Annex V

Report on the 2017 forum of the Standing Committee on Finance, "Mobilizing finance for climate-resilient infrastructure"

[English only]

A. Background and proceedings

1. Introduction

1. The 2017 forum of the Standing Committee on Finance (SCF) was held on 6 and 7 September in Rabat, Morocco, on the topic "Mobilizing finance for climate-resilient infrastructure". The forum was hosted by the Government of Morocco and held in partnership with the Union for the Mediterranean (UfM) and the European Bank for Reconstruction and Development (EBRD), with contributions from the Government of the Netherlands, the World Bank and the Inter-American Development Bank (IADB).

2. The forum was attended by about 120 participants representing different regions, with representatives from governments, multilateral development banks (MDBs), the operating entities of the Financial Mechanism, infrastructure project developers, the private sector and industry associations as well as civil society organizations. More than 30 resource persons were engaged in the forum as presenters, panellists and facilitators.

3. The two-day forum featured plenary presentations, panel discussions, case studies and breakout group discussions. It examined climate-resilient infrastructure in the broader global infrastructure landscape, the current trends, gaps in financing and ways to close the financing gap in the light of international best practices. The forum programme and information about speakers and panellists are available on the SCF forum web pages.[1]

4. At the opening and closing sessions, Ms. Patricia Espinosa, the Executive Secretary of the UNFCCC secretariat, Ms. Nezha El Ouafi, Secretary of State to the Minister of Energy, Mines and Sustainable Development, responsible for sustainable development, of the Government of Morocco, Mr. Mezouar Salaheddine, President of the twenty-second session of the Conference of the Parties (COP), Mr. Fathallah Sijilmassi, Secretary-General of the UfM secretariat, Mr. Jorge Borrego, Deputy Secretary-General of the UfM secretariat, and Ms. Bernarditas Muller and Mr. Georg Børsting, Co-Chairs of the SCF, highlighted the urgent need for financing climate-resilient infrastructure, citing recent extreme weather events around the world, including the flooding in Houston, United States of America, and Mumbai, India, and the substantial damage experienced by Caribbean countries. It was also noted that governments need to demonstrate strong political will and honour the important commitments made at COP 21 and reiterated at COP 22. Enhancing the link between climate-resilient infrastructure and sustainable development, transparency and a disciplined market was suggested as a means to attain sustainable development objectives. The nationally determined contributions (NDCs) were mentioned as an immediate, concrete opportunity to create an enabling environment for financing climate-resilient infrastructure.

5. The importance of close cooperation between governments, the private sector and other non-state actors was also emphasized, as was the need to look beyond national interests. Related to this, the benefits of regional cooperation were highlighted and the Mediterranean region was mentioned as an example, where the identification of concrete regional cooperation projects and initiatives enhances partnerships and interactions through a scaling-up effect, exchange of best practices, exchange of information and development of innovative initiatives.

6. The remainder of chapter A provide a detailed summary of the presentations and discussions in the different sessions of the forum. Chapter B contains recommendations of

[1] http://unfccc.int/10368.php.

the SCF for consideration at COP 23. Finally, chapter C describes follow-up actions of the SCF in 2018.

2. Session 1. Climate-resilient infrastructure in the context of the broader global infrastructure landscape

7. Session 1 focused on climate-resilient infrastructure in the context of the broader global infrastructure landscape. The scene-setting presentation by EBRD highlighted that while infrastructure is already vulnerable to extreme weather, climate change is a significant risk amplifier. It was noted that the long lifespan of infrastructure means that it needs to cope with shifting climate conditions over future decades, including sea level rise and shifts in temperature ranges and precipitation patterns. This in turn means that infrastructure being built today needs to anticipate the climate conditions expected tomorrow. In this sense, it is noteworthy that the Organisation for Economic Co-operation and Development (OECD) estimates that each dollar spent on climate change adaptation delivers four times its value in terms of potential damage avoided.

8. The benefits of climate-resilient infrastructure, as presented by EBRD, include the following:

(a) Reduced exposure or sensitivity of systems to climate-related hazards;

(b) Minimized consequences of disruptions through robust design;

(c) Reduced vulnerability of populations to climate shocks and disruptions, with their access to resources and services being safeguarded;

(d) Protection of investment returns, business continuity and regulatory compliance.

9. It was emphasized that developing countries are facing huge infrastructure needs and need to develop nationally appropriate standards and codes to incentivize the consideration of climate resilience in their infrastructure plans. In this regard, it was noted that MDBs, which are among the key financiers of climate-resilient infrastructure, could play an important role, both with regard to developing new financial products and as intermediaries that bring in knowledge to developing countries to align their practices with international best practices, enabling them to develop their own approaches and standards.

Box 1
European Bank for Reconstruction and Development's work on climate-resilient infrastructure

Climate resilience and adaptation is part of the European Bank for Reconstruction and Development (EBRD) Green Economy Transition (GET) approach and infrastructure is a major focus of EBRD climate resilience investment operations. Since 2011, EBRD has spent EUR 1.1 billion of dedicated adaptation finance on infrastructure and signed 130 projects. In terms of business areas, the majority of GET adaptation finance went to municipal and environmental infrastructure, followed by investments in power and energy, transport, and property and tourism.

Source: EBRD Presentation, session 1, 2017 forum of the Standing Committee on Finance.

10. With regard to the role of multilateral climate funds, a panellist from the Green Climate Fund (GCF) secretariat noted that currently only 20–30 per cent of GCF financing is spent on adaptation, because the fund's operations are country-driven and many developing countries have not yet sufficiently prioritized climate-resilient investments. For the GCF to further advance work in this area, developing countries, as part of their engagement with the GCF, need to prioritize climate-resilient infrastructure in line with their national strategies and plans.

11. In a similar vein, a representative of EBRD pointed to an existing gap with respect to strategic planning in many developing countries. In EBRD countries of operation, insufficient attention is given to adaptation in the NDCs. In those cases, the countries' adaptation needs should be spelled out in the NDCs and linked with investment planning. An example of good practice cited is the Strategic Programs for Climate Resilience developed

under the Pilot Program for Climate Resilience (PPCR). The PPCR experience shows that developing an investment plan that integrates climate resilience helps developing countries to prioritize and allocate investments and to identify the most suitable financing channels.

12. A panellist from the Global Environment Facility (GEF) secretariat noted that the GEF sees an increased demand for resilient urban development and resilient infrastructure projects, including requests for both increased safety of infrastructure and service continuity. Beyond this, the panellist noted the need for a more concerted effort to enable transformative infrastructure-based solutions that offer social and/or economic benefits beyond infrastructure resilience. The GEF also aims to continue and increase its work on integrating green solutions into infrastructure, an area where many innovations are happening. Examples of such solutions include green roofing, permeable pavements, filter strips, shelter belts and bioretention.

13. It was noted that there is a general lack of enthusiasm for financing projects focused on maintaining ecosystem services, although such services are crucial in assisting infrastructure to fulfil its function with regard to promoting resilience for communities. Often the myriad of co-benefits produced by this type of project are not fully taken into account in the context of cost–benefit analyses.

3. Session 2. Infrastructure investment trends and the investment gap

14. Session 2 focused on infrastructure investment trends and the investment gap. The scene-setting presentation by Global Infrastructure Basel (GIB) noted that estimates of annual global infrastructure investment requirements range from USD 5 trillion until 2020[2] to USD 5–7 trillion for the period 2015–2030.[3] Taking climate resilience in the urban infrastructure context into account, the Cities Climate Finance Leadership Alliance estimates 'business as usual' investment needs at USD 4.1–4.3 trillion annually, and additional investment needs for a low-emission and climate-resilient path at USD 0.4–1.1 trillion.[4]

15. In recent years, infrastructure investment has been stagnating and the estimated global infrastructure investment gap ranges from USD 1 trillion[5] to USD 2.5 trillion for basic infrastructure.[6]

16. The presenter from GIB noted that aligning different stakeholders' understanding of infrastructure resilience will be key for attracting financing. The concept involves not only physical but also qualitative components which are hard to measure. In addition, data on resilience and climate change adaptation are limited.

