Report

Finding the pipeline

Project preparation for sustainable infrastructure

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THE NEW CLIMATE ECONOMY

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Cover photo: Khi Solar One power plant in South Africa's Northern Cape province. Credit: Planet

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A window of opportunity for investment in sustainable infrastructure

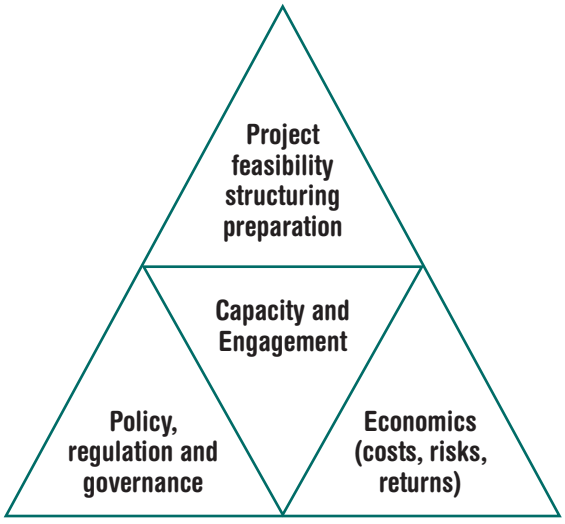
The Paris Agreement on climate change and the Sustainable Development Goals (SDGs) create an opportunity for new momentum for investment in sustainable infrastructure. These global objectives require a fundamental shift in what types of new infrastructure we invest in and for project preparation support. This will ensure new infrastructure is aligned with the requirement to keep climate change 'well below' 2°C while also delivering on development needs.

Lack of 'bankable' projects

Public and private investors broadly see that lack of investment-ready, 'bankable' projects as a major constraint to greater investment in low-carbon and climate resilient infrastructure. However, whether a project is bankable depends on a number of factors including the policy and regulatory environment, consultations with relevant stakeholders, capacity of counterparts to engage with investors, quality of project documentation, and at a fundamental level, economic development issues such as creditworthiness and willingness to pay. Project preparation also involves a number of stages – from upstream activity on establishing a supporting, enabling environment, engaging in stakeholder consultations, project conceptualisation and identification, and assessing project feasibility, to downstream activity involving financial structuring, determining 'bankability', and providing transaction support and reaching financial closure (for details, see Table 1).

Different factors shape a country's priorities in defining their infrastructure needs and can foster or hinder the development of a project's ability to secure requisite finance, as shown in Figure 1 below. These factors include: (i) the capacity of domestic institutions to structure and negotiate projects; (ii) processes and aptitude for engagement among the proponents and beneficiaries, (iii) policy, regulatory and governance considerations; (iv) project feasibility, structuring and preparation, including prefeasibility studies and feasibility studies; and (v) economics, including costs, likely returns, and the risk tolerance of potential investors. While the economic viability of low-carbon and resilient infrastructure is increasing, there may be significant need for new knowledge and technical capacity to deliver such investments.

Figure 1. Factors affecting project preparation



Source: ODI analysis

Promising new approaches

Establishing the conditions that will allow bankable projects to be generated is, therefore, a complex task that is likely to take sustained engagement at multiple levels. It is also likely to place new demands on existing systems that support project preparation. A number of promising approaches are beginning to emerge, however, that focus on building up endogenous capacity and draw on local expertise that understand the domestic context and investment environment.

Project preparation is key and must be aligned with delivering on climate goals and the SDGs

Numerous project preparation facilities (PPFs) have been set up to provide technical advice for design and conceptualisation, funding for prefeasibility studies and related functions. A review of current investment in project preparation support, and the costs associated with structuring low-carbon and climate resilient infrastructure suggests that delivering an investment of $93 trillion in sustainable infrastructure between 2015 and 2030 is likely to require project preparation support of $2.3-4.7 trillion, or approximately $155-310 billion per year. However, several studies have highlighted concerns about the effectiveness of existing facilities, including the adequacy of financial and human resources given their mandates, over-reliance on external expertise, the interests of particular

project investors, a lack of financial stability, and a lack of coordination across a myriad of small-scale initiatives.

Project preparation that supports low-carbon, climate resilient infrastructure at scale is now an urgent priority. Delivery will require greater domestic institutional capacity, more transparency on the functions of existing project preparation facilities, and stronger frameworks to coordinate action and act on lessons learned.

Better project preparation and implementation cannot happen without new approaches to developing infrastructure projects that are consistent with the achievement of countries' climate strategies, and an increase in investment in project preparation.

This paper recommends the following:

- **PPFs will need to adopt new approaches consistent with achieving global climate pledges.** To ensure that new infrastructure is consistent with a future 'well below' 2°C, current and future project preparation facilities will need to adopt new approaches to developing infrastructure projects that are consistent with achieving global climate commitments.
- **Support for project preparation for sustainable infrastructure needs to increase.** This increased support will need to include planning for sustainable infrastructure at the national level, ensuring attention to the climate change implications of projects that existing PPFs could support, continued focus by governments and development finance institutions to expand capacity, investment for building in-country capacity including for transaction management, and increased concessional finance for project preparation.
- **Sustainability should be built into project development and project preparation facilities.** The infrastructure needed to achieve the goals of the Paris Agreement and SDGs will require new approaches, including scenario testing for emissions reductions and climate resilience, as well as stakeholder engagement to ensure social equity and inclusion.
- **Improved capacity, including in transaction management, will be critical to navigating the challenges of raising finance for public and private infrastructure from a range of investors with different expectations and requirements.** MDBs and other DFIs need to consider rethinking long-term infrastructure where doing so would provide a lower emissions and more sustainable set of investments than business as usual investments.
- **MDBs and other DFIs can boost investment flows by investing in project preparation.** MDBs, DFIs and climate funds, including the GCF, can make a meaningful difference by increasing the share of finance invested in project preparation and take a targeted approach to strengthening institutional capacity to engage on climate change and to structure and negotiate projects and programmes along these lines.
- **Greater transparency and better coordination among facilities is needed.** More transparency on the functions of existing facilities, as well as stronger frameworks to coordinate action and share lessons, is needed. Strengthened support for project preparation should be accompanied with a more concerted effort to understand the full range of experiences, to identify and scale up efficient and effective practices.
- **Public funds should focus on sustainable infrastructure.** Public resources should emphasize invevestment in the low-carbon and climate resilient infrastructure of the future and discontinue financing for development of carbon intensive infrastructure, except in cases where no other option exists.

Action taken over the next 10-15 years will likely be decisive for achievement of Paris Agreement objectives and SDGs. Given the amount of time that project preparation takes, project preparation for sustainable infrastructure needs to be faster, greener and better to ensure sustainable development consistent with internationally agreed goals.

1. Introduction

The Paris Agreement on climate change and adoption of the SDGs create an opportunity for new momentum for investment in sustainable infrastructure

Delivery on the SDGs and the objectives of the Paris Agreement will require scaled-up flows of public and private investment in infrastructure that is socially, economically and environmentally sustainable. This will include low-carbon and climate resilient infrastructure over the next 10-15 years (Bhattacharya et al., 2015).[1]

To reach these goals, there is a broad consensus in the international financial community that the main barrier to increased investment is not a lack of available finance, but rather a lack of well-prepared and investment-ready bankable projects – i.e., whether a project is attractive enough for investors to decide to invest (Bielenberg et al., 2016).[2] This is evident in developing countries, where there is often limited capital available for project preparation, but also in developed economies – in the G20, only half the countries publish infrastructure pipelines (Ibid.).

The lack of bankable projects that reduce emissions and deliver sustainable development benefits remains a key constraint to achieving global climate and development objectives. The international community has launched numerous capacity building, technical assistance and learning initiatives to address this gap, but greater effort will be needed to mobilise sufficient levels of public and private investment in developing and emerging economies for sustainable infrastructure.

Since 2011, the G20 have supported a work programme focused on options for mobilising investment in infrastructure, anchored in the Global Infrastructure Hub,[3] with emphasis on project preparation support (MDBs, 2015a). Both the Paris Agreement and the SDGs 'require enormous new amounts of financing for infrastructure' (Kim, 2016) as well as a shift away from financing infrastructure incompatible with these goals. Preliminary analysis suggests that incremental spending required to achieve the SDGs in lower-income countries (LIC) and lower-middle-income countries (LMIC) may reach at least $1.4 trillion per year, of which approximately half can be financed through private investment. Globally, 'an incremental 1.5-2.5% of world GDP needs to be invested each year by the public and private sectors to achieve the SDGs in every country' (Schmidt-Traub, 2015).

Efforts to agree a new framework on Financing for Development in 2015 also emphasised the need for more and better coordinated support for project preparation, particularly for infrastructure. The Addis Ababa Action Agenda noted, 'insufficient [private] investment is due, in part, to inadequate infrastructure plans and an insufficient number of well-prepared investable projects, along with private sector incentive structures that are not necessarily appropriate for investing in many long-term projects, and risk perceptions of investors' (UN DESA, 2015: 24).

Multilateral development banks (MDBs) are working to distil lessons from their experiences with project preparation support and to create new platforms to facilitate infrastructure investment. The recently inaugurated Global Infrastructure Forum (2016: 1) brings together development banks to facilitate such investment and 'consolidate and scale up where possible existing multilateral mechanisms to promote greater knowledge transfer, project preparation, and implementation support'.

Delivering the Paris Agreement goal of keeping global average temperature increases 'well below' 2°C will require greater investment but also a concerted shift in investment trajectories away from business as usual, towards low emission, climate resilient development. More ambition or over-delivery on current commitments will be needed to achieve agreed targets.[4] However, efforts to prepare infrastructure projects and programmes do not uniformly reflect this imperative. As the 2015 New Climate Economy (NCE) report noted, 'some institutions [including the MDBs and national development banks] are now pioneering new methods of "mainstreaming" climate concerns into infrastructure planning and policy', but for G20 efforts such

1 Also see (2014) 'Window of opportunity'. Nature Climate Change, 4: 1037, available at: http://www.nature.com/nclimate/journal/v4/n12/full/nclimate2464.html.

2 Also see Bhattacharya et al. (2015), pp. 13, 20; CEPA (2015a), p. 122; Inderst and Stewart (2014), para. 11; PPIAF (2007), p.1; and Z/Yen and WWF (2015).

3 See http://globalinfrastructurehub.org

4 See for example Rogelj et al. (2016)

as the Global Infrastructure Hub, 'too often infrastructure and climate policies exist in separate silos' (Rydge et al., 2015).

Therefore, we have a window of opportunity for action. However, the window is closing due to the time required for project preparation ahead of required investments to deliver the SDGs and to raise ambitions in achieving the Paris Agreement goals. As Professor Lord Nicholas Stern of the Grantham Research Institute and Inter-American Development Bank (IADB), and the IADB President Luis Moreno recently observed:

> *[T]his unprecedented opportunity will either be seized or squandered in the boardrooms of development banks. Borrowing governments must push smart infrastructure to the front of their project pipelines as their best route to sustainable development and poverty reduction. And donor nations, through their shareholdings, must do everything possible to facilitate financing for these projects (Moreno and Stern, 2016).*

Structure of this report

This report considers the complexities that underpin efforts to attract investment into sustainable infrastructure, with a focus on project preparation. It reflects on experiences with project preparation support for infrastructure and potential shifts in approach needed to deliver the scale of investment required in sustainable infrastructure to achieve the SDGs, and fulfil the goals of the Paris Agreement.

The report is organised as follows. **Section 2** begins by outlining the nature of infrastructure project development and the complexities involved in directing the process towards sustainable outcomes. **Section 3** considers the interrelated factors that make it difficult to attract investment for infrastructure projects. It explores the barriers to institutional investment, and estimates the amount of investment needed for projected levels of required investment in sustainable infrastructure.

