufficient energy to power 100,000 homes each year.

In order to become a positive contributor to climate resilience, we have chosen to target to achieve Net Zero emissions by 2050 or sooner, in line with the Paris Agreement. This means we will set medium term emissions reduction targets for 2030. We anticipate to achieve these targets through several practical steps: (i) we work with our portfolio companies to measure

greenhouse gas emissions and identifying pathways to reduce emissions with the Paris goal of net zero target by 2050 or sooner, (ii) we continue our investment programme into renewable energy and related infrastructure to support the global energy transition to decarbonised sources of energy, (iii) we will report on Climate-related Financial Disclosures recommendations and (iv) we will report on our progress annually. The M4 Motorway in Ireland is a case in point. Its safety scores have risen from 61% to over 89% since 2017 thanks to the introduction of measures such as near miss monitoring and through knowledge sharing. The project recorded zero injuries in 2020 and improved its 'Community and people' score by introducing measures for vulnerable users such as a system to detect vehicles driven by disabled people to exempt them at the toll plaza and a freephone line for disabled drivers who have difficulties on the road. We believe not only advocating this approach, but also implementing it in a practical manner in all our projects.

A GLOBAL PRESENCE IS A MUST TO STILL INVEST IN PUBLIC PRIVATE PARTNERSHIPS ("PPPS")

We view PPPs to be one of the most appealing investments in the infrastructure space. A short explanation on the concept of PPP: a PPP is a contract structure between at least one public and one private party of a long-term nature. This contract type is typically used in the form of a design, build, finance and maintain (DBFM) style, whereby the private parties are responsible for the four DBFM elements and in return they are remunerated by revenue streams that comprise a very high level of predictability, such as fixed annual availability payments made by the public party which cover all expenses while leaving room for an appealing return for equity investors.

The essence of the PPP concept is that it allows governments to move project risks towards private parties whereas for private lending and investing parties it can comprise an attractive investment opportunity. Once operational, PPPs are deemed to be low risk as these projects often have revenue counterparty exposure on sovereign states. That means the procuring authority is responsible for paying its revenues through a contractually agreed availability sum, which is typically indexed annually, while operational expenses are largely long-term contracted with contractors and debt financing is locked in for long tenors. As a result, operational and financing risks are largely passed down to other parties and a limited amount of risk resides with the infrastructure investment company.

PPP deal flow has been high over the past decade and the contract structure has been a fashionable means for governments to procure essential infrastructure with costs optimised over the entire asset life, as opposed to the construction phase only. However, the PPP form of contract has seemingly fallen out of grace in some jurisdictions.

The decline of PPPs in many jurisdictions is a consequence of two factors, being a debate about the level of risk transfer to the private sector following cost overruns and governments having

the ability to borrow at historically low funding costs providing them a lower cost of capital than what private parties can offer. Zooming in on the Netherlands, there is a number of large scale infrastructure works that have been procured using Rijkswaterstaat's DBFM contract, where either Rijkswaterstaat, the private partner or both had to assume significant additional costs. Examples include the Afsluitdijk, the IJmuiden Sealock and Knooppunt Hoewelaken. Following this, a more "classical" design and build approach was chosen for the Zuidasdok, resulting in the contractor handing back the project while construction had barely commenced. For the A27, to be procured next, Rijkswaterstaat is considering to opt for a DBFM contract for a straightforward section and a design-build contract for the technologically challenging south section. Despite these challenges, a recent study from Erasmus University concluded that the PPP form of contract results in qualitatively better assets, that are cheaper over the full asset lifecycle, and are delivered with less delay (Klijn, Koppenjan and Warsen, 2021).

THE EBB AND FLOW OF PPPS SHOWS THE IMPORTANCE FOR AN INFRASTRUCTURE INVESTOR TO BE ACTIVE GLOBALLY, TO AVOID EXPOSURE TO MARKETS WITH REDUCED ACTIVITY

The trend visible in the Netherlands is reflective of developments in broader Western Europe where PPP deal flow is reducing. However, deal flow in certain other geographies such as Latin America, Asia and Australia is continuing and in some countries even growing. In Australia for example, an average total annual greenfield PPP deal value of approximately A\$8 billion (EUR 5.1 billion) was tendered during the last four years. One example is the North-East Link project, the largest PPP project ever in Australia with a total cost of A\$11.1 billion (EUR 7.2 million). North East Link will be Victoria's longest twin road tunnel, with three lanes and ca. 6.5 kilometres in length, finally closing the missing link in Melbourne's freeway network. The consortium will build, operate and maintain the tunnels for a 25-year period after construction. The ebb and flow of PPPs shows the importance for an infrastructure investor to be active globally, to avoid exposure to markets with reduced activity.

RENEWABLE ENERGY HAS GROWN TO THE LARGEST INFRASTRUCTURE SUBSECTOR

Given the continued importance of clean energy in government policy and driven by government incentives, renewable energy has become the largest subsector of infrastructure investments. Approximately 22% of global infrastructure deal volume in 2021 comprised renewable energy deals, thereby exceeding other sectors such as energy, transport, telecommunications and social infrastructure. However the availability of long-term contracted revenues in renewable energy is declining, it is

challenging to structure projects with highly predictable and visible cash flows to fit with the typical infrastructure investment mandate.