17. It was also noted that while sustainability and resilience may be perceived as critical in the financial sector, well-defined concepts are not currently widespread. There is a need for comprehensive and efficient measurement tools to make risks and benefits transparent. Figure 1 shows the potential private sector contribution to fill the investment gap. It shows that while private finance in the power sector and in climate change mitigation could be raised fairly easily, this will be much harder for action on adaptation, illustrating the need for more incentives to facilitate private sector investments in the relevant sectors.

[2] World Economic Forum. 2013. *The Green Investment Report: The Ways and Means to Unlock Private Finance for Green Growth*. Available at http://reports.weforum.org/green-investing-2013/.

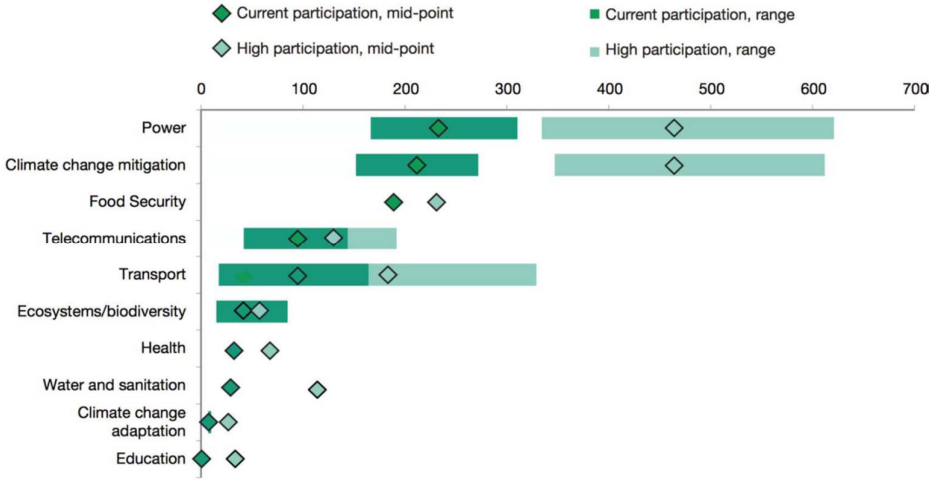
[3] United Nations Conference on Trade and Development. 2014. *World Investment Report 2014*. Available at http://unctad.org/en/PublicationsLibrary/wir2014_en.pdf.

[4] Cities Climate Finance Leadership Alliance. 2015. *The State of City Climate Finance 2015*. Available at http://www.citiesclimatefinance.org/2015/12/the-state-of-city-climate-finance-2015-2/.

[5] As footnote 2 above; McKinsey Global Institute. 2016. *Bridging Global Infrastructure Gaps*. Available at http://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/bridging-global-infrastructure-gaps.

[6] As footnote 3 above.

Figure 1
Potential private sector contribution to fill the investment gap



Source: United Nations Conference on Trade and Development (2015) cited by: Global Infrastructure Basel presentation at the 2017 forum of the Standing Committee on Finance.

18. The presentation from GIB highlighted that the development of sustainability and resilience frameworks and measurement tools is vital: (a) to show the sustainability and resilience performance of an infrastructure project; (b) to indicate the benefits that can be achieved by integrating sustainability and resilience into infrastructure planning and design; (c) to highlight the room for improvement (optimizing sustainability and resilience lowers the risks of default and damage, implying lower borrowing rates and insurance premium); and (d) to show the themes that cities and investors should be looking at for increasing sustainability and resilience, to save costs and to reduce risk.

19. The second presentation by an SCF member, Mr. Oquist Kelley, discussed alternative sources of finance such as idle corporate funds of listed companies which could be used to stimulate the global economy, reduce inequalities, and support climate action and the achievement of the Sustainable Development Goals (SDGs). These corporations could be encouraged to invest in AAA-rated bonds issued by institutions such as the World Bank and regional development banks. The funds generated would then be channelled to the existing financing windows for climate action. One of the participants also noted the importance of blended finance, which enables public and private actors to create projects jointly, and stressed that attracting philanthropic money could also be an option for developing countries to get off the ground projects that are not bankable.

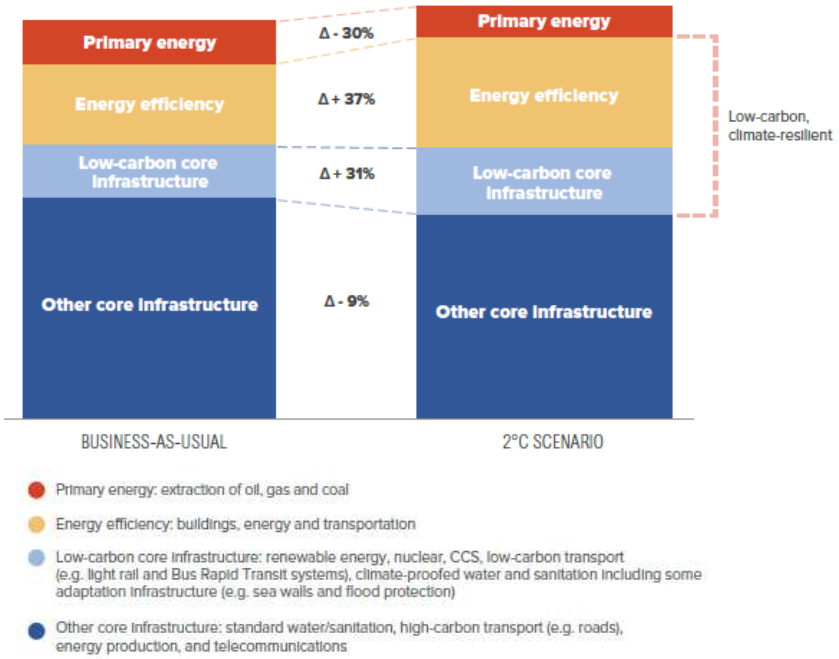
20. A representative of the United Nations Economic Commission for Africa (ECA) provided insights into the African perspective on trends and gaps in climate-resilient infrastructure. He stated that Africa suffers from a chronic infrastructure deficit in all sectors as well as poor-quality and expensive infrastructure services compared with other parts of the world, and that the continent's existing infrastructure is under threat from climate change. In this context, ECA, the World Bank, the African Union Commission and the African Development Bank, with initial funding from the Nordic Development Fund, jointly founded the Africa Climate Resilient Investment Facility. This facility is aimed at strengthening the capacity of African institutions and project developers to integrate climate information and services into the planning, design and implementation of infrastructure investments to enhance their resilience to climate variability and change in selected sectors, particularly energy, water, transport and agriculture.

4. Session 3. Infrastructure investment in the context of Article 2 of the Paris Agreement

21. Session 3 focused on the objective of the Paris Agreement to make finance flows consistent with a pathway towards low greenhouse gas (GHG) emissions and climate-resilient development. In this context, an expert of the Overseas Development Institute,

representing the New Climate Economy project, provided insights into the work of the Global Commission on the Economy and Climate, which leads the New Climate Economy project. The reports of the Global Commission, inter alia, highlight that developing countries account for around two thirds of global infrastructure investment, and have an opportunity to 'leapfrog' polluting and inefficient models. The next two to three years will be critical because of lock-in of capital and technology and a shrinking carbon budget. The report stressed that investing in sustainable infrastructure requires a shift in investment but does not need to cost much more (see figure 2).

Figure 2
Infrastructure spending in a 2 °C scenario (2015–2030, percentage change)



Note: Δ is the mathematical symbol for change.
Source: Global Commission on the Economy and Climate (2016 and 2014) and Bhattacharya et al. (2016), as cited in: Overseas Development Institute/New Climate Economy presentation at the 2017 forum of the Standing Committee on Finance.