Section 4 offers an overview of the existing landscape of project preparation facilities, reviewing experiences with existing efforts in addressing project viability and bankability to reflect on their adequacy and effectiveness, as well as highlighting promising initiatives. Finally, **Section 5** concludes with recommendations to strengthen current initiatives, promote innovative approaches that ensure sustainability, and to accelerate the pace of project preparation for sustainable infrastructure.

2. Project preparation and sustainable infrastructure investment

Phases of project development

Project development involves several phases of activity, as shown in Table 1. Within project development, project preparation represents a subset of activities from project conceptualisation and definition to transaction support and implementation (Ramboll, 2015). Each phase involves specialist skills and expertise, which depending on the project may require involvement from national government officials, local government representatives, multilateral development banks, development finance institutions, commercial banks, private equity or venture capital investors, industrial or technology companies, donor agencies, engineering and construction firms, environmental and social experts, legal and financial advisors, and monitoring and evaluation specialists.

Through this process, governments may be required to play the central role of project sponsor, particularly in large-scale infrastructure projects or where deployment of new technology requires public support. In these cases, governments serve as an anchor for critical steps in the project development process, which include: creating enabling legislation and regulatory policy for the project; marshalling political support within government; engaging with project preparation facilities, and technical and financial experts as needed to bring the project to financial close; and developing an implementation and monitoring plan (CEPA, 2015a).

The private sector too will engage at different stages, providing project developers, investors, engineers, consultants, and financial and technical advisors. In some cases, private sector actors may initiate the project development process by taking a project proposal to the host government or respond to a government request for proposals.

While in theory, the process can be described step-wise as above, in practice the process is not always linear and may involve iteration to earlier stages. This relates particularly to ensuring the policy and regulatory environment supports the long-term financial viability of the investment.

Estimating project preparation needs

Given the strong focus of international forums, such as the G20 and others, on the importance of project preparation, it is worth considering the scale of these efforts compared to projected needs:

- Assuming project preparation costs in the range of 2.5% to 5% of total investment,[5] and using NCE estimates of $93 trillion for investment demand in a low-carbon scenario between 2015-2030 (Global Commission on the Economy and Climate, 2014: 19), global investment in project preparation could reach $2.3-4.7 trillion over the period, or approximately $155-310 billion per year
- Broken down by sector, estimated project preparation costs for energy would be approximately $1-2 trillion and $0.675-1.35 trillion for transportation over 2015-2030 (Bielenberg, 2016).[6]

Project preparation costs may be higher where infrastructure, including low-carbon and climate resilient infrastructure, is trans-boundary (e.g. China's One Belt, One Road initiative) due, in part, to the need to coordinate activities with counterparts and institutions across different geographies and policy jurisdictions. The World Bank suggests that regional projects are roughly twice

5 Annex 2 shows estimated ranges of project preparation costs as a percentage of total investment.

6 See Annex 3 for details.

Table 1. Phases of project development

Stage		Step	Activity
Upstream	Early stage	1. Enabling environment	Designing enabling legislation Designing regulatory approaches Reforming project relevant institutions Capacity building Consensus building
		Stakeholder consultations (throughout process)	
		2. Project conceptualisation and definition	Identifying desired outputs Comparison with alternative projects and prioritisation Identifying project partners Preparing action plans including implementation tasks and terms of reference Conducting prefeasibility studies Preliminary risk allocation Set-up and manage advisory team Start public procurement process, if applicable
	Mid-stage	3. Project feasibility	Organisational/administrative arrangements Financial modelling Technical/engineering options analysis Environmental impact assessment Socio-economic appraisal Other specialist studies
Downstream	Late stage	4. Project structuring	Assessing public/private finance options Designing legal entities Developing technical/engineering designs
		'Bankability'	
		5. Transaction support	Project financing (ongoing) Legal structuring (ongoing) Finalising engineering/technical designs Drafting procurement contracts Conducting bid process Drafting contracts Negotiating financial and legal terms
		Financial closure	
		6. Post-implementation support	Monitoring of outcomes Conducting impact evaluation Renegotiating or refinancing project

Source: Adapted from World Bank (2013); Ramboll (2015); Kortekaas (2015) and CEPA (2015a)

as expensive to prepare as national projects.[7] Reviews commissioned by the G20 of available finance for project preparation in Africa found that available finance amounts to about $1.1 billion annually (ICA, 2015); highlighting the considerable gap between the requirement and the available funds compared to the project preparation requirements to close an infrastructure gap of $31-93 billion a year (Foster and Briceño-Garmendia, 2010).

Key challenges in project development

The key challenges include obtaining sufficient financing for each stage, securing appropriate legal or financial advice, addressing environmental and social considerations, dealing with unforeseen policy or regulatory changes, and adjusting course if a key donor or partner withdraws support. It is also important to ensure reliable revenue streams for clean energy projects relative to alternatives.

Similarly, financial structuring depends on cost of capital as well as input prices, which vary depending on market conditions. In energy investments, changing technology prices over time represent an important variable. For example, when

7 See for example, Foster and Briceño-Garmendia (2010).

South Africa planned its new fleet of coal power stations, costs of deploying solar energy were considerably higher than at present. Falling solar and wind prices create a challenge for developers preparing potentially large investments – while also presenting an opportunity to avoid path dependency, inertia and 'lock-in'.

In addition to the 'hardware' of project preparation (e.g. technology and financing options), a sound process also involves 'software' in the form of stakeholder consultations and political engagement. Stakeholder consultations represent a key component throughout the process, particularly important given that relevant stakeholders change depending on the stage of the process. Upstream stakeholders may include beneficiaries and affected communities, while downstream stakeholders may include investors, implementing entities and local communities who bear risk during and after project implementation. Robust and effective stakeholder consultation needs to reflect the scope and potential impact of the proposed intervention and needs to be designed and conducted in a way that is flexible, iterative and inclusive rather than being treated as a 'check box' exercise.

The success of projects depends on developers and other stakeholders navigating the stages above, and steering the project to financial closing, construction, operations and maintenance. Smaller-scale infrastructure projects may take relatively short time-frames to implement, but major infrastructure investment projects, particularly involving low-carbon energy, may take much longer. According to Bhattacharya et al. (2015:20), 'analysis of 44 recent mega-projects (those over $1 billion) indicates an average time from announcement to construction of five years. Many MDB projects can take up to nine years or more'. Large-scale infrastructure projects in Africa can take 7-10 years to move from project identification to financial closure and then an additional 3-5 years for construction. In developed economies, project development involving the private sector may take an estimated 2-8 years.[8]

To maintain momentum, project preparation also needs to be framed in the broader context of the vision for growth and development in a city, country or region. In this context, project preparation – from project identification (described in further detail below), review of options, stakeholder engagement, and even financing strategies – can be conceptualised in terms of the larger objectives. This results in better choices made in terms of investing in sustainable options, rather than viewing sustainability as an additional cost to a project that might have anyway been prepared under a business as usual approach. This re-conceptualisation of overall aims can open up new possibilities for intervention, deepen ownership of the development process, and improve chances for sustainable outcomes through the proposed policy change or investment.

Even when a long-term vision has been formed, project preparation takes time, particularly for large investments. In Kenya, which launched its long-term development programme Vision 2030 in 2008,[9] it took over a decade to progress the development of the Lake Turkana Wind Power (LTWP) project, a 310 MW (megawatt) wind power facility now being built in northern Kenya. Box 1 below summarises key milestones in the project development process for the LTWP project from concept to construction.

Shifting to sustainable and resilient infrastructure for a future 'well below' 2°C

The SDGs and Paris Agreement place new demands on existing systems that currently are not positioned well to support initial phases of project development. Shifting to sustainable and resilient infrastructure requires additional steps before and throughout the project preparation process. These steps include greater willingness and ability to re-conceptualise at the early stage the potential intervention, as well as ensuring that Environmental, Social and Governance (ESG) considerations are taken into account throughout the project development process. Integration of sustainability considerations has historically focused on environmental and social safeguards, as considerations taken into account only following project identification. More comprehensive efforts are necessary to ensure that investment in infrastructure will be sustainable.

Decision-makers need consolidated processes for ensuring that investments align with a future 'well below' 2°C as well as broader, long-term sustainability considerations. Research organisations have begun to explore ways to assess and ensure such alignment. For example, Cochran et al. (2015: 15-16 and Figure 7) note that the 'structuring of strategic intervention frameworks to support low-carbon, climate resilient [LCCR] development and respect long-term transition objectives is perhaps the most important step to ensuring that an institution's activities support the mainstreaming of climate and the LCCR transition'. Quantitative and qualitative tools to screen and prioritise technological options and sectors, estimate potential impacts, and set emissions thresholds are highlighted.

In this context, the challenge for project preparation becomes 'identifying how to align individual investments and short- and medium-term objectives with long-term objectives', including 'moving from "static" assessment tools – that identify whether or not emissions are reduced or resiliency is increased by an action – to a "dynamic" process within which the "transition potential" or "transition impact" is assessed' (Cochran et al., 2015: 20-21). In general, it is possible to develop 2°C investment criteria, particularly in some sectors (e.g. energy) rather than others (transport), but

8 Sources: NEPAD-IPPF for Africa and the World Bank for developed countries, cited in ICA (2015), p. 16.

9 See http://www.vision2030.go.ke.

Box 1. Development of the Lake Turkana Wind Farm

At a total of nearly $1 billion in investment, the 310 MW Lake Turkana Wind Power (LTWP) is the largest wind power project in Africa, the largest private investment in Kenya's history, and a landmark public private partnership transaction for sub-Saharan Africa. The evolving regulatory framework for private participation in energy in Kenya coupled with perceived uncertainties around demand for power and likelihood of cost recovery meant that it took more than 10 years for the project to reach financial close. The project brought together a large number of players to develop a project centred on a technology at a scale that was new and potentially transformational for Kenya and the region.

1998	Carlo Van Wageningen, later director of LTWP, goes on a fishing trip to Lake Turkana. 'The wind blew like nowhere I'd ever seen', he says (Stevis, 2015)
2005	Willem Dólleman, a Dutch entrepreneur/farmer resident in Kenya, with four other founders, starts Lake Turkana Wind Power Limited to fulfil Dólleman's dream of setting up a wind park on the shores of the lake
2006	Dólleman discusses the wind conditions in Lake Turkana and approaches Anset Africa as project developers
Later in 2006	Anset Africa starts developing the project and established KP&P to continue to develop a wind power project
November 2006	KP&P start collecting wind data. Early tests show the wind to be so strong that 'it would break any turbine because it was well above the average speed … they are designed to handle' (Mutiga and Smith, 2015)
2009	Discussions begin with the Government of Kenya. 'Everybody thought we were a bunch of looneys because of its size: 310 MW of installed capacity' in a remote area with no roads or other type of infrastructure (Mutiga and Smith, 2015)
Late 2009	Aldwych International begins to co-develop LTWP with KP&P
January 2010	Power Purchase Agreement (PPA) signed with Kenya Power
February 2011	LTWP registered as a Clean Development Mechanism (CDM) project by the UN Framework Convention on Climate Change (UNFCCC) with the Gold Standard rating
September 2011	PPA reaffirmed and signed
October 2012	World Bank withdraws from the project because of concerns that output from the wind farm would exceed electricity demand in Kenya (Dodd, 2012)
February 2013	Government of Kenya signs a letter of support for LTWP
May 2013	African Development Bank (AfDB) approves $149.5 million loan to LTWP and agrees to partially guarantee timely construction of 428 km in transmission lines from base stations to the grid, eliminating a key concern that led to the World Bank withdrawing from the project in 2012
March 2014	Debt financing agreed for €623 million, with AfDB as mandated lead arranger, Standard Bank of South Africa and Nedbank as co-arrangers, and financial support from the European Investment Bank (EIB), Netherlands Development Finance Company (FMO), Proparco, East African Development Bank, PTA Bank, EKF, Triodos and DEG (AfDB, 2014; LTWP, 2014)
September 2014	Project achieves equity closing
October 2014	Construction on the power plant commences
December 2014	Project achieves full financial close
February 2015	Project wins Project Finance International's African Renewables Deal of the Year 2014, and is also awarded the African Renewables Deal of the Year for the IJ Global Awards 2014 Europe & Africa
June 2015	Project wins Africa investor (Ai) Power Deal of the Year
October 2015	Google agrees to buy 12.5% stake from turbine manufacturer, Vestas
March 2016	First turbine shipment arrives at the Port of Mombasa
September 2016	Scheduled date of commissioning for 50 to 90 MW of capacity
April 2017	Previous target date for wind farm to be fully operational at 310 MW
October 2017	New target date for first output of 50-70 MW to the grid 'because transmission lines may not be in place' (Genga, 2016)

Sources: Lake Turkana Wind Power website and press reports (LTWPa, 2016; LTWPb, 2016; Africa investor, 2015; Aldwych International, 2016; Hovland, 2015; Sambu and Wahome, 2012).

that more work is needed to develop such investment criteria and processes as well as form a broader systemic view on potential investments (Höhne et al. 2015a, 2015b).