Today, over 90% of global deal flow in renewable energy concerns onshore and offshore wind power and photovoltaic solar projects. While the build out of those technologies have been accelerated by government incentives offering a predictable offtake price per unit of power produced, including feed-in tariffs, contracts-for-difference and green certificates, the levelized cost of electricity ("LCOE") decreased as the number of projects has increased. This LCOE development continued to a point where developers and investors have gotten sufficiently comfortable to build new projects without the requirement of such incentive schemes. This in turn has led to some of those technologies becoming increasingly dependent on the prevailing electricity market prices. This introduces additional risk from an investor's perspective, as electricity prices are volatile and this volatility is increasing due to the expanding amount of renewable energy production which tends to produce simultaneously when wind speeds or solar irradiation are high. In such cases when projects are built without the benefit of an incentive scheme, project owners often seek to mitigate market price exposure by entering into a power purchase agreement ("PPA") with utility companies, traders, or directly with corporates that are the end consumer.

In effect, the renewable energy sector finds itself in a paradigm shift from government-backed incentive schemes to market risk. This requires a hands-on approach from an investor, involving the structuring of electricity offtake, in order to mitigate some of these new risks.

Also when looking at the alternative sub-sectors of renewable energy, such as biomass and biogas, challenges for investors are visible. Biomass projects are facing increased local and political resistance over doubts regarding the sustainability and locality of the supply chain of wood chips. This is added to general concerns about long-term security of fuel supply for any biomass project. While biogas shares some of those challenges, there might be better visibility on local feedstock supply. However, inherent technology risk and the limited scale of individual assets remain a limitation for large scale infrastructure investors to become active in the sub-sectors.

WHAT WILL DRIVE INVESTMENT OPPORTUNITIES IN THE NEXT DECADE?

There are two trends that will drive the need for infrastructure investments during the coming decades: the energy transition and digitalisation.

ENERGY TRANSITION

The first trend that will require significant capital inflows is the energy transition. Supply of power will need to transition from fossil fuel towards clean energy. Also demand for electricity will increase implying that power grids will require material upgrades to manage the increased load. Consequently, sizeable

investments are required in renewable energy generation capacity (mainly wind and solar), re-enforcing transmission and distribution networks, energy storage, hydrogen electrolyzers, electric vehicle charging infrastructure, carbon capture and storage for the hard to abate sectors and electrification of heating systems for the residential and industry sectors.

THE RENEWABLE ENERGY SECTOR FINDS ITSELF IN A PARADIGM SHIFT WHICH REQUIRES A HANDS-ON APPROACH FROM INVESTORS TO MITIGATE SOME OF THE NEW RISKS

Furthermore we see a trend that European final energy demand will reduce by 30%, while the share of electricity in final energy demand is forecast to increase from 20% to almost double that amount according to DNV (2021), a leading renewable energy market consultant. This is driven by the rapidly growing power demand from electric vehicles and electrification of buildings. By 2050 the role of coal will be marginalised, as it is substituted by other means of electricity generation and balancing of grids. Oil and natural gas will continue to play a role in hard to abate sectors such as shipping, aviation and heavy industry. However, both DNV (2021) and the International Energy Agency (2021) forecast hydrogen production to replace fossil fuels in some of those sectors by increasing five-fold in output and making up more than 10% of final energy demand by 2050. The role of nuclear capacity is forecasted to reduce slightly with new capacity additions not quite making up for decommissioning of nuclear capacity.

DIGITALISATION

Market researchers estimate that 4 billion people, roughly half of the global population, have internet connection today (International Telecommunications Union, 2021). Since 2013, mobile broadband subscriptions increased threefold and nearly reached 6 billion active subscriptions by the end of 2020, while mobile phone subscriptions reached 8.1 billion. Consequently, data consumption has grown by over 30% in 2020, and PwC forecasts continued growth of 25% per year on average until 2025 (PwC, 2021). To meet this increase in demand for connectivity and bandwidth, continued investments are required to roll-out glass-fibre networks and deploy telecom towers. Furthermore, the increase in data consumption, data storage and shift to cloud working require further investments in data centres.

As a consequence of the previously described trend, and sped up by the global pandemic, organisations are embracing working from home. The European Commission has measured that the number of workers in the EU that regularly works from home had increased from 5.2% in 2009 to 9% in 2019. During 2020 however, close to 40% of employed EU citizens was working from home fulltime (European Commission, 2020). Thought leaders, such as McKinsey (2020) and The Economist (2021), are expecting that in the post-pandemic world a hybrid way of working will be the norm, ensuring lasting increased demand for connectivity, bandwidth and data storage capacity.

CONCLUSIONS

In order to achieve predictable and attractive inflation protected returns, infrastructure investors will need to increasingly focus on the sustainable character of investments, reducing environmental impacts and climate-proofing investments. In addition to obtain low risk investments such as PPPs and renewable energy with strong contracted offtake, investors will need to search globally and become increasingly hands-on in the structuring of PPAs and other contracted offtake instruments.

In the future, not only the style of investing but also the sectors in which infrastructure investors invest will change as investments in traditional infrastructure such as roads, bridges and hospitals are expected to be overshadowed by investments in the energy transition and digitalisation due to rapidly increasing electricity use and exponentially growing demand for data. To adapt to these trends moving infrastructure markets, investors will need to remain flexible and innovative to invest in infrastructure of the future, thereby ensuring a positive impact on society while generating attractive returns for pension funds and insurance companies.

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