22. The Global Commission identified four action areas to scale up and shift public and private investments to sustainable infrastructure and provided the following targeted recommendations:

(a) **Tackling price distortions**: almost 30 countries have initiated or accelerated reforms of their fossil fuel subsidies over the last three years and leaders of the Group of Seven committed in May 2016 to eliminate inefficient fossil fuel subsidies no later than 2025. At the same time, 40 countries and over 20 cities have implemented or scheduled carbon pricing. The Global Commission recommends that all developed and emerging economies, and others where possible, commit to introducing or strengthening carbon pricing by 2020. Furthermore, it will be crucial to price infrastructure services appropriately, for both traditional and ecosystem-based infrastructure;

(b) **Strengthening investment policy frameworks and capacity**: the Global Commission recommends that countries develop clear national, subnational and sectoral development strategies and infrastructure plans that are aligned with long-term climate goals. In addition, all countries should develop transition plans to accelerate the scaling-up of clean and resilient energy solutions and a phasing-out of coal, in a way that ensures a just transition;

(c) **Transforming the financial system**: the Global Commission recommends that governments and investors agree on common standards for, and scale up, green bonds. Countries, especially those in the Group of 20 (G20), should build on the work of the

Financial Stability Board's Task Force on Climate-related Financial Disclosures to move towards appropriate mandatory disclosure standards. Further, development finance institutions should double their investments in financing sustainable infrastructure as quickly as possible, and scale up further as warranted;

(d) **Innovation – boost investment in clean technology research and development (R&D) and deployment**: governments and businesses should substantially increase investments in R&D and deployment, and develop genuine research partnerships together and across countries.

23. The Integrated Programme for Protection of the Lake Bizerte against Pollution was presented at the forum as an example of a low-carbon and climate-resilient infrastructure project that is taking an integrated approach to serve the multiple aims expressed in Article 2 of the Paris Agreement. The flagship programme aims to rehabilitate the environment and water quality of Lake Bizerte in the North of Tunisia through an integrated approach tackling all its main sources of pollution. The programme seeks to build an effective ecosystem to enhance the socioeconomic status for the population living around Lake Bizerte and to enable a multi-stakeholder process for sustainable development. Developed as part of the Horizon 2020 initiative for a cleaner Mediterranean Sea, it will directly contribute to the local and regional depollution efforts and the improvement of aquatic life and living conditions of the surrounding population. It will implement sustainable infrastructure and protection measures against environmental degradation in pollution hot spots that could affect the environmental quality of marine and coastal ecosystems and the quality of life in the region of Bizerte. The Ministry of Equipment and Environment of Tunisia has worked closely with the UfM to secure commitment and resources to the project, which include self-financing from the Government of Tunisia, a loan of EUR 40 million from the European Investment Bank, EUR 15 million as a grant from the European Commission and EUR 20 million from EBRD.

24. During the plenary discussion, participants discussed, inter alia, the need to examine how financial sector regulations such as Basel III or Solvency II are shaping the incentives within asset management firms. The need to look at fiduciary requirements of sovereign wealth funds to see how much money those funds are allowed to allocate to emerging markets, or, in particular, infrastructure in emerging markets, was also highlighted.

5. Sessions 4 and 5. Barriers to financing climate-resilient infrastructure

25. Session 4 was designed to allow discussion on what could be the main barriers to financing climate-resilient infrastructure. The session opened with a scene-setting presentation by the World Bank, followed by four parallel breakout group discussions. The participants rotated among the four breakout groups, which respectively tackled the following four areas:

(a) Policies and enabling environments;

(b) Strategic planning and programming;

(c) Project preparation and technical design;

(d) Financial structuring.

26. In the scene-setting presentation, the World Bank presented its views on the main barriers to developing climate-resilient infrastructure. With regard to creating enabling policy environments, the presentation noted that it will be crucial to mainstream climate into the national budget, to ensure that NDCs cover climate-resilient infrastructure and to use the NDCs to create policies that incentivize investment. There is a need to improve climate and disaster risk screening in order to overcome planning and programming related barriers and to be able to 'climate proof' projects and better account for future conditions. Screening tools need to be user-friendly and the staff applying the tools need to be trained in order to be effective. In addition, the tracking of climate co-benefits needs to be improved to be able to measure climate finance and achieve targets. In terms of project preparation and design, it is essential to analyse all available strategies, identify any vulnerabilities of those strategies and develop an adaptation strategy to address such vulnerabilities. With regard to financing projects, concessional finance will need to be better targeted towards the provision of global public goods and towards funding activities that cannot be funded by commercial finance. It

should also be optimized towards drawing in the private sector. Public and private sector capacity needs to be built and infrastructure investments need to be de-risked through quantifying and managing risks and building new insurance packages.

Box 2
Examples of World Bank support to climate-resilient infrastructure

The World Bank is supporting developing countries in their efforts to develop and finance climate-resilient infrastructure in different sectors. Concrete country examples include support provided to Cameroon for building an institutional framework that enables private sector participation in the power sector, resulting in close to USD 1 billion of private investments to date. In Colombia, the World Bank supported the government's efforts to deepen capital markets and create green bonds and other green financial products. In Kenya support focused on enhancing the legal and regulatory framework and the utilization of credit ratings in the national water sector to create enhance investors' understanding of risks underlying investments.

Source: World Bank presentation, session 4, 2017 forum of the Standing Committee on Finance.

(a) Outcomes of the breakout group discussions

27. Following the presentation, the participants rotated between four breakout groups, with each thematic group tackling one of the four areas referred to in paragraph 25 above. Paragraphs 28–33 below provide an overview of the key results of the breakout group discussions, as presented by the facilitators of the breakout groups in session 5.[7]

28. **Policies and enabling environments**. Participants emphasized the need for better inter-agency coordination across different government agencies and for mainstreaming climate resilience into budgetary planning processes. Outdated legislative and regulatory frameworks, building codes and standards were also mentioned as key barriers. Participants also stressed that insufficient attention is given to policies and enabling environments supporting the resilience of small-scale infrastructure. The need to allow for more flexibility with regard to providing access to climate finance was underlined, and it was noted that, in particular, subnational entities are facing severe hurdles with regard to accessing financing.

29. **Strategic planning and programming**. Participants highlighted the lack of frameworks for climate-resilient infrastructure planning and noted that creating a unified framework for planning would be preferable to having a proliferation of multiple frameworks. In addition, participants noted a lack of climate risk data and the difficulty of translating scientific information into a public communication that can be easily understood and used by policymakers. Receiving information on the options for action as well as on the consequences of those options would enable policymakers to plan for climate-resilient infrastructure. Participants also emphasized that more attention needs to be directed towards enhancing the climate resilience of existing infrastructure. Another barrier mentioned was that politicians are often faced with competing needs and conflicting goals. In this regard, it was noted that there is value in having a high-level body that could help to enhance the importance of climate-resilient infrastructure on the political agenda. Participants also pointed to the challenge of adequately taking into account local needs and concerns in planning processes.

30. In terms of best practices and lessons learned with regard to overcoming strategic planning barriers, the usefulness of utilizing standards and codes was stressed. An example was given of national standards for roads and embankments in the Netherlands which are helping to integrate resilience criteria into planning and procurement processes. A programme in Nepal, which successfully supported the integration of local knowledge into building infrastructure in mountainous regions, was also discussed. Further examples from the discussions include the development of strategic investment plans in Egypt and Honduras which are helping to align financial support with national priorities, and a strategic plan for

[7] The report-back slides from the breakout group facilitators are available under section 5 of the programme of the 2017 SCF forum, available at http://unfccc.int/10368.php.

road networks in Morocco which recommends an assessment of climate risks and resilience criteria for every project in the road sector. Another best practice tool highlighted is the Building Research Establishment Environmental Assessment Method, which is the world's longest established method of assessing, rating and certifying the sustainability of buildings.