Such a shift may involve deeper changes in the way investors tend to view long-term sustainability. As Mersmann et al. (2014: 12) note, 'With respect to low-carbon development there is a growing consensus that a low-carbon development pathway in line with the 2°C limit can only be reached by a paradigm shift'. After the Task Force on Climate related Financial Disclosures (TCFD) completes its final report for the G20, more detailed consideration of different policy, technology and climate risk scenarios may become an important part of business and investment evaluation (Carney, 2016).

At present, current institutional incentives to focus on project delivery can compound the challenge of sustainability. A sector-based approach – in which issues involved are qualified, quantified and analysed before assistance is provided – can be more effective in ensuring sustainability. This is in comparison with a project-based approach in which policy, regulatory and sustainability issues are addressed after a project has been narrowly defined. In a sector-based approach, an investment master plan for the sector can serve to prioritise investments focusing on aspects responsive to foreseeable climate-related risks. Donors and project developers can then be required to 'sign on' to the investment master plan to ensure proper sequencing and avoid duplication of effort. Investment master plans can focus preparation on priority projects and facilitate investment including through project selection, help ensure more consistent integration of climate-related considerations into subsequent project design, and enable a thorough and systematic review of potential alternatives (e.g. including different location, technology or project specification).

Financial incentives, with a narrow focus on attracting private investment, can run counter to sustainability goals. While some projects may be financially attractive for private investment (i.e. primarily driven by financial considerations), others may be economically feasible for donor or MDB funds, whose decisions may be driven by economic rates of return (ERRs). Others still may be socially important, and therefore suitable for the country itself to fund. To the extent that financial returns drive investment decisions, developers may be incentivised to reduce costs to realise short-term gains, and under-invest in elements of the project that reflect sustainability considerations.

To achieve the goals of the Paris Agreement and the SDGs, both public and private investors will need to reach a better shared understanding of the underlying barriers to greater levels of investment in sustainable infrastructure. This understanding must begin with a fuller recognition of the complexity of bankability and the underlying drivers that shape perceptions of bankability.

3. Lack of 'bankable' projects

There is broad consensus among investors and development banks that the main hurdle for investment in sustainable infrastructure is not lack of finance but 'the lack of packaged, bankable projects' (PPIAF, 2007: 1). This constraint is particularly binding in less developed countries where there is less domestic public and private finance available for project development and preparation, while institutional capacity may also be limited and financial systems underdeveloped. As the World Economic Forum recently noted:

> *The main challenge in the infrastructure area has been to structure and deliver bankable and sustainable projects. In other words, the public sector's chronic difficulty in creating a long-term framework for planning, preparing and implementing the delivery of infrastructure has been the most visible bottleneck in the search for funding. But this difficulty itself is anchored in the limited ability of the public sector in many countries to deal with the contractual, institutional and technical dimensions of project preparation. ... The design of an infrastructure project that will depend on private co-financing tends to involve multiple actors, all with overlapping but different agendas, time horizons, constraints and degrees of commitment. It also involves contracts of various types, starting with procurement and ending with the need to manage the degree of recourse that lenders will have. (WEF, 2014a: 19)*

Developing long-lived bankable project faces headwinds in emerging markets, where political and economic conditions may be fluid and private investors may be attracted by a country's promising growth prospects but will seek reassurance from the country's long-term vision as well as policy and regulatory frameworks to ensure that conditions will support the viability of the proposed investment over the relevant timeframe. In these markets, private investors also face the challenge of understanding domestic political conditions and dynamics, aligning their business processes with the political context and development priorities of the country, and pursuing investment opportunities tied to long-term development goals.

In addition, public sector representatives in countries seeking private investment must, ideally, be able to engage and interact effectively and efficiently with private sector counterparts on their own terms (e.g. technical and financial). This needs to happen early enough in project development process to ensure that policy conditions necessary to attract investment are in place, fast enough to maintain momentum in the private counterpart's own decision-making processes, and consistently enough to give reassurances that investment conditions will be stable over the life of the investment – for large infrastructure projects, this may be measured in decades.

Different factors interact to shape the priorities that countries have in defining their infrastructure needs; these factors foster or hinder the development of projects able to secure requisite finance. Figure 1 (above) sets out some key fundamentals, which shape the priorities countries have in defining their infrastructure needs and fostering the development of financeable projects. These factors include:

1. Capacity of domestic institutions (including government ministries, regulators, parastatals and state-owned enterprises, as well as private sector firms and institutions) to structure projects, pitch them to private and public actors able to invest, and negotiate appropriate arrangements with various stakeholders involved in the stages of an infrastructure programme;
2. Engagement among the proponents and beneficiaries. Particularly in developing countries that may depend more on non-domestic funding sources so that the projects may be co-developed more actively, can involve stakeholders and institutions, and take into account the country's political economy and long-term vision to reduce execution risks;
3. Policy, regulatory and governance issues which are diverse and involve key considerations such as which actors are allowed to participate in different infrastructure sectors, the emphasis placed on climate change related risks and opportunities to reduce emissions and increase resilience to the impacts of climate change, the systems as well as processes in place to develop and enable effective implementation of programmes (including on procurement, and complex issues related to corruption);
4. Project feasibility, structuring and preparation, including prefeasibility studies and feasibility studies whose existence and apparent readiness can focus decision-makers on specific infrastructure development opportunities; and,
5. Economics, including costs, likely returns, and risks and the tolerance of various potential investors of those risks.

Often these issues are interrelated: for example, policy and regulatory frameworks affect the creditworthiness of key actors in the system – such as utilities that may be buyers for privately generated energy in a deregulated electricity market – which in turn, can shape the economics of interventions. Infrastructure provision in developing countries is frequently characterised by high costs and inadequate revenue, which also affects the degree of attraction for private investment.

'Bankability' depends on creditworthiness and perceptions of risk and return

Whether a project is 'bankable' – i.e., attractive enough for investors to decide to invest – depends on a number of factors, including but not limited to the quality, detail and transparency of the project documentation itself (e.g. feasibility studies). At a fundamental level, bankability often involves broader economic development issues, including consumers or end-users' willingness to pay, the ability of the off-taker (e.g., utility purchasing electricity generation) to collect fees from customers or end-users, and the government's willingness to support appropriate charges for infrastructure services (e.g. through purchase agreements) (CEPA, 2015b: 2).

As CEPA (2015a: 4-5) notes, 'This lack of bankability is the key barrier to the flow of private finance to projects'. Furthermore:

> *Although the lack of an 'enabling environment' has long been recognised as a constraint to PPPs and private investment … some of the real challenges lie even further upstream. They involve a lack of a broad based recognition of the need to pay for infrastructure services – irrespective of who provides them – and to overcome different interest groups that can work against PPPs succeeding. … These challenges require just as much focus as the more technical issues such as developing a legal and regulatory framework, project preparation and modes of financing.*

'Unless the basic credit worthiness risk is mitigated, private finance will not flow to projects' (CEPA, 2015b). In other words, the lack of bankable projects often reflects views of proposed investments as not creditworthy due to risks associated with projected cash flows to investors (CEPA, 2015a: 122).

Bankability is also closely tied to the institutional capacity of the public ministry or agency involved in an investment to serve as an effective counterpart. This is also tied to the country's level of development. As Tan (2011: 66) points out:

Box 2. Realising sustainable urban transit infrastructure: Mexico City's Metrobus system

Mexico City's Metrobus project provides an illustration of the many elements that must come together successfully to realise a sustainable urban infrastructure investment. It also demonstrates the importance of effective political champions to drive projects through and the facilitative role of international support.

Metrobus is a bus rapid transit (BRT) system launched in 2005, financed by a combination of public and private resources. By 2012, the system incorporated over 93 km of total routes and was carrying 700,000 passengers per day. BRT is a mode of public transit based on separated busways, usually situated down the centre of existing roads, with special purpose platforms and off-bus ticketing systems. Cities have turned to BRT as a far simpler and cheaper alternative to constructing new underground subway systems.

The Metrobus project was conceptualised in 2000, largely because of air pollution and traffic congestion concerns. However, a focus on carbon savings was not incorporated until the World Bank became involved in 2002 through a Global Environment Facility (GEF) grant that provided funds for project planning, aimed at seeking accreditation as a CDM project. Mexico City's Secretary of the Environment, Claudia Sheinbaum played a crucial role during her tenure in office in championing the project and driving implementation. She created a Project Implementation Unit to oversee the project's development, helped obtain funds for early feasibility studies and was influential in persuading the mayor of the project's viability. The project's anticipated co-benefits – reduced travel times, health gains from reduced air pollution, improved road safety and new economic opportunities along BRT routes – were also critical to building support.

The Metrobus system was financed through a combination of public and private resources: broadly, local government paid for the core infrastructure, while private concessionaires paid for the buses. The large number of individual bus concessionaires from the pre-existing bus system posed a major barrier, as they were reluctant to change the status quo. Lengthy negotiations resulted in agreement on the new system involving the amalgamation of individual concessionaires into firms. A publicly funded bus-scrapping programme helped to incentivise the transition. Private investment in new buses for the BRT system was difficult because of a lack of credit history, so the government had to act as guarantor for the loans to make investment possible.

While a considerable amount of planning, negotiation and effort contributed to realising the project, it also benefited from being on the side of good fortune. At the time of the project's planning, most of city's public infrastructure funding was already committed to expanding Mexico City's outer beltway. An unexpected windfall in revenues due to higher global oil prices helped make the project possible (Franke, Macias, and Schmid, 2012).

Institutional weaknesses are often a symptom of underdevelopment, and focusing on strengthening existing institutions or transferring developed-country institutions to developing countries is sequentially problematic. More crucially perhaps, strengthening regulatory capacities … does not address the problems of high cost and inadequate revenue that characterise infrastructure provision in developing countries.

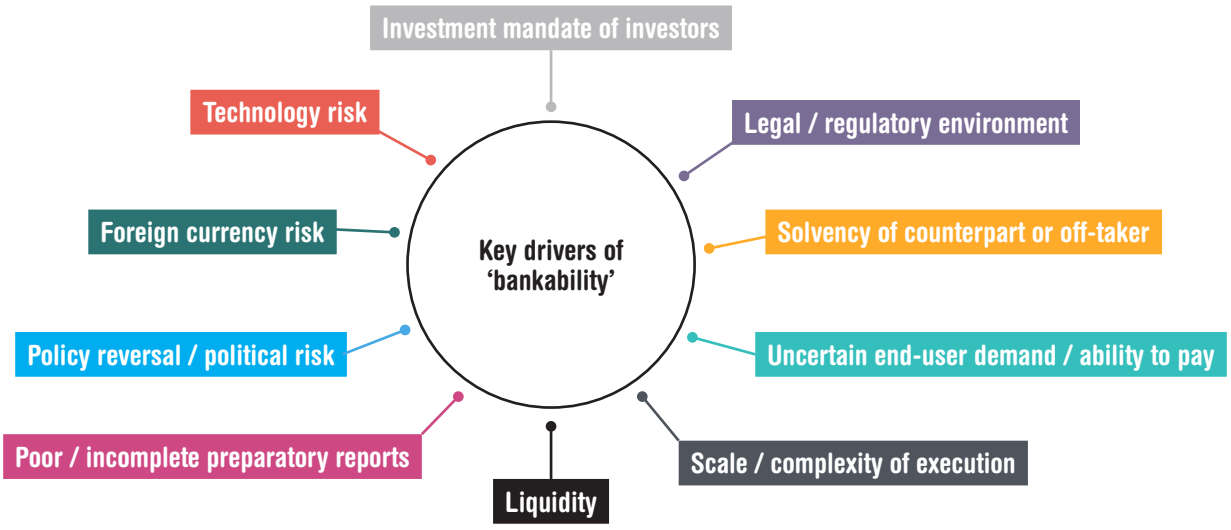
Even where enabling conditions seem relatively well established, matching proposed initiatives with interests of potential investors remains a challenge. Different types of investors have different expectations, which requires a thorough understanding of each specific investor requirements for investment. As a recent study on the bankability of solar projects noted, 'while banks might typically emphasise the impact of stable cash flows on the project's long-term debt service, equity investors tend to focus on their expectations on investment returns, possible tax incentives and their portfolio strategies' (Hampl, et al., 2011: 3).

Managing perceptions of risks is also vital for ensuring bankability. Even as new technologies and business models become better established, risk perception may be higher for renewable energy and energy efficiency investments as investors tend to view these as less familiar or more exposed to risks of policy changes compared to fossil fuel technologies or centralised utility models.

Risk management is not only the responsibility of the project sponsor. Lack of capacity within financial institutions – where risk aversion by credit committees and failure to engage because the project technology, geography or business model may be unfamiliar – can also affect bankability. Mexico's experience developing bus rapid transit systems (described in Box 2) highlights the multiple factors that must come together for a project to become viable.

Therefore, bankability is not a purely objective concept. It depends on subjective views and analysis of a project's creditworthiness as well as perceived credibility, financial strength and track record of the project sponsor (CEPA, 2015a). Bankability also depends, in part, on the policy, legal and regulatory regime of the country or region in which it is located and the accompanying macroeconomic risks (e.g. exchange or interest rate risk). These risks may not be fully hedged, and may go 'well beyond specific aspects of the project's own design' (CEPA, 2015a). Indeed a project's design, including its financing structure, may need to be adjusted to accommodate these broader risks, which may also affect the expected returns for investors and the project's bankability.

Figure 2. Key factors that shape views of bankability



Source: ODI analysis

As the private sector begins to reconceptualise its role and begins to see sustainable investment in the future as an opportunity rather than an arbitrary response to policy mandates, the potential for bankability may expand. To reach the scale of investment required to achieve Paris Agreement goals or the SDGs, the public sector alone cannot shoulder the responsibility of driving investment into sustainable infrastructure, nor can achievement of these goals be based only on private responses to policy mandates. Private investors also need a long-term vision compatible with a sustainable future. As the UNEP Inquiry (2016a:5) has observed, 'Momentum is also growing to align at a more fundamental level the financial system with sustainable development'. Yet current progress 'remains inadequate to deliver the transformation needed to finance sustainable development' (UNEP, 2016b:1). New frameworks of fiduciary responsibility and concepts of sustainable investment may shift investors' perceptions, increase appetite for infrastructure investments and expand the scope of bankability. Figure 2 summarises some of the key factors that shape perceptions of bankability.

Financial regulation plays a role in allocation of capital to sustainable infrastructure

Financial regulation also affects institutional investors' appetite for infrastructure and perceptions of bankability. Following the global financial crisis in 2008, regulatory changes improved financial stability – but it may have also adversely affected incentives, particularly for banks and institutional investors, to invest in long-term, low-carbon, climate resilient infrastructure (Bielenberg et al., 2016). For example, Basel III bank regulations, intended to increase liquidity and reduce leverage, may have also reduced the availability of project finance debt as banks previously active in providing non-recourse project finance loans have become more reluctant to fund long-term, illiquid assets (OECD/IEA/NEA/ITF, 2015: 59). As Kaminker and Stewart (2012: 12) noted in a paper focusing on clean energy:

> *The new Basel III banking regulations … will force banks to hold more equity on their balance sheets for higher risk lending and it is predicted that the long-term capital commitments associated with clean energy infrastructure projects could become too expensive for banks to finance. Current expectations are that conditions for bank loans and refinancing will likely become much less favourable and more expensive.*

As a result, banks have withdrawn from the market to increase their capital base which they hold in reserve, resulting in less available credit, higher borrowing costs and shorter maturities (OECD, 2014: 20; WEF, 2014b: 3, 13).

Similarly, under Solvency II – an EU directive to codify and harmonise insurance regulation particularly with respect to the amount of capital that EU insurance companies must hold to reduce the risk of insolvency – infrastructure loans are subject to capital charges similar to corporate bonds. As high-yield corporate loans with shorter tenor, or time for repayment, receive better capital treatment than longer tenor investment grade bonds, the regulation may dis-incentivise EU insurance companies from taking on long-term investments, including in sustainable infrastructure (UNEP, 2015; OECD, 2014).

Moreover, while large institutional investors may seem to have substantial assets under management to potentially invest,[10] unless they have a specific mandate to focus on infrastructure, they are limited in terms of how much capital they allocate to such investments by a range of factors. These include large institutional investors' investment mandates, portfolio diversification strategy, geographical preferences,

10 Assuming assets under management of approximately $45 trillion in the OECD as of 2010, and taking into consideration liquidity requirements, investment mandates, capacity by funds for direct investing, and institutional investors' diversification requirements, Climate Policy Initiative estimated the potential for investment in renewable energy assets by institutional investors to be approximately $257 billion. See Nelson and Pierpont (2013), Appendix 2, p. 65-68. Using a different approach and $93 trillion assets under management, Murray (2015) estimated 'the maximum theoretical institutional investor equity allocation for non-domestic climate finance infrastructure is currently of the order of $250 billion'.

risk tolerance (e.g. for new technologies or markets), internal capacity to evaluate and monitor individual infrastructure projects, and liquidity requirements (MDBs, 2015b).

Due to prudential regulations, international debt investors (e.g. pension funds) that also require minimum investment grade ratings for investments have limited their scope for investment in sub-investment grade countries (CEPA, 2015a). Institutional investors, such as pension funds rarely provide early-stage finance, but expectations at the project appraisal stage of the availability of long-term capital to refinance projects once they are operational can also be an important factor in determining initial viability. It is also important to recognise the central role that state-owned enterprises and utilities play in the delivery of infrastructure services in many developing countries (including in the energy and water sectors), and the difficult political economy in introducing private sector participation in these sectors.[11] In practice, those processes have been closely linked to initiatives to privatise state run activities in certain sectors, which in many cases has been politically controversial. Creating a governance context that ensures high-quality service delivery and accountability from private sector players is often easier said than done.

In view of the conventional wisdom that lack of bankable projects represents a principal barrier to investment, it is important to consider the actual availability of capital to pursue long-term investments in infrastructure. While there is, in principle, an opportunity to tap existing and emerging pools of capital such as sovereign wealth funds, insurance companies, and pension funds, these institutions tend to be conservative and seek assured returns which may be difficult to secure from infrastructure in developing countries. Therefore, while the goal of structuring bankable projects seems attractive, achieving it in practice requires grappling with a range of complex, interacting factors, including the fundamentals of the relevant economic, institutional and developmental context.

Targeted support can build capacity and expand the pool of viable projects

While targeted support for preparation of specific projects cannot by itself be the 'silver bullet' for implementation, well-targeted support can expand the pool of possible projects and programmes that diverse investors might consider potential options. Well-targeted support can also strengthen the capacity of key stakeholders, particularly in developing countries, to engage with each other and with prospective investors through the project development process.

Nevertheless, not all projects prepared through early stages will reach financial closing; some may fail to attract capital for a number of reasons related to views on their bankability. If the preparatory process extends over a prolonged period, market conditions may differ from assumptions, input costs may increase or decrease (especially with newer technologies), and policy and regulatory conditions may change. Maintaining momentum – with strong political support to provide policy stability around long-term assets and reassure project developers and investors that they face a stable investment environment to protect long-term cash flows – is therefore an important element to successful implementation. Stalling project development or ones that stops altogether can send a negative signal to investors about the attractiveness and viability of the project.

11 For example see Dubash (2003), Victor and Heller (2007).

4. Experiences with project preparation support

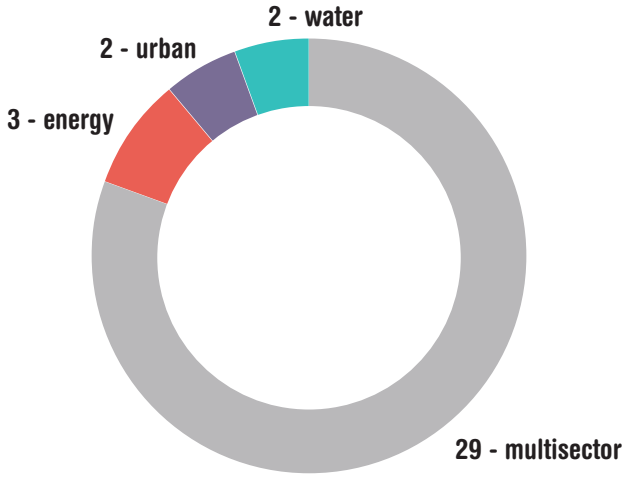
Overview of the landscape of project preparation support

Considerable effort is already being spent to improve the flow of viable infrastructure projects. The international community has established a large number of project preparation facilities (PPFs) or PPF-like mechanisms over the past 15 years. Some, such as the Private Infrastructure Development Group (PIDG) established by a group of European governments, are freestanding institutions focused solely on supporting project preparation. Others, such as the Asian Development Bank (ADB) Asia-Pacific Project Preparation Facility (A3PF), are focused entities within larger institutions. Most development banks, development finance institutions (DFIs) and climate funds provide some funding for project preparation in the course of their standard financing practices. Table 2 provides examples of different groups of PPFs.

Based on a review of these facilities, project preparation support may include a range of elements including the provision of technical advice for design and conceptualisation, funding for prefeasibility studies and project identification, matching functions aimed at linking projects with funding from other sources and investors, plus other supporting functions. Of the 36 PPFs reviewed, approximately 40 percent offer assistance to strengthen the wider enabling environment in addition to providing project-specific support.[12]

PPFs may provide grants or operate as revolving funds in which recipients pay back some or all of the funding they receive. Repayment may be contingent on the project reaching implementation. Development banks generally establish PPF mechanisms to develop their own project pipelines, so support is commonly tied to future investment in the project from the institution in question. The Infrastructure Consortium for Africa (ICA) highlighted a lack of PPF funding to support private sector-originated projects, where governments are negotiating with an individual developer, as opposed to offering a project proposal to developers on a competitive basis (ICA, 2012b).

Figure 3. Sectoral focus of reviewed project preparation facilities



Note: Includes both regional and global PPFs as of the dates of the review reports cited.
Source: Authors' calculations based on PPFs presented in Annex 1.