31. **Project preparation and technical design**. The lack of clear guidance on the technical definition of climate resilience was found to be one of the main barriers. The need for technical standards was also noted and participants had varying views on whether such standards should be stringent or have inbuilt flexibility. It was further noted that, unlike mitigation technologies, guidance on available adaptation technologies and how to use them appropriately is lacking. Substantial requirements for financing and lack of guidance on how to meet financing requirements and criteria were also mentioned as key barriers. The low predictability of financing is a major hurdle, since even if efforts are undertaken to meet financing requirements there is still significant risk that the project may not meet the high standards and requirements of financiers. There is also a risk that efforts to meet the criteria of project financiers, such as a results framework requirement, lead to diminished country ownership of a project. Further barriers noted include the lack of harmonized data due to different methodologies used by actors, insufficient horizontal and vertical data sharing and the difficulty of feeding scientific information into political decision-making processes. With regard to existing capacity in countries, it was noted that it is crucial to identify those capacities and sustain them in the long term.

32. **Financial structuring**. The discussions focused mainly on technical capacities, tools and data. A lack of technical tools for modelling externalities and screening long-term climate risks was noted. How to validate and monetize social and environmental benefits needs to be further explored so as to enhance the financing of climate-resilient infrastructure. Building the capacity of the private sector to price in these externalities will also be crucial, given that the development of many infrastructure projects is led by the private sector. Furthermore, the need for creating structures for non-revenue-generating and small-scale projects that may not appear attractive to lenders and investors was stressed, given the various non-commercial, social and environmental benefits of climate-resilient infrastructure. Varying time frames of actors involved in the different stages of infrastructure projects were noted as a further hurdle, as was the uncertainty on access to external sources of finance. Requirements by MDBs for sovereign guarantees where they co-finance projects in host countries were also mentioned as a barrier. Participants also highlighted that resilience and adaptation should be an integral part of good project design and engineering and cautioned against focusing on building a business case around the adaptation component of larger infrastructure project alone.

33. Given that the depth of private capital markets and the maturity of the insurance market varies greatly across developing countries, financing solutions need to be context specific. Recent success stories and good practices include asset pooling and project aggregations to finance small-scale infrastructure projects, such as the set of small-scale hydropower projects in the Russian Federation financed through the New Development Bank, which was founded by Brazil, the Russian Federation, India, China and South Africa. Other examples mentioned are domestic actions in the Moroccan insurance sector, including the introduction of new requirements for businesses to insure certain types of assets, and the development of a sustainable insurance road map.

6. Session 6. Best practices, lessons learned and opportunities related to mobilizing financing for climate-resilient infrastructure

34. Session 6 set the scene for day two by focusing on key areas for action, namely improving climate risk information and assessment, strengthening policy and regulatory frameworks and institutional capacities, and transforming the financial system.

35. A presentation by OECD focused on different policy levers needed to strengthen resilience, such as evidence provision, accounting for climate risks in projects financed by governments, enabling resilience through policy and regulation, and disclosure of climate risks. On the provision of evidence, all OECD countries have conducted national infrastructure risk assessments, which are mostly multi-sector and multi-hazard and reveal a growing consideration of interdependencies between operators and across sectors. The body of methodological guidelines and tools on integrating resilience into investment projects is

growing. With regard to accounting of climate risks in publicly funded projects, climate risk screening and management tools are prevalent in development banks but still rare in OECD domestic investments. In terms of contractual arrangements, particularly when looking at public–private partnerships (PPPs), it is crucial to determine who has the capacity to bear a certain risk in practice. The presenter noted that in Colombia, for instance, contractual arrangements for PPPs were changed following the floods in 2010 and 2011 in order to strengthen insurance requirements for concessions, which reduces the government's liability and provides an incentive for concessionaires to consider climate risks. On the policy and regulation side, it will be important to change standards in such a way that by default new infrastructure is climate resilient. Policies should support resilience throughout the entire process of designing, building and operating infrastructure. Lastly, the presenter highlighted the importance of climate risk disclosure as it can provide a price signal in terms of distinguishing a resilient asset from a less resilient one, enhance the consideration of infrastructure interdependencies, and raise management attention and provide an incentive to take a decision. There is growing interest from the financial sector in the physical aspects of climate risk and there are industry-led initiatives to scale up climate risk disclosure, such as the Financial Stability Board disclosure task force on climate-related risks or voluntary reporting initiatives, led by both the public and the private sector, such as the Carbon Disclosure Project.

36. Sessions 7, 8 and 9 focused on best practices with regard to, respectively: improving risk information and assessment; strengthening policy and regulatory frameworks and institutional capacities; and transforming the financial system. Each session featured two parallel plenaries with three to four case studies presented in each. The following sections provide an overview of the presentations made by the panellists.

7. Session 7. Best practices, lessons learned and opportunities related to mobilizing financing for climate-resilient infrastructure: Part I. Improving risk information and assessment

37. It was suggested that targeted support is needed to make risk data and information accessible to policymakers and industries, especially in developing countries. Donors and the operating entities of the Financial Mechanism can help to strengthen hydrometeorological services in developing countries so that better weather and climate data and information services become available to inform the cycle of infrastructure planning, designing, building and operation. For an effective climate risk management, the use of digitalization and satellites can be considered for data-gathering purposes. The following case studies and examples presented by the various panellists attest to the need for enhanced risk information and assessment in the process of infrastructure planning, building and operation.

38. The Minister of Public Works of El Salvador spoke about his country's experience in systematically managing climate risks over the years. As a country exposed to various climate risks and extreme weather events such as hurricanes and typhoons, El Salvador has focused on identifying the most vulnerable zones and refurbishing those areas. The country established the Climate Change Adaptation and Risk Management Department (DACGER) within the Ministry of Public Works, Transportation, Housing and Urban Development in December 2010. DACGER is comprised of four units responsible for overseeing the country's bridges, drains, geotechnical engineering and conducting technical studies. The unit is supported by technical specialists and staff for administrative and field support. DACGER runs an intensive programme of protection works and has eliminated 780 vulnerable areas of the 978 zones inspected over the years. For instance, hills vulnerable to potential landslides and soil erosion have been stabilized with rainwater runoff management. For an effective volcanic hazard management, El Salvador has utilized drone technology to identify debris flow trajectories and built dikes to control the flow of debris. These are some of the examples of what DACGER is doing to improve risk information and assessment. However, the Minister emphasized that risk information needs to be taken a step further, creating a culture of prevention and facilitating a dissemination of risk knowledge among the public.

39. What has made the El Salvador experience so successful lies in the fact that people are the main focus of the country's climate and geological risk management. The country is

now moving towards building a culture of foresight and prevention. A special emphasis is placed on vulnerable groups, and the government seeks their active engagement in the risk mitigation and management efforts. The Minister of Public Works of El Salvador also stressed the importance of aligning the national strategy with a regional one, such as the Central American framework policy on mobility and logistics, saying that a regional approach is useful when dealing with common and transboundary ecosystems and infrastructure. The country also takes an approach of multiscale management, from local to global, using various channels and financial instruments such as loans and regional and subregional funds. The Minister also emphasized the need for instituting regulations to prevent corruption. For instance, if the iron used in building a bridge is not of the required quality, then the infrastructure will fail to withstand shocks and disasters as originally planned.

40. A representative of C40 Cities Climate Leadership Group, a global network of the world's megacities and mayors, stressed the importance of city-level action in integrating climate resilience into infrastructure. Ninety-eight per cent of C40 cities say the effects of climate change present significant risks for their respective cities, and cities are increasingly at risk of coastal and inland storm flooding, heatwaves and drought. It is estimated that climate change will cost the global economy more than USD 2.5 trillion a year in lost productivity by 2030 owing to occupational heat stress alone. Cities are a centre for various social and economic activities, and infrastructures are intricately interconnected to support the many activities taking place in cities. For instance, the transport system can be affected by extreme heat or rainfall and sea level rise, which in turn has consequences for other infrastructure systems such as water, energy, telecommunications and wastewater management. When one infrastructure system fails, there will be a series of cascading failures, paralyzing cities and their economic activities. Therefore, the interconnectedness of infrastructure needs to be tackled and relevant risk information and assessment needs to be made accordingly.

41. Infrastructure developers need sector- or industry-specific best practices guidelines to move forward with climate-resilient infrastructure. A representative of the International Hydropower Association (IHA) informed the participants that IHA is currently working with the World Bank Group and EBRD to develop hydropower-specific guidelines for climate resilience, which can facilitate the process of risk analysis, modelling, risk assessment and defining best adaptation strategies or solutions for the sector. At the analysis phase, the potential impact of climate change at a specific site needs to be identified through reasonable modelling. The findings of such analysis can then be translated into scenarios at the site. Developing a set of reasonable climate change scenarios, using the best risk information and data available, is important, and the scenarios need to be applied to a project design. The scenarios are also used to stress-test a project to identify any vulnerabilities as well as an appropriate business model. Then they need to consider what structural and functional measures are already in place or planned to avoid or reduce those identified risks.

42. Tajikistan offers a good case study for climate-resilient hydropower. In a presentation by EBRD, it was highlighted that the country derives more than 98 per cent of its electricity from hydropower, which is therefore critical to the country's economic growth, livelihoods and living standards. However, only around 5 gigawatts of 40 gigawatt hydropower potential is currently being captured due to inefficiency. Qairokkum is a major hydropower plant in northern Tajikistan, which supplies 500,000 households with electricity. Projected climate change impacts pose risks to the plant's ability to generate electricity, especially given shifting temperatures and precipitation affecting glaciers and rivers. In this context, a rehabilitation and upgrade of the dam structure and turbine and hydro-electric equipment of Qairokkum was envisioned, which is expected to result in a capacity increase from 126 to 170 megawatts. A feasibility test was conducted in preparation for the project with a focus on understanding and analysing the impacts of climate change on the hydropower sector and integrating them into the infrastructure design. Turbine upgrade and spillway capacities were then adjusted to optimize power generation and safety across a range of climate change scenarios. Integral to this project was an emphasis on capacity-building on climate and hydrological data collection and usage, reservoir management and dam safety, which was supported by twinning with a world-leading hydropower operator, Hydro-Québec.

43. A flood repair and upgrade of a roads project in Bosnia and Herzegovina, financed by loans from EBRD, the World Bank and others, demonstrates a careful use of climate projections and assessment of impacts on the road network when designing climate resilience measures to be built into the roads. The project aimed at repairing and upgrading the 34 road sections that had been heavily damaged by the unprecedented floods of 2014. In the technical assessment phase, two global climate models were used to make climate projections for temperature, precipitation, cold events and storms, and their likely impacts on the roads were assessed. In assessing major climate risks and mapping out vulnerabilities, a QuickScan approach to risk assessment was used, a methodology developed by the Conference of European Directors of Roads. This approach mobilizes a multi-disciplinary group of stakeholders in a workshop and goes through three analytical steps using available maps, data, information and local knowledge to identify, analyse and evaluate risks. As a result of the risk assessment process, it was decided to enhance the roads' drainage systems, strengthen vulnerable slopes, bridges and tunnels and deepen bridge abutments. It was also decided to install rock mattresses to reduce the impact of long-term erosion risks and widen the bypass roads.

44. A representative of the Adaptation Fund Board secretariat indicated that the Adaptation Fund takes an integrated approach to adaptation and climate resilience by aligning it with the SDGs, Article 2 of the Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015–2030. Consulting local people is at the heart of the Adaptation Fund adaptation and resilience projects, which include community-built small-scale infrastructure projects such as building sea walls to slow costal erosion in Senegal. The Adaptation Fund has supported updating the meteorological services in developing countries to enhance risk information and assessment. In Georgia, it funded a project aimed at developing climate-resilient flood and flash flood management practices to protect vulnerable communities. The project activities included building partnerships, facilitating cooperation between the local and national governments and building capacity of the local people to use climate data. Systems were established at the national and subnational level for both short- and long-term flood forecasting.

45. During the discussions that followed the presentations, some panellists stressed the importance of local consultation and inter-actor coordination in implementing adaptive and resilient measures. In a local setting, people are often not fully aware of climate risks, and capacity-building is needed in this regard. Changing the mindset of such local people is important to avert damage and a loss of human lives in extreme weather events. Developing country participants also highlighted the need to change the mindset of infrastructure planners and developers at home so that they can start doing things differently and integrating climate resilience into infrastructure development.

8. Session 8. Best practices, lessons learned and opportunities related to mobilizing financing for climate-resilient infrastructure: Part II. Strengthening policy and regulatory frameworks and institutional capacities

46. A representative of the World Bank stated that strengthening policy and regulatory frameworks and institutional capacities for climate-resilient infrastructure can have the following benefits:

(a) Ensure strategic, multi-sectoral approaches to building resilient infrastructure;

(b) Strengthen institutions and build capacity;

(c) Improve project appraisal and preparation;

(d) Enhance access to finance and reduce the cost of capital;

(e) Improve project design and implementation.

47. The programmes and case studies contained in paragraphs 48–51 below elaborated on how strengthening policy and regulatory frameworks in different cases have enabled strategic planning for and supported designing, building and financing climate-resilient infrastructure projects.

48. The World Bank has supported building national-level climate-resilient development strategies through PPCR and the Climate Action Peer Exchange (CAPE). PPCR provided funding for technical assistance to enable developing countries to build upon existing national work to integrate climate resilience into national and sectoral development plans. As a result, 28 vulnerable countries developed a multi-sectoral climate-resilient strategy with a special focus on directing investment for adaptation planning. CAPE brings together ministries of finance and other relevant stakeholders to discuss fiscal and financing challenges and experiences in implementing the NDCs, and serves as a capacity-building forum for peer-to-peer knowledge-sharing and advisory support. Both PPCR and CAPE have enabled strategic planning for climate-resilient infrastructure and its financing at the country level.

49. In a climate-resilient road project in the West Coast of Samoa, where more than 50 per cent of the roads sits less than 3 metres above sea level and only a few metres from the shoreline, the World Bank supported a review of the country's institutional and legal framework and recommended specific reforms and the capacity-building that is required to facilitate climate resilience in the road sector. This review led to the development of the country's climate change adaptation policy framework and objectives for the national road network.

50. The World Bank also supported the Government of Timor Leste in undertaking a detailed analysis of available structuring options and the viability and market acceptance of the Tibar Bay Port project, a new greenfield port construction project in Tibar Bay following Dili Port for dry cargo reaching its capacity. The World Bank worked with the Government of Timor Leste to develop the country's long-term capacity for project appraisal and preparation, which led to the establishment of a PPP unit within the Ministry of Finance and development of its workflow and process. Furthermore, the World Bank helped to build capacity within the Government of Timor Leste to support the establishment of a working PPP programme and bringing projects to the market. As a result, in 2016 the Government of Timor Leste signed a 30-year, USD 490 million concession contract with Bolloré Logistics, which had been selected through a competitive bidding process.

51. In the case of the 4th Generation Toll Road Program in Colombia, a USD 24 billion decade-long investment plan to create a nationwide toll road network through multiple PPPs. Once the plan was in place, it brought together investment, advisory and treasury support from the MDBs as well as investment and guarantees. In the case of a roads and bridges maintenance project in Mozambique, efforts are being made to review the existing design standards and construction maintenance approaches to ensure that these better address climate risks in the infrastructure lifecycle. As identified as a priority in the National Climate Change Adaptation and Mitigation Strategy of Mozambique, the MDBs and local developers are working together to develop technical standards and maintenance approaches for paved and unpaved classified road networks and capacity-building programmes for local contractors and service providers.