PPFs may also specialise at different stages of the project development process. Most PPFs provide support for the full range of infrastructure sectors (i.e. multisector in Figure 3), while a relatively small number are more specific in their focus. For example, the Cities Development Initiative for Asia (CDIA), a functionally independent facility co-managed by the ADB and GIZ, has had some success in supporting urban infrastructure project development in secondary Asian cities.

Only about a third of PPFs listed in Annex I refer to facilitating investment in infrastructure that align with climate change mitigation and/or adaptation as a specific objective even though these entities account for over half of the cumulative resources available to the PPFs reviewed.[13] These PPFs tend to include climate-related criteria as one among several used to screen for eligible projects. Only four focus exclusively on supporting climate-relevant projects.[14]

12 15 out of 36 facilities; see Annex 1. These include the sources included in the reviews by ICA (2012a, 2012b) and Adam Smith International (2014) of PPF experiences in Africa and Asia, respectively, as well as recently announced MDB facilities.

13 12 of the 36 facilities, see Annex 1.

14 The Clean Energy Partnership Facility; Green Climate Fund Project Preparation Facility; Sustainable Energy Fund for Africa; and World Bank Energy Sector Mapping Assistance Program.

Table 2: Examples of project preparation facilities

Name	Size	Year established	Funders	Approach taken/activity supported	Focus	Sector focus
ADB Asia-Pacific Project Preparation Facility (A3PF)	$73 million	2016	ADB, Japan, Canada, Australia	Primary objective is project preparation support for governments, including due diligence and advisory work covering technical, financial, legal, and regulatory issues as well as safeguards. Can also provide capacity and policy development support and project operation support. Will prioritise PPP infrastructure projects with regional cooperation, sustainable development, and climate change elements.	Asia	Multisector
NEPAD Infrastructure Project Preparation Facility (NEPAD IPPF)	$46 million	2004	Canada, Denmark, Germany, Norway, Spain, UK, USAID, AfDB	Provides grant resources for regional infrastructure development projects in the following sectors: transport, energy, ICT, and water resources management. Activities eligible for financing under the fund are: (i) prefeasibility studies; (ii) feasibility studies; (iii) project structuring; (iv) capacity building for infrastructure development; and (v) facilitation and creation of an enabling environment for regional infrastructure development.	Africa	Multisector
Cities Development Initiative for Asia (CDIA)	$58 million	2007	ADB, Germany, Sweden, Austria, Shanghai Municipal Government, UK, Spain, Rockefeller, World Bank, Switzerland	Focuses on upstream activities – prioritisation, prefeasibility studies, linking projects to financing – for low-carbon and climate resilient infrastructure projects in secondary Asian cities. Support is not tied to later investment by the ADB.	Asia	Urban
Global Infrastructure Facility (GIF)	$100 million	2015	Large group of institutional investors, commercial banks, DFIs and finance associations	Can provide advisory support at all stages of project development. Intention is to fill gaps in project preparation support given other resources available.	Global	Multisector
Sustainable Energy Fund for Africa (SEFA)	$51.7 million	2011	ADB, Denmark, USA, UK, Italy	Provides grants of up to $1 million to project developers to assist in the preparation of private clean energy projects of $30-200 million scale. Can support activities from feasibility through financial close. $30 million set aside for grants of up to $1 million for technical assistance and capacity building to improve enabling environments for on-grid and mini-grid spaces. SEFA has an additional $35.5 million available in seed/growth capital for equity investments in private projects, managed by Berkeley Energy LLC.	Africa	Energy

Recent studies of the capacity and performance of project preparation facilities have pointed to concerns about the effectiveness of existing facilities, including the adequacy of financial and human resources. This stems from the PPFs' broad mandates, the reliance on development banks with linkages to their own financing strategies rather than an emphasis on raising funds from a diverse range of sources, and a lack of financial stability or information-sharing among PPFs (Ramboll, 2015).

Specific constraints have also been noted for renewable energy PPFs, including lack of early stage project development support, insufficient support with grant and other financial funding for project development, a lack of skilled consultants who can support projects to become bankable, deficient enabling environments (i.e. legal rights and corruption), under-developed energy markets and unsupportive legal and regulatory regimes for low-carbon technologies, and difficulties matching projects and PPFs (Ibid.; Richie, 2010).

These reviews have also noted a lack of support available to assist governments negotiating with sole-sourced private sector sponsors, and a lack of support for private sector sponsors who obtained rights to develop projects, undertaking early stage development work at their own risk (ICA, 2015; GIB, 2015).

Project preparation support for low-carbon and climate resilient infrastructure

There has been a growing push to develop infrastructure projects and programmes expressly designed to address climate change. The experience of international climate funds is instructive of the challenges involved in doing this effectively. 'Climate finance' delivered through these funds represents only a fraction of the approximately $90 trillion investment needed over the next 15 years – approximately $6 trillion per year, up from an estimated $3.4 trillion per year currently invested in infrastructure – but it can play a potentially catalytic role in leveraging private and public finance for low-carbon and climate resilient investment (NCE, 2016). These funds provide grants and concessional finance to facilitate wider investment in developing countries for mitigation and resilience-building activities, often involving infrastructure.

Climate funds have encountered challenges in identifying viable projects and programmes building from existing development bank engagements in partner countries. For example, the Climate Investment Funds (CIFs) administered by the World Bank Group and regional development banks have sought to channel finance to programmes that will support the deployment of clean technologies at a significant scale, facilitate renewable energy deployment in LICs, reduce deforestation and promote sustainable forestry, and promote effective adaptation and resilience planning. To access these funds, a country works with the World Bank and its relevant regional development bank to develop an investment plan that sets out the key areas in which it seeks investment and indicates the priority projects that will be developed (ICF International, 2014).

The CIF experience demonstrates both the challenges and benefits of early, focused support for investment planning. Investment plans for the Clean Technology Fund (CTF) were developed first, with an initial budget to develop the investment strategy. Every one of these plans has been revised since originally approved, which reflects the iterative nature of project preparation and development.

In the case of the Pilot Programme on Climate Resilience (PPCR), which supports adaptation and focuses on public investment, up to $1.5 million was available to countries to engage with stakeholders regarding resilience priorities, and to support projects and programme development. No PPCR investment plans have yet been revised, suggesting that even though upfront investment in scoping out priorities can be helpful, implementation can be slower than anticipated. It is not yet clear whether PPCR produces better investment pipelines, but it may be more difficult for key players to withdraw interest in proposed investments after a plan has undergone extensive consultation.

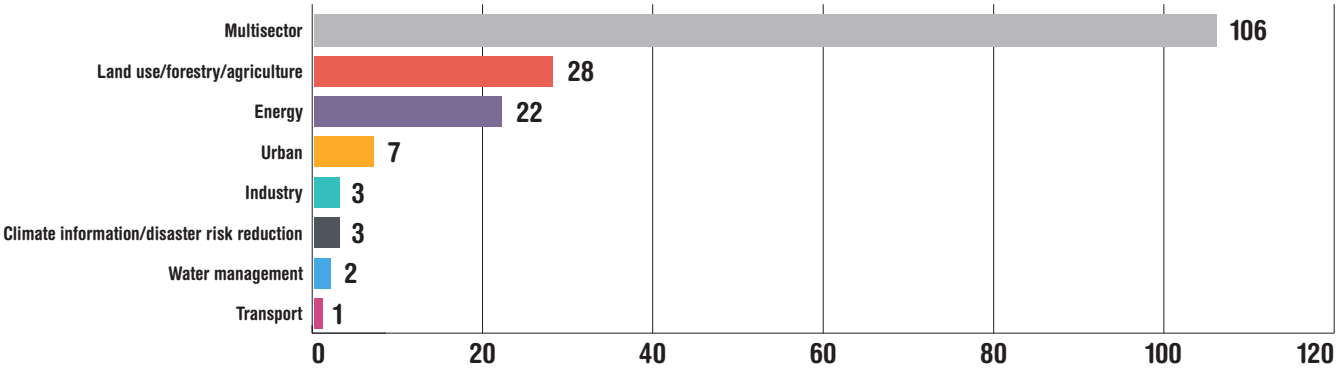
To complement existing funding that supports countries to meet the institutional preparedness standards required to access its resources, and building on the CIF experience, the Green Climate Fund (GCF) Board recently approved a new line of funding to support countries. The new funding will assist in the preparation of specific investment projects and programmes for which resources from the GCF could be sought. The climate funds emphasise stakeholder consultations to inform project and programme proposals, which is typically not available from non-climate related PPFs.

The Paris Agreement explicitly recognises the importance of making upfront investments in 'readiness' for climate finance (UNFCCC, 2015).[15] A number of 'climate finance readiness' initiatives have been launched in recent years, several supported by the German government through its bilateral partners GIZ and KfW, as well as through UNDP and UNEP in partnership with World Resources Institute (WRI). While these programmes have strongly emphasised interventions to address wider enabling environment and capacity related issues, they have not always linked effectively to concrete finance and investment programming processes in countries. Even when readiness programmes are supported by investment institutions (as in the case of KfW), the preparatory work has often been outsourced to external consultants, and it has taken time to remake the link with internal investment planning and programming processes.

Figure 4 is derived from an initial inventory of readiness related programming completed by the GCF Secretariat

15 Article 9 and Para 65 of the decisions giving effect to the Paris Agreement.

Figure 4. Sample of climate finance related readiness initiatives by theme



Number of initiatives. Source: GCF Readiness Inventory (2014)

in 2014 as it sought to develop its readiness programing strategy, taking stock of readiness related programming by various bilateral organisations, multilateral organisations (including climate funds such as the Strategic Climate Fund), and others. It shows that there are a large number of relevant initiatives (though they often have quite limited resourcing), and these are largely cross-cutting in their focus (rather than specialised on particular sectoral needs). It suggests that most programming has been more general and cross-cutting in nature, and there have been fewer more specific programmes that target particular needs in key sub-sectors or institutions.

Key role of political skills

While many see project preparation primarily as an exercise in technical engineering and financial structuring, political and stakeholder management functions are crucial to the process of 'navigating feasibility' that usually determines success or failure. As Collier (2014: 40) notes in reflecting on project preparation in Africa:

> *[T]he technical aspects of project preparation can be undertaken by international consultancy companies, but they do not have the political authority needed to overcome the spoiling actions of veto players. The lack of a pipeline in turn means that it is not worthwhile for either private investors or African governments to finance specialist teams to undertake the design work necessary to raise funding for construction ... African infrastructure projects are usually highly political. Catalysing a project in such an environment requires a combination of specialist technical knowledge and high-calibre political entrepreneurship.*

Indeed, large infrastructure projects often involve politics regardless of where they are built, and these insights have wider relevance for infrastructure finance. Not surprisingly, project preparation facilities that focus exclusively on technical aspects of the proposed investment may struggle to achieve progress. Taking significant projects forward, in both developed or developing countries, will also require important political acumen and negotiating skills to reach financial close.

As CEPA (2015a: 6) observed, 'A key constraint is the lack of availability of appropriate technical, legal, and financial skills, both inside and external to government, to support the necessary processes and activities'. When these skills are absent, delays ensue, adding to costs for all parties; when these skills are present, either in government or procured from external specialists, project preparation faces fewer hurdles and has a better chance of reaching financial close and implementation.

Analysts and policy practitioners have been encouraged by new efforts to set up specialised unit approaches that hold promise in supporting governments to support contract negotiation. Such bodies while linked to government are somewhat independent of it, and have been structured to be able to bring in diverse requisite public and private sector expertise, including on legal, financial and design elements. Elements of such an approach are involved in how both Hong Kong structured its public transportation infrastructure investments (see Box 3) and in how South Africa has taken forward its Renewable Energy Independent Power Producer Procurement Programme (see Box 4).

In South Africa, a key innovation for building up endogenous capacity was under the Renewable Energy Independent Power Producer Procurement Programme (REI4P), In REI4P, project developers were asked to contribute 1% of the total project cost into a project preparation facility housed in the National Treasury. The aim to create a revolving national fund to invest and support further technical and other work for small to medium Independent Power Producers (IPPs) on an ongoing basis. Plans were under discussion with the Development Bank of South Africa (DBSA) and others to create an investment type fund for the full value chain of project development activities. This unique 'pay it forward' initiative would ensure a steady funding stream for future IPPs, with the early adopters effectively paying back the state for market development activities. Finding ways to sustain such arrangements will

take continued commitment from national governments. From the above analysis, it is clear that the current system of infrastructure preparation and delivery involves a number of limitations, including: insufficient finance for project preparation; incomplete understanding, particularly among policy-makers of the question of 'bankability'; difficulty in ensuring sustainability considerations are appropriately taken into account in sector planning and project preparation; lack of capacity (technical, financial, and political), notably in developing and emerging countries to manage the project preparation and transaction process, particularly given the scale and speed required for the transition to a low-carbon economy; and insufficient attention to building a

Box 3. Financing the Hong Kong Mass Transit Railway

Hong Kong's Mass Transit Railway (MTR) is held up as an example of an efficient, profitable and affordable public transit system. Hong Kong is 11 times more densely populated than Los Angeles in terms of usable area: recognising the infeasibility of private road transport, since the 1970s, the Hong Kong Government has built its economic strategy on the provision of public transport.

Early politics

The colonial British government began the MTR project. A 1969 report by a government-commissioned British consultancy firm recommended the construction of an underground train system to reduce congestion. It took several years to overcome wariness, particularly from the UK Treasury, of committing to such a costly project. Once the political decision to proceed was taken, a Mass Transit Steering Group was set up to guide the project's construction and financing.

The government intended to negotiate a single contract for the system's construction and issued a tender with a cap on total value. The contract was awarded to Mitsubishi, the only firm that submitted a bid in line with the cap, but it withdrew after a year when it became apparent that the proposed pricing was unrealistic. The government was forced to resort to a multiple contract model and reduced the scope of the planned construction by 20%. The project revolved around creation of an autonomous agency to operate and maintain the system.

The MTR Corporation (MTRC) would be mandated to operate according to 'prudent commercial principles' and given the power to set fares, manage staff, develop property and borrow money or issue shares. The government would ensure oversight by appointing the senior management and board, and would retain powers to take control if deemed necessary for the public interest – a controversial proposition.

While most were supportive of the project's goals, there were concerns over costs and potential negative social implications of resettling low-income families. Nevertheless, the MTRC was established as a statutory corporation in 1975. Since 2000, MTRC has been publicly listed on the Hong Kong stock exchange while maintaining majority government ownership.

New approaches to financing: the 'rail plus property' model

The government paid for the initial MTR construction, but much of the system's subsequent expansion has been financed by taking advantage of the enhanced value generated by connecting the subway to new areas. MTRC was granted exclusive rights to develop the land above stations and in certain places along subway routes. It developed these locations into integrated hubs, combining the subway station with malls, restaurants and offices, leasing out the space to businesses keen to take advantage of the prime locations. This model has allowed the metro system to expand with little direct financing from the government budget. The MTRC is now one of the largest real estate actors in Hong Kong. In 2015, non-transport revenues contributed 63% of its operating profits.

The revenues generated by the 'rail plus property' model, as it is known, have allowed the MTRC to invest properly in the subway infrastructure, resulting in a virtuous cycle of greater efficiency, fewer maintenance problems and lower operating costs. In fact, in 2015 the MTR boasted a 'fare box' recovery ratio (the percentage of operational costs covered by fares) of 186% – the highest in the world and in stark contrast to, for example, publicly operated subway systems across the US, which typically operate at substantial losses.

Demand for the MTR and other public transit options have been bolstered by government policies that constrain private car ownership, including an initial vehicle registration fee of 33-100% of purchase cost and a high fuel tax. The MTR system now stretches over 218 km and carries more than 5 million passengers per day.

Hong Kong's experience had a unique political context for inception that may make it difficult to replicate. Nevertheless, creative elements of the structuring of the programme and its financing can inform efforts in other places and sectors.

Sources: MTR (2015); Padukone (2013); Tang and Lo (2008); Tang and Lo (2010); and Yeung (2008).

Box 4. South Africa's experience with Renewable Energy Independent Power Producer Procurement Programme (REI4P)

South Africa's efforts to involve the private sector in driving the de-carbonisation of the country's energy mix highlight the extensive policy and political groundwork that is often required before investment can start to flow (see Figure 5, which summarises the key developments).

South Africa's power sector is dominated by the state-owned utility, Eskom, which encompasses generation, transmission and distribution. The government has introduced reforms aimed at enabling some private sector participation in the power sector, but implementation has been challenging. South Africa's economy has one of the highest carbon intensities in the developing world. In the lead up to the Copenhagen COP, South Africa's offer of climate action highlighted the challenge of diversifying the national energy mix: internationally, the country had proposed to reduce emissions by 30% relative to business as usual (contingent on international support), but this would require substantial de-carbonisation of the energy sector.

Initial proposals for how to meet energy needs were inconsistent with the country's intentions to mitigate emissions. This prompted South Africa to undertake its first ever multi-stakeholder effort to develop an Integrated Resource Plan for the sector. The result was an energy plan that anticipated bringing on board a substantial share of renewable energy, alongside continued investment in coal.

Translating this intent into practice required a new policy and contracting framework to streamline arrangements for purchasing power from independent renewable energy power producers. Building on renewable energy feed-in tariff work begun by the National Regulator, the National Treasury stepped in to design what is now the Renewable Energy Independent Power Producer Procurement Programme (REI4P). REI4P eventually created a reverse auctioning mechanism through which renewable energy was brought online at lower than anticipated costs through competitive procurement. International energy and climate support provided financing for technical advisory services to inform programme design, building on technical support from the World Bank to develop a Renewable Energy Feed in Tariff (REFiT) regime.

Access to highly skilled local and international expertise and consultants for technical, legal, procurement and financing was key to making the programme operational. The renewable energy auctions were managed through an IPP unit jointly managed by the Department of Energy and National Treasury, which secured experienced advisers to transfer good practice in public-private partnerships and auctions to South Africa. The Development Bank of Southern Africa also provided initial support to develop the IPP Programme (Eberhard, et al. 2014).

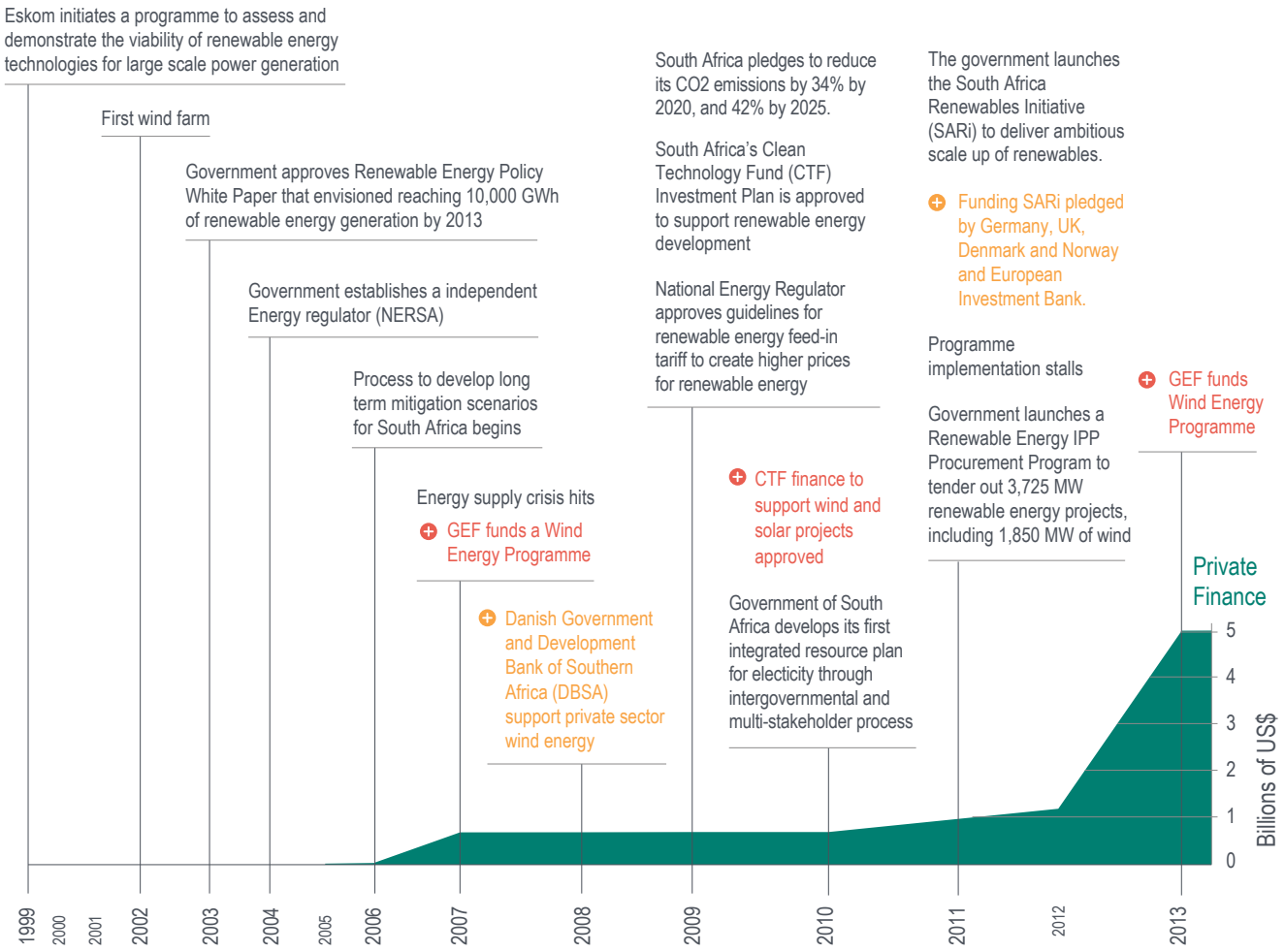
More than 100 different organisations are investing in 64 projects approved through the REI4P tendering process, the first of which that are already operational will generate nearly 4 GW (gigawatts) of renewable power. Of these organisations, 46 are involved in more than one project. About 28% of the more than $12 billion in private investment attracted by the REI4P is foreign investment, totalling around $4.7 billion in 2014 (South Africa Department of Energy, 2015). Almost two-thirds of this was equity finance, from DFIs and international utility companies. International DFIs financing these projects include the IFC, the AfDB and the EIB. DFIs from OECD countries include the Danish Export Credit Agency (EKF), which is involved in three projects, the Netherlands Development Finance Company (FMO), and the US Overseas Private Investment Corporation (OPIC).

Prices have dropped over the successive bidding phases with average solar photovoltaic (PV) tariffs decreasing by 68% and wind dropping by 42% in nominal terms, over the first three rounds. The proportion of foreign investment has increased with successive auction rounds, with the success of earlier rounds making the opportunity more attractive to outside investors. The increased competition in the third and fourth rounds, in 2013 and 2014 respectively, may have priced some of the smaller, domestic companies out of the market, while others have sold their equity stakes to larger companies (Baker and Wlokas, 2014). In comparison to the large-scale REI4P, the small-scale programme (round 4) has struggled due to the upfront transaction costs of bidding. This is set to change with a new financing facility set up to reduce those costs for small developers.