52. A representative of the World Association for Waterborne Transport Infrastructure (PIANC) spoke about her organization's ongoing work in developing technical good practice guidance to support the owners, operators and users of waterborne infrastructure in building mitigation and adaptation safety along with nine other international associations of ports and maritime infrastructure. Waterborne infrastructure such as ports and harbours today are exposed to more frequent and severe flooding, wind, waves and storms owing to climate change. Other factors that the operators and developers of waterborne infrastructure need to take into consideration include potential changes in fog characteristics, which has implications for visibility and navigational safety issues, changes in ice cover and river flow and changes in water chemistry due to increased air and water temperatures. In this context, providing technical guidance that promotes adaptive management and capacity in waterborne infrastructure becomes all the more important as conventional methods and techniques are not as applicable owing to increased uncertainty.

53. The PIANC representative stressed that it is important to design waterborne infrastructure in a way that can facilitate modification when new information arises. The technical good practice guidance for maritime infrastructure, which is currently in the making, will include considerations for real-time monitoring, early warning systems and

contingency plans as well as constant monitoring of asset conditions and maintenance of infrastructure to maximize adaptive capacity. Further, the working group on the technical guidance will review the investment financing criteria for waterborne infrastructure and focus on developing a business case for adaptive infrastructure that takes into consideration the interconnectivity of infrastructures.

54. The Nador West Med project is a climate-resilient port project in northern Morocco, which is currently under construction and funded by, among others, the Government of Morocco, EBRD and the African Development Bank (AfDB). Ports are especially important in the case of Morocco, as 95 per cent of the country's trade passes through ports. During the project preparation phase, EBRD commissioned a study on adaptation to determine what adaptation measures should be incorporated into the design. Climate resilience measures that have been and will be included throughout the project cycle include the installation of surfacing, mechanical and electrical equipment designed to withstand projected temperature extremes of more than 40 °C. Moreover, surface drainage systems able to cope with extreme rainfall and overtopping, and storage facilities able to withstand extreme temperatures and weather will be installed. In addition to providing support in the construction phase, EBRD will offer advice on operational aspects, including developing an emergency response plan in the case of extreme weather events and a coastal erosion monitoring scheme for the local area.

55. EBRD is also preparing a loan with the National Ports Agency, for climate-resilient upgrades in Morocco's port sector. The GEF Special Climate Change Fund has awarded a USD 6 million grant to co-finance this investment. The GEF is working with the National Ports Agency to identify priorities for the development of the Moroccan ports sector in the context of its national strategies and plans such as the 2030 National Port Strategy, specific to the priority climate change risks the country faces. Furthermore, the GEF will provide a comprehensive package of technical support to build the capacity of the port sector for climate resilience, which includes formulation of a strategic framework for the sector and preparation of technical guidelines in reference to international best practices such as the forthcoming PIANC technical good practice guidance mentioned in paragraph 52 above.

56. Efforts are under way in Jamaica to address water management issues related to climate change, which is one of the most serious threats to sustainable development facing the small island developing States, in the housing sector. In Jamaica, drought and shifting patterns of rainfall are likely to worsen the challenges already affecting the country's water supply and distribution, such as ageing assets, population growth and environmental degradation. In this context, the four-year Financing Water Adaptation in Jamaica's New Urban Housing Sector project, which is based on a partnership agreement between IADB and the Jamaica National (JN) Group, aims to introduce various water adaptation measures in the country's housing sector such as the use of rainwater harvesting systems, water-efficient taps and showers, low-flush toilets, efficient irrigation systems and grey water recycling facilities. The project also seeks to increase climate-resilient housing by raising awareness of the business and financial cases for building homes with water-efficient measures and to enhance the country's water security and climate-resilience by increasing the efficiency in the use of water by Jamaican households.

57. The Financing Water Adaptation in Jamaica's New Urban Housing Sector project has two main components: the loan facility that will facilitate the installation of water-saving measures and technologies, administered by the JN Bank, and the technical cooperation component to be managed by the JN Foundation. A representative of the JN Foundation noted that her team is focused on building the institutional capacities of the Jamaican housing sector and construction industry, as well as local businesses, financial institutions, civil society and the Government of Jamaica. The capacity-building support focuses on enhancing capacity to design and install water adaptation measures, making the business case for water efficiency for developers and construction companies and the financial case for water adaptation in households, and raising awareness of the threats of climate change and the related opportunities presented by water efficiency.

58. A representative of the GCF secretariat stressed the importance of structural changes, driven by decisively resilient and low-carbon interventions, in addressing the increasing vulnerabilities of megacities and urban centres in developing countries to climate risks. If not

properly managed, deepening urbanization can reduce a city's resilience as it puts added pressure on energy and natural resources while increasing the GHG emissions. For cities like Manila and Bangkok, which represent 61 and 72 per cent of the Philippine and Thai economies, respectively, integrating climate resilience at the city level is imperative. As discussed in a presentation by the C40 Cities Climate Leadership Group mentioned in paragraph 40 above, in an extreme weather event, a city's entire infrastructure system can be paralyzed because infrastructures are closely interconnected. The bigger and more concentrated the city, the greater the damage if it is not resilient. Urban climate change resilience implies that cities are capable of functioning, surviving and thriving in the face of shocks and stresses related to climate change.

59. The GCF can support mainstreaming transformational resilient investments into urban areas by initiating consultations early in the process of designing an intervention and properly addressing climate resilience considerations, including significant social development issues and safeguards. A wide mix of financial resources, including the full spectrum of the GCF funding and other climate project preparation and finance facilities, can be used to create synergies across sectors and enable the capacity-building needed on the ground. Policies that can support such structural changes must be in place in developing countries, and a strong push from the governments is needed to integrate the growth and climate agendas. A recent OECD report estimates that integrating the growth and climate agendas could add 1 per cent to the average economic output of the G20 countries by 2021 and raise their 2050 output by up to 2.8 per cent.[8]

60. AfDB is currently in the second phase of its Climate Change Action Plan 2016–2022. A representative of AfDB noted that adaptation projects in Africa are often small-scale community projects and that aligning adaptation with infrastructure is the best way to scale up climate finance for adaptation in the region. Since 2013, the Climate Safeguards System of AfDB has facilitated upstream climate risks assessment and helped to identify strategies that can reduce the vulnerabilities of infrastructure projects to climate risks. AfDB has offered institutional capacity needs assessments and relevant training opportunities, targeting engineers, infrastructure developers and decision makers. It has raised their awareness of climate risks and strengthened their capacity to mobilize adaptation finance at scale while facilitating an exchange of knowledge and skills transfer among the institutions represented.

61. A representative of the IHA informed the participants that integrating climate resilience into hydropower starts in the planning at the river basin level and includes building resilience into the design of a new project or modernizing the existing projects, such as re-sizing of turbines. The World Bank Group and IHA are currently working together to develop climate resilience guidelines specific to hydropower, a renewable source of energy in and of itself. The World Bank Group requires climate resilience as a criterion for its project screening process; climate resilience is one of the World Bank's five strategic shifts for its climate change related work. The hydropower-specific guidelines, expected to be finalized later this year, are adapted from the World Bank Decision Tree Framework. IHA is simultaneously working on developing concise climate resilience assessment criteria that outline, inter alia, eligibility requirements for the Climate Bonds Initiative.

62. During the discussions that followed the presentations, a panellist stressed the need for municipalities and governments to work closely with development partners and funding agencies to develop sectoral and master plans for adaptation and resilient infrastructure from the very beginning. Another panellist was of the view that national priorities must be determined by the countries themselves as well as their regulatory approaches. There was a common agreement among the panellists that public finance needs to be used to de-risk the economy and to make climate-resilient investments attractive for the private sector. The need for targeted capacity-building for various stakeholders, such as engineers, was also noted with regard to the technical aspect of climate-resilient infrastructure as well as the financing aspect, including eligibility and criteria for funding.

[8] OECD. 2017. *Investing in Climate, Investing in Growth*. Paris: OECD Publishing. Available at http://dx.doi.org/10.1787/9789264273528-en.

9. Session 9. Best practices, lessons learned and opportunities related to mobilizing financing for climate-resilient infrastructure: Part III. Transforming the financial system

63. The need for developing metrics for climate resilience that can be used to measure progress or estimate the expected benefits of a project was suggested as a way to help to transform the financial system. More funds are being committed to adaptation finance worldwide, and it is crucial to communicate what the results of such finance may be by using a tool. Private investors also want to see the benefits and opportunities of a project. For this reason, various organizations have developed their own system of measuring resilience, including the GEF and the GCF as well as private entities such as the S&P Global Ratings.