The most common financing structure has been project finance, although about a third of the projects in the third round used corporate financing arrangements. The majority of debt funding has been from commercial banks (ZAR 57 billion) with the balance from DFIs (ZAR 27.8 billion) and pension and insurance funds (ZAR 4.7 billion). Approximately 87% of debt has been raised from within South Africa, and debt tenors typically extend 15-17 years from the commercial date of operation.

The lessons from this success demonstrate that private sponsors and financiers are more than willing to invest in renewable energy if the procurement process is well designed and transparent. With these elements in place, transactions have reasonable levels of profitability, and government mitigates key risks. REI4P also highlights the need for effective programme champions with the credibility to interact convincingly with senior government officials, effectively explain the programme to stakeholders, and communicate and negotiate with the private sector. REI4P demonstrates that whether a FIT or competitive tender is chosen, private sector project developers need a clear procurement framework within which to invest (Eberhard et al., 2014).

Figure 5. Timeline of major renewable energy developments in South Africa



Sources: Nakhooda and Norman (2014); Nakhooda, Scott, Carvalho and Barnard (2016).

transparent pipeline of sustainable infrastructure investment opportunities.

New approaches to supporting project preparation

In view of the gaps in project preparation, particularly for long-term sustainability and resilience to climate change, a number of organisations have developed new tools to support project preparation. Recent examples include the following initiatives:

- The **International Infrastructure Support System (IISS)**, managed by the Sustainable Infrastructure Foundation (SIF), is an online platform that gathers and synthesises information and data on all aspects of development of infrastructure on a project-by-project basis. The IISS template guides the public authorities through the project preparation process. The platform focuses on criteria for 'well prepared projects' to cover three key sustainability elements: (i) quality of the answers to the questionnaire; (ii) consistency with the SDGs; and (iii) suitability for long-term institutional finance. Governments provide information on governance, technical, economics, legal, financial, environmental and social aspects of infrastructure projects, which are organised by sector and sub-sectors. Post construction and project monitoring will also be done to improve future projects.[16] MDBs and PPFs collaborated on development of the platform and agreed to use IISS for infrastructure project investments.[17]
- **Climate Investor One** intends to accelerate the delivery of renewable energy projects in emerging markets by combining three investment funds into one facility to finance renewable energy projects at specific stages of the project lifecycle. The aim is to reduce the transactions costs, and the time and risk involved at each stage of the project development process, which is usually managed by different investors. The initiative focuses on solar, onshore wind and run-of-river hydropower projects and provides early-stage project support through a Development Fund, finances construction through a Construction Equity Fund, and includes a Refinancing Fund for long-term financing after a project is operational. The first term sheet was signed in 2016 for a solar PV-pumped hydro-storage

project in Rwanda that will begin construction in early 2017.[18]

- **The Clean Energy Investment Accelerator (CEIA)** initiative is intended to fill key gaps in early-stage finance that impede development of a pipeline of investment-ready renewable energy projects. CEIA aims to develop one or more blended capital facilities that leverage philanthropic and public capital. This will work alongside private equity and debt to fill critical gaps carbon asset development space and provide early-stage working capital at concessional rates to renewable energy and energy efficiency projects in selected emerging markets. One of the CEIA's primary objectives is to fulfil a 'risk discovery' role by contributing to a better understanding of the actual versus perceived risks of investing in clean energy assets in emerging economies.[19]
- A number of leading banks, donor governments, and DFIs and others[20] launched the **Sustainable Development Investment Partnership (SDIP)** to mobilise $100 billion in private financing over five years for infrastructure projects in developing countries using development assistance. SDIP aims to mobilise potential private investments by improving and enhancing risk mitigation tools to reduce political, regulatory, credit, currency and liquidity threats. The SDIP assembled a Project Investment Review Group (PRG) to review and appraise projects to identify barriers to reaching financial close and 'identify innovative solutions in the areas of financial enhancement, risk mitigation, or blended capital structures push the project towards closure'.[21]
- Global Infrastructure Basel (GIB) promotes development and financing of sustainable and resilient infrastructure to ensure relevant criteria are included in infrastructure planning and investment. GIB works with stakeholders ranging from city representatives to project developers and infrastructure financiers, and has developed a range of tools which centre around SuRe® – the Standard for Sustainable and Resilient Infrastructure. SuRe® integrates key criteria of sustainability and resilience into infrastructure development and upgrade, through 14 themes covering 76 criteria across environmental, social and governance factors.[22] GIB also provides other tools such as Credit SuRe and InSuRe, as well as capacity building, to help integrate sustainability criteria into assessment of credit rating agencies and insurance firms.

These initiatives represent a sample of the efforts underway to improve the flow of investment into sustainable infrastructure. However, much more needs to be done quickly. The scale and urgency of the challenge justify greater attention and resources, as well as drawing early lessons from project preparation funding efforts to-date. Indeed, preparation support may be viewed as a broader process of learning and innovation – failures will happen and we need ways to recognise these as benefits. These initiatives must therefore be complemented with sufficient investments in evaluation and lesson sharing to ensure we extract full value from both future failures and successes.

16 Questions in the IISS template for each subsector have been reviewed by more than 60 private companies, and benefited from review and support from collaboration with MDBs. Questions focus on the fundamental issues for 'bankability' (except for policy reversal) that that institutional investors, and operators and lenders need to know to take an investment decision. Source: SIF, communications with authors.

17 Source: Article by Christophe Dossarps, SIF, from English translation provided to authors. Also see http://bit.ly/2fUPJVU

18 See http://www.climatefundmanagers.com

19 See http://bit.ly/2eCwUah and http://bit.ly/2fTcNk2

20 Founding members include Citi, Deutsche Bank, East Capital, Standard Chartered, Storebrand and Sumitomo Mitsui Banking Corporation; the governments of Canada, Denmark, the Netherlands, Norway, Sweden, USA and UK; the Bill & Melinda Gates Foundation, Danish Investment Fund for Developing Countries (IFU), MIGA (Multilateral Investment Guarantee Agency), Development Bank of South Africa, International Finance Corporation, PKA, Pension Danmark and the Senegal Sovereign Wealth Fund (FONSIS), with the World Economic Forum and the OECD providing institutional support. See http://www.oecd.org/dac/sdip.htm

21 See http://www.sdiponline.org/sdip-in-action/

22 According to GIB, 'The standard aims to establish a common language and understanding of sustainable and resilient infrastructure projects between project developers, financiers, local authorities; and to provide guidance on how to manage those aspects from both a risk management and a benefit creation perspective, and starting from as early as possible in an infrastructure project's life cycle'. Information provided to the authors via email. Also see: http://bit.ly/2eXi0qk, http://bit.ly/2eXbujj and http://bit.ly/2fRTuZK

5. Conclusions and recommendations

PPFs will need to adopt new approaches consistent with achieving global climate pledges

Investing in project preparation efforts that support low-carbon, climate resilient infrastructure objectives is now an urgent priority. To ensure that new infrastructure is consistent with a future 'well below' 2°C, existing and future PPFs will need to adopt new approaches to developing infrastructure projects that are consistent with achieving global climate pledges. Increased investment in effective project preparation, greater focus and attention on new and innovative approaches, and acceleration of efforts to deliver sustainable infrastructure will allow for increased ambition in Paris Agreement pledges and delivering on the SDGs.[23]

Support for project preparation for sustainable infrastructure needs to increase

MDBs have launched new initiatives aimed at project preparation and public private partnerships in infrastructure, and new platforms for collaboration have emerged, but the scale of funding for project preparation remains modest relative to the investment needed. Given the urgency of the challenge, there is a strong case for scaling up funding for project preparation support. This includes planning for sustainable infrastructure at the national level, ensuring attention to the climate change implications of projects that existing PPFs could support, continued focus by governments and development finance institutions to expand capacity, and increased concessional finance for project preparation.

Sustainability should be built into project development and project preparation facilities

The vulnerability to climate change mandates that infrastructure design be resilient to foreseeable risks. MDBs and others are developing portfolio level screening tools to help ensure infrastructure reflects the imperatives of adaptation, which could also be used to guide project preparation support efforts. The sustainable infrastructure needed to achieve the goals of the Paris Agreement and SDGs will require new approaches, including scenario testing for emissions reductions and climate resilience, as well as stakeholder engagement to ensure social equity and inclusion.

The imperative to de-carbonise global infrastructure systems also means we need to ensure incentives are aligned to minimise emissions and ensure resilience during construction and operations. Sustainability should be built into project development from the start in all initiatives and project preparation facilities.

Project development must also enable countries to strengthen domestic institutional capacity

Equally important is a continuing need to find ways to build domestic institutional capacity. Project development must also enable countries to strengthen capacity to navigate the challenges of raising finance for public and private infrastructure from a range of investors with different expectations and requirements. Advances in technology can accelerate capacity building, though such approaches will be more effective if complemented by practical, on the ground experience in negotiating transactions with investors and project developers.

23 See https://germanwatch.org/en/2degree-criteria

MDBs and other DFIs need to consider rethinking long-term infrastructure plans where doing so would provide a lower emissions and more sustainable set of investments than business as usual interventions. For example, rethinking urban planning can avoid other infrastructure construction (e.g. highways or roads), which would otherwise lock-in unsustainable, high emissions investments, as opposed to more sustainable, lower emissions investments (e.g. denser urban planning). System planning will be needed for transportation connectivity, to develop compact cities, and in the power sector to ensure energy access that includes off-grid renewable energy.

MDBs and other DFIs can can boost investment flows by investing in project preparation

MDBs, DFIs and climate funds, including the GCF, can increase the share of finance invested in project preparation, take a targeted approach to strengthening institutional capacity to engage on climate change, and structure and negotiate projects and programmes along these lines. For example, if the GCF, as part of broader readiness efforts, were to invest just 5% of its pledged resources in project preparation support, this would result in an additional $500 million for development of investment opportunities. Rather than providing project level preparation support to only accredited entities, the GCF could differentiate itself by investing in domestic capacity to structure and negotiate financing for low-carbon and climate resilient infrastructure projects. This would strengthen country ownership, consistent with effective development cooperation, and help fill a key gap in the current finance landscape.

Greater transparency and better coordination among facilities is needed

More transparency on the functions of existing project preparation facilities, as well as stronger frameworks to coordinate action and share lessons, is needed.

Records of existing facilities require rigorous evaluation, recognising that project preparation risks financial loss and that failure can occur. Strengthened support for project preparation should be accompanied with a more concerted effort to understand the full range of experiences, to identify and scale up efficient and effective practices.

Public funds should focus on sustainable infrastructure

Public resources should emphasize financing of low-carbon infrastructure of the future and discontinue financing carbon intensive infrastructure, except in extreme cases when no other options are available (Oil Change International, 2016: 45). Recent evidence demonstrates that more coal does not end but rather entrenches energy poverty (Granoff et al., 2016). PPFs should impose a moratorium on funding coal extraction projects; or better still, discontinue support for projects tied to fossil fuel extraction. Similarly, a suspension on project preparation related to coal-fired power plants would send a clear signal about the future direction of investment required for a cleaner future and free up resources for renewable energy and sustainable infrastructure.[24]

Given the immediate window of opportunity and the amount of time that project preparation takes, action taken over the next 10-15 years will likely be decisive for achievement of Paris Agreement objectives and SDGs. Stakeholder engagement and inclusion will be essential to political support and momentum. Project preparation for sustainable infrastructure needs to be faster, greener and better to ensure that investments in the near to medium term are consistent with internationally agreed goals.