64. A representative of EBRD spoke about the current work of the MDBs in developing a metric that can be used to monetize the climate resilience benefit of their projects and investments. For mitigation projects, metric tonnes of CO_2 equivalent is widely used to capture an estimated reduction in GHG emissions that a given project will achieve. The measure is comparable between different sectors and can be used to capture the benefits of different sector projects such as wind farms, cement plants and forest restoration projects. Values expressed in metric tonnes of CO_2 equivalent can also be aggregated, which is very convenient for institutions that finance mitigation projects.

65. In the case of adaptation, different sectors are likely to require different approaches and solutions as adaptation is highly context specific. EBRD, for instance, supported an irrigation upgrade project in Kazakhstan. The project aimed to modernize an irrigation system that was highly inefficient in the use of water, as large amounts of water were being lost in the conveyance. A vast amount of water can be saved through this upgrade project, and EBRD monetized the value of water saved, which came out at around USD 35.5 million per year. The upgraded irrigation system is expected to last about 25 years, and can be translated to benefits worth about USD 887 million in the lifespan of the infrastructure. This computation scheme is a work in progress and open for further consultation (see the table below).

Analysis of the climate resilience benefit of the Kazakhstan irrigation project

Indicator	*Value (units)*	*Note/Computation*
Physical outcome	Reduction in water conveyance losses: 180 million m^3/year	Water conveyance loss reduction was calculated during the feasibility study
Monetization/valorization of physical outcome	USD 35.5 million	Shadow irrigation water tariffs in the project location are around 62 tenge per m^3, or USD 0.2/m^3. Therefore, 180 million m^3 x USD 0.2/m^3 = USD 35.5 million
Climate resilience benefit	USD 887 million	The design life of the infrastructure being financed is 25 years. Therefore, the climate resilience benefit is calculated as USD 35.5 million x 25 = USD 887 million NB: no discount rate was applied in this calculation, and the tariff was assumed to be constant
Resilience benefit ratio	4.93	The finance committed to the project was USD 180 million, and the climate resilience benefit is USD 887 million. Therefore, the resilience benefit ratio is 887:180 or 4.93

Source: Adapted from the presentation by the European Bank for Reconstruction and Development at the 2017 forum of the Standing Committee on Finance.

66. Internationally recognized climate resilience standards incorporating the social, economic and environmental benefits of resilience can direct investment towards infrastructure projects that are more resilient to medium to long-term climate change impacts. The Standard for Sustainable and Resilient Infrastructure (SuRe®), which was developed by GIB, is an example of such a standard. SuRe® is a stakeholder-driven and voluntary global standard for infrastructure sustainability and resilience. GIB brought together various stakeholders from the public and private sectors, civil society, the engineering community, non-governmental organizations and international organizations to define a common understanding around the concept of sustainability and resilience. The SuRe® standard is a product of three years of consultation with these stakeholders, and is aligned with the existing international frameworks and agreements on environmental, social and governance topics, including the SDGs and the Sendai Framework. The interconnectedness of different infrastructure systems and the corresponding cascade of risks are taken into consideration in the SuRe® standard for resilience management and risk mitigation. Furthermore, the SuRe® Standard takes into account the social and environmental benefits of sustainable and climate-resilient infrastructure (see figure 3).

Figure 3
The SuRe® standard

Source: Adapted from the presentation by Global Infrastructure Basel at the 2017 forum of the Standing Committee on Finance.

67. Some countries have taken on developing principles for sustainable insurance, and there is a growing emphasis on the importance of insurance regulation in building a resilient society. A representative of the Moroccan Supervisory Authority of Insurance and Social Welfare, said the central bank of Morocco, Bank Al-Maghrib, has taken a lead role in elaborating the Moroccan road map for the financial sector alignment on sustainable development under the direction of the Chairman of the Scientific Committee of COP 22. The exercise was made possible with contributions from the Ministry of Finance and the nation's bank and insurance associations and stock exchange. The road map outlines key elements for aligning the financial sector with sustainable development objectives, which include the extension of risk-based governance to social and environmental risks, the development of sustainable financial instruments and products, capacity-building in the field of sustainable finance and disclosure for the purposes of transparency and market discipline.

68. Against the backdrop of the national road map for the financial sector alignment on sustainable development, an insurance scheme to cover the consequences of catastrophic events has been established in Morocco. The scheme covers losses in both natural disasters and man-made events. The compensation process is triggered once the Head of Government declares an event a catastrophe. The insurance scheme is a mixed plan covering the losses

incurred to the insured and at the same time offering an entitlement system for persons with no coverage. The entitlement system guarantees persons with no coverage a right to minimum compensation for a personal injury and loss of principal residence in the event of a catastrophe. It draws funding from the Solidarity Fund against Catastrophic Events, which is financed by the State.

69. The Government of the Republic of Korea institutes a broad policy framework for green finance and provides incentives to private sector entities for green business practices. In this context, the role of the public sector in leading the way and providing policy frameworks and guidelines for the private sector was emphasized. A representative of the Ministry of Strategy and Finance of the Republic of Korea introduced the country's green finance practices. For instance, the Green Certification System helps identify firms, products and technologies that are green, and the certification can help rally public support for such firms and products. The Green Management Disclosure Programme is a voluntary disclosure programme run by the Korea Exchange, while the Green Financial Information System is operated by the Korea Federation of Banks and the Committee on Green Growth. Moreover, the National Pension Act encourages the National Pension Service, a leading institutional investor in the country, to consider the environmental, social and corporate governance criteria for investments.

70. In the realm of private finance in the Republic of Korea, green loans and green bonds are being offered. For instance, industries and firms certified as 'green' are given preferential treatment with regard to a lending limit and rate offered by private financial institutions. Private entities such as the Korea Development Bank, Korea Eximbank and Hyundai Capital are each offering green bonds for low-carbon and eco-friendly projects and the purchase of eco-friendly vehicles.

71. A representative of S&P Global Ratings indicated that there is a growing interest from the financial sector in identifying the physical aspects of climate risks through financial disclosure initiatives and resilience ratings. For instance, the G20 Finance Ministers and Central Bank Governors meeting in December 2015 asked the Financial Stability Board to review how the financial sector can take account of climate-related issues. The Financial Stability Board, in turn, created the industry-led Task Force on Climate-related Financial Disclosures. The S&P Global Ratings has also developed its Green Evaluation approach that can be applied to green bonds, green bank loans, green asset-backed securities, equity and all other forms of sustainable finance. Green Evaluation defines the value of 'green' for capital markets and any other financing, and enables transparency in green finance. It is designed to enable institutional investment in sustainability by providing the confidence of independent evaluation of environmental impacts. Furthermore, it provides a green channel to sustainable finance for institutional fixed incomes. This particular tool goes beyond the existing tools and takes into consideration the local and sector-specific context of sustainable and climate-resilient investments.

72. A representative of the Global Adaptation & Resilience Investment Working Group (GARI), a private sector led and launched initiative that was announced at COP 21, introduced the findings of the group's 2016 survey that captured the private sector sentiment on issues of climate risk metrics and climate-resilient infrastructure.[9] Seventy-eight per cent of the survey respondents said that analysing the risk of the physical effects of climate change is "very important" to them. Seventy per cent of the investor respondents replied that they are considering climate-resilient investments now, while an additional 23 per cent said they are poised to invest in climate resilience in one to three years' time. The respondents were most interested in investing in infrastructure, which stood at 61 per cent, and then in companies that address specific aspects of physical climate risks, which ranked 60 per cent.