24 World Bank President Jim Kim has said that current plans to build coal-fired power plants over the next 20 years in Asia will spell a "disaster" for the planet. See http://www.theguardian.com/environment/2016/may/05/climate-change-coal-power-asia-world-bank-disaster

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Annex 1. List of project preparation facilities included in quantitative analysis[26]

Name	Geography	Sector	Initial size ($, mn)
Asian Development Bank Asia-Pacific Project Preparation Facility	Asia	Multisector	73
African Water Facility	Africa	Water	167
Arab Financing Facility for Infrastructure	Global	Multisector	5
Cities Development Initiative for Asia - Technical Advisory Facility	Asia	Urban	58
Clean Energy Financing Partnership Facility	Asia	Energy	260.6
Common Market for Eastern and Southern Africa Project Preparation and Investment Unit	Africa	Multisector	20
Development Bank of South Africa/European Investment Bank Project Development Support Facility	Africa	Multisector	7.5
East Asia Australia Infrastructure for Growth Fund	Asia	Multisector	45.7
European Bank for Reconstruction and Development Infrastructure Project Preparation Facility	Europe	Multisector	44.68
Economic Community of West African States Project Preparation and Development Unit	Africa	Multisector	6
World Bank Energy Sector Management Assistance Program	Global	Energy	113
EU Africa Infrastructure Trust Fund	Africa	Multisector	486
Global Infrastructure Facility	Global	Multisector	100
Green Climate Fund Project Preparation Facility	Global	Multisector	Unknown
Ho Chi Minh City Finance and Investment Company	Single country	Multisector	Unknown
Interamerican Development Bank Fund for Integration Infrastructure	LAC	Multisector	20
Interamerican Development Bank Infrafund	LAC	Multisector	20
International Finance Corporation InfraVentures	Global	Multisector	100
International Finance Corporation PPP Advisory	Global	Multisector	1200
Japan Fund for Poverty Reduction	Asia	Multisector	702.7
JICA Preparatory Survey	Asia	Multisector	Unknown
JICA Preparatory Survey for PPP Infrastructure	Asia	Multisector	Unknown
JICA Technical Cooperation for Development Planning	Asia	Multisector	Unknown
NEPAD Infrastructure Project Preparation Facility	Africa	Multisector	46
Partnership for South Asia	Asia	Multisector	52.19
Public Private Infrastructure Advisory Facility	Global	Multisector	260
PPP Centre of the Philippines	Single country	Multisector	19.65
Private Infrastructure Development Group	Global	Multisector	1130
Southern African Development Community Project Preparation and Development Facility	Africa	Multisector	6
South Asia Infrastructure for Growth Trust Fund	Asia	Multisector	Unknown
Sustainable Energy Fund for Africa	Africa	Energy	51.7
Urban Development Financing Partnership Facility	Asia	Urban	Unknown
USAID Africa Infrastructure Program	Africa	Multisector	35
Vietnam Project Preparation and Start-up Support Facility	Single country	Multisector	37.88
Vietnam Project Preparation Technical Assistance Facility	Single country	Multisector	100
Water Financing Partnership Facility	Asia	Water	100

26 Sources: ICA (2012a, 2012b, 2012c and 2012d); Adam Smith International (2014) and facility websites

Annex 2. Estimates of project preparation costs

Range	Excerpt	Source	Hyperlink
1-5%	There are no hard and fast rules for the allocation of project costs to early-stage and late-stage development and construction finance as this is determined by a multiplicity of factors, including project scope, scale and complexity as well as the length of the development and construction phases. Project scale, in particular, is a key determinant of the cost split for each phase of activity as economies of scale tend to bring down the development cost as a proportion of total costs or larger projects. For smaller scale projects, a 1%, 4% and 95% cost allocation at, respectively, early-stage development, late-stage development and construction financing phases is a reasonable working assumption.	UNEP, Aequero (2011)	
1-3-10%	In countries with well-developed frameworks for PPPs, project preparation costs are generally about 1% as a percentage of total project costs, but for countries without much PPP experience, the project preparation costs run between 3% and 10% of total project costs because of weak institutional and policy arrangements.	Mapping Support for Africa's Infrastructure Investment (2014), p. 56	http://www.oecd.org/daf/inv/investment-policy/MappingReportWeb.pdf
2.5-5%	For regional projects, coordination among national agencies with different procedures, capacity, and administrative constraints adds to the complexity. Thus, the project preparation costs for regional projects tend to be higher, and the process can take longer than that for national projects. Preparation costs are typically about 5% of total financing, or approximately double the cost of preparing national projects.	Africa's Infrastructure: A Time for Transformation (2009), p. 158	http://documents.worldbank.org/curated/en/2009/01/11487313/africas-infrastructure-time-transformation
2-5%	No detailed information has been found on the level of expenditure on project preparation in Asia as a whole. ... The allowance is considerably higher in advanced economies, at between 2-5% of the cost of a project. ... In some countries, the combined allowance for feasibility studies and the preparation of detailed designs and bidding documents is around 2% or so of the estimated construction cost of the project. This compares with expenditure in developed countries of 7-15% depending on the nature of the project.	Assessment of the Effectiveness of Project Preparation Facilities in Asia (Adam Smith International September 2014)	http://www.g20australia.org/sites/default/files/g20_resources/library/assessment-effectiveness-ppfs-in-asia-15092014.pdf
2-5% 10-12%	Depending on the complexity of the process, the development phase of private infrastructure projects typically absorbs somewhere between 2-5% of total project costs. In extreme cases, however, this can reach up to 10% or 12%. While larger projects tend to require more preparatory efforts, these increased costs are associated less with project size but rather with the lack of a streamlined and effective implementation and approval process	Attracting foreign direct investment into infrastructure: why is it so difficult?	http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/08/16/000009486_20040816161106/Rendered/PDF/297440018213146021 40Attracting0FDI.pdf
3-4% (under $100 million) 2% (over $500 million) 2% (over $500 million)	The costs of project preparation and tendering should not be underestimated. These costs may typically be 3-4% of investment costs for projects costing less than $100 million, 2-3% for projects costing more than $100 million, and around 2% for projects costing more than $500 million (excluding significant costs of land, early works, and environmental impact assessments).	Attracting Investors to African Public-Private Partnerships: A Project Preparation Guide, p. 41	http://www.ppiaf.org/sites/ppiaf.org/files/publication/Attracting_Investors_to_African_PPP.pdf
3-5%	A Project Development budget can consume 3-5% of the total cost of the project. In emerging/frontier markets, this number often reaches 10% of the total project cost. Developing a project and bringing it to financial close can take two to five years.	Unleashing Private Capital Investments for Sustainable Infrastructure Greenfield Projects (2014)	http://www.gib-foundation.org/content/uploads/2014/05/Scoping-Study-for-the-Early-Phase-Project-Preparation-Phase_.pdf

Range	Excerpt	Source	Hyperlink
3-5% 10-12%	Developers' transaction costs range from a relatively small 1-2% of project costs to well over 10%. ... Industry experts suggest that transaction costs vary mainly with familiarity with and the stability of the policy environment. Costs are usually about 3-5% in well-developed policy environments, while they may be 10-12% in pioneering projects.	Transaction Costs in Private Infrastructure Projects—Are They Too High? (1996)	http://siteresources.worldbank.org/EXTFINANCIALSECTOR/Resources/282884-1303327122200/095klein.pdf
5-10% G24, GGGI (2015)	Preparation costs in developing countries typically range between 5-10% of the total project investment.	Infrastructure Finance in the Developing World	http://g24.org/wp-content/uploads/2015/06/MARGGK-WP04.pdf
5-10%	On average, project preparation financing requires between 5-10% of the total project costs, however actual allocations made for project preparation financing can be much lower in practice.	ICA (2014) Effective Project Preparation for Africa's Infrastructure Development, p. 16	http://www.icafrica.org/fileadmin/documents/Publications/Effective_project_preparation_in_Africa_ICA_Report_31_October_2014.pdf
5-10%	A general rule of thumb is that preparation requires the equivalent of 5% of a project's investment cost. Yet NEPAD has recently suggested that preparation costs in Africa are closer to 10% of a project's investment cost, largely because upstream preparation often has not been done.	The African project preparation gap PPIAF (2007)	https://www.ppiaf.org/sites/ppiaf.org/files/publication/Gridlines-18-The%20African%20Project%20Preparation%20Gap%20-%20JLeigland%20ARoberts.pdf
7-10%	Detailed planning takes time, often a year or two or longer for complex agricultural projects. It may also be quite expensive. In agriculture, preparing the detailed project plan may well cost 7-10% percent of the total project investment.	Projects, the cutting edge of development (Stanford)	http://web.stanford.edu/group/FRI/indonesia/documents/gittinger/Output/chap1.html
10-12%	More recent estimates indicate that the preparation cost for large, regional projects…can be 10-12% of total project cost.	ICA (2014) Effective Project Preparation for Africa's Infrastructure Development, p. 6	http://www.icafrica.org/fileadmin/documents/Publications/Effective_project_preparation_in_Africa_ICA_Report_31_October_2014.pdf
Up to 10%	At issue is the fact that project preparation in LICs – particularly inexperienced ones – tends to be very costly, possibly amounting to 10% of total project cost (as opposed to 0.5-1% in experienced and more developed countries).	Supporting Infrastructure Development in Low-Income Countries – Submission to the G20 by the MDB Working Group –Interim Report June 2011, p. i	http://www.g20dwg.org/documents/pdf/view/13/
Up to 10%	[P]reparation costs, including design and arranging financial support, are not insignificant – they can constitute up to 10% of overall project costs.	EMCompass Quick Take, Infrastructure Financing Trends (April 2016)[27]	http://bit.ly/26AJjgR
N/A	How much does project preparation cost? No ready answer is available. Generally, it is estimated that project preparation costs range around 5-10% of total project investment (MDB Working Group on Infrastructure 2011). But this straightforward estimate is more applicable to the traditional infrastructure projects which utilise standard efficiency measures. ... In reality, there are many factors that affect the total cost of project preparation and no single standard can be used. ... The sizes of projects, its complexity (i.e., having single or multiple objectives) its geographic location, as well as the type of sector (i.e., whether transport, energy or agriculture) all affect the costs of project preparation. Country factors also affect total cost of project preparation (e.g. cost of hiring technical experts).	The Evolution of Development Concerns in Public Sector Projects: From Simplicity to Complexity with What Impacts? (January 2013)	⌜ http://www.aim.edu/files/

27 Also see: Financing African Infrastructure: Can the World Deliver? (March 2015), http://www.brookings.edu/~/media/Research/Files/Reports/2015/03/financing-african-infrastructure-gutman-sy-chattopadhyay/AGIFinancingAfricanInfrastructure_FinalWebv2.pdf

Annex 3. Estimates of project preparation costs implied by different estimates of infrastructure requirements

Period	2015-2030	Project preparation as a percent of total investment				
Number of years	15	1%	2.5%	5%	10%	Sources
Global infrastructure demand – low-carbon scenario						
Total	93,000	930	2,325	4,650	9,300	NCE (2014), p. 19
Per year	6,200	62	155	310	620	
Sector breakdown						
Transport	27,000	270	675	1,350	2,700	Bielenberg et al. (2016), p. 12
Energy	40,000	400	1,000	2,000	4,000	
Telecom	7,000	70	175	350	700	
Water and waste	19,000	190	475	950	1,900	
Of which: Low- and middle-income countries						
Per year	3,000	30	75	150	300	Bhattacharya et al. (2015), p. 9
Per year	4,000	40	100	200	400	
Low-carbon, climate resilient 'core' infrastructure						
Total	52,000	520	1,300	2,600	5,200	Meltzer (2016)
Per year	3,467	35	87	173	347	

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The Global Commission on the Economy and Climate, and its flagship project The New Climate Economy, were set up to help governments, businesses and society make better-informed decisions on how to achieve economic prosperity and development while also addressing climate change. This paper is one of the Contributing Papers for the 2016 Report of the Global Commission, The Sustainable Infrastructure Imperative: Financing for Better Growth and Development

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