73. As private sector investors are increasingly and practically focused on screening climate risks for infrastructure and other assets, GARI is preparing a 5- to 10-page investor

[9] The survey compiled 101 responses from 236 solicitations for feedback from GARI participants and interested stakeholders. See: Global Adaptation & Resilience Investment Working Group. 2016. *Bridging the Adaptation Gap: Approaches to Measurement of Physical Climate Risk and Examples of Investment in Climate Adaptation and Resilience*. Discussion paper. Available at https://garigroup.com/discussion-paper.

guide to climate risk and resilience and plans to release it at COP 23. More and more innovative financing tools are emerging, such as the Climate Resilience and Adaptation Finance & Technology Transfer Facility (CRAFT), which is the first private fund concept to focus on climate resilience and adaptation. CRAFT has a USD 500 million blended finance fund to invest in companies that generate actionable data about and solutions to climate change impacts. It is equipped with a USD 20 million Project Preparation Technical Assistance Facility. This momentum for change in doing things differently within the private sector needs to be capitalized, and a greater coordination is required between the public and private sector on climate risk screening and climate-resilient investment opportunities.

74. During the discussion that followed the presentations, it was suggested that finding the right language for the private sector and investors that they would understand is important. The benefits of climate-resilient infrastructure need to be emphasized, as businesses are looking for opportunities, not risks. Furthermore, it was noted that financial structuring would require a clear definition of resilience and adaptation as well as clear criteria for resilient infrastructure financing. Having a clear definition of resilience and adaptation does not necessarily require coming up with a new definition; it could be more effective to better align the existing definitions to bring about a common understanding among stakeholders from the public and private sectors.

75. The need for building the capacity of the private sector was also mentioned, given that there is currently a mismatch between private investments and long-term public needs in the context of climate change. Furthermore, the need for creating structures for non-revenue-generating and small-scale projects that may not appear attractive to lenders and investors was stressed, given the various non-commercial benefits of climate-resilient infrastructure.

76. A participant stressed that the NDCs are not just about mitigation; many of them include adaptation, and ways for developing countries to get the funding needed for their adaptation activities must be tackled. A panellist stressed the need for enhancing the capacity of countries to design sound projects in line with the funding agencies' criteria and priorities. Another panellist suggested that identifying exactly where projects are struggling, and appealing to investor appetite would be the next step to mobilize private finance for climate-resilient infrastructure. The need for enhanced capacity-building to help countries to put forward a good project concept was noted as well as the need for enhancing the accessibility of the climate funds so that the work of integrating resilience into infrastructure can be expedited.

10. Session 10. Reflections on key outcomes and conclusions of the forum

77. Mr. Luke Daunivalu (Fiji), representing the incoming COP 23 Presidency, expressed his gratitude to the SCF and the Government of Morocco for hosting the forum and highlighted a few themes in concluding the forum. He noted that natural disasters and extreme weather events taking place around the world today underscore the urgency needed for Parties to deliver on the Paris Agreement. It is time to do things differently by building climate-resilient infrastructure and also by transforming the financial system so that Parties, together with other stakeholders, can implement adaptation. The questions of what specific guidance needs to be given to the operating entities of the Financial Mechanism so that more financing can be triggered for adaptation and how to accelerate the delivery of climate finance to fund climate-resilient infrastructure projects need to be further explored. He also linked the Paris Agreement to the 2030 Agenda for Sustainable Development, saying that if the goals of the Paris Agreement are not met, then the SDGs cannot be achieved.

78. A representative of the Africa Adaptation Initiative gave a regional perspective on the issue of climate resilience and adaptation. Adaptation is a priority in the region, and all African countries have included an adaptation component in their intended nationally determined contributions. In sub-Saharan countries, adaptation costs as a share of gross domestic product (GDP) are expected to be around 0.5 per cent on average between 2010 and 2050, which is much higher than in any other world regions, where the costs are expected to range from 0.08 to 0.2 per cent of GDP. She suggested that adaptation must be supported in the form of grants, not loans, given the urgency of the matter in the face of increasing climate risks and more frequent extreme weather events. Specifically, she highlighted that 70 per cent of national hydrological and meteorological services in Africa operate at a basic level or

below, linking it to one of the suggestions emerging from the forum that hydrometeorological services in developing countries need to be enhanced (see para. 37 above).

79. The representative of the GIB Foundation acknowledged the usefulness of this forum and urged the SCF to disseminate the findings of the forum and dig deeper into some of the important topics, including the issue of harmonizing the various project proposal templates that are used by the GEF, the GCF and the Adaptation Fund and facilitating the uptake of global standards for resilience and sustainability in the UNFCCC process. A wider use of blended and phased finance as well as guarantees to attract private finance is encouraged. Mechanisms for asset pooling and project aggregation for small-scale projects need to be further refined and mainstreamed. She also stressed that the engineering and insurance sectors need to be more involved to mainstream climate resilience into infrastructure. She encouraged the use of nature-based solutions and hybrid infrastructure in making infrastructure resilient. Furthermore, she noted that making a stronger business case for more private sector involvement in climate-resilient infrastructure is needed.

80. A representative of EBRD highlighted the usefulness of the 2017 forum, which brought together actors not only from the international climate change negotiation process but also from the investment community and industry associations. He stressed that the forum reinforced a strong link between infrastructure and human development. For instance, better and more consistent water supplies can result in better living standards. Strategic planning that can support the mobilization of finance for climate-resilient infrastructure was identified as a priority, as well as the need for internationally recognized metrics and standards that can be used to measure success and progress. The forum also informed the participants that there is a wide range of financial sources that can be used to finance climate-resilient infrastructure. One of the barriers to financing climate-resilient infrastructure identified was the issue of turning the NDCs into a concrete strategic plan that can readily attract funding. How development partners may be able to support developing countries to do strategic planning for adaptation and climate resilience needs to be tackled further.

81. The representative of C40 Cities Climate Leadership Group called for engaging cities more rigorously in driving action for climate resilience and adaptation, noting that cities are where most people live and where the effects of climate change will be felt the most. He stressed that capacity-building is needed to enable cities and central governments to identify best practices in addition to enhancing their capacity to prepare good project proposals. Risk information needs to be made more accessible, and a vertical integration of actors at the city, regional and national levels needs to be strengthened.

B. Recommendations of the Standing Committee on Finance

82. On the basis of the outcomes of its 2017 forum, the SCF submits the following recommendations for consideration by the COP. The SCF recommends that the COP:

(a) Invite developing country Parties to develop policy and/or strategic planning frameworks that incorporate national climate-resilient infrastructure priorities into investment decisions in the context of nationally determined contributions and national adaptation plans, as appropriate;

(b) Encourage developing country Parties to take advantage of the resources already available through the operating entities of the Financial Mechanism in order to strengthen their institutional capacities at the local, subnational and national levels to develop climate-resilient infrastructure projects;

(c) Highlight the need to ensure efficient access to climate finance from different providers, including the operating entities of the Financial Mechanism;

(d) Invite Parties to encourage enhanced engagement of government agencies, including ministries of finance and planning, in order to further mainstream climate resilience and integrate it into infrastructure plans as well as national development strategies and budgetary processes, as appropriate;

(e) Encourage the continuation of the provision of technical and financial support for enhancing hydrometeorological services in developing countries so that better climate

data and information services become available to inform the process of infrastructure planning, design, building and evaluation;

(f) Invite Parties, MDBs, international organizations, expert institutions and the private sector to further collaborate in the development of climate-resilient infrastructure certification systems and standards and metrics, including the valuation of social and environmental benefits;

(g) Invite Parties to consider means to incentivize private sector investment in climate-resilient infrastructure and to establish and/or strengthen the dialogue with key actors at the subnational, national, regional and international levels to ensure the resilience of infrastructure;

(h) Request the GCF, the GEF and the Adaptation Fund to continue supporting climate-resilient infrastructure projects in developing countries, while taking into account the need for coherence and complementarity between these funds and with other providers of financial support.

C. Follow-up activities of the Standing Committee on Finance in 2018

83. The SCF will consider undertaking the following activities in relation to the topic of its 2017 forum:

(a) Assessing how to address the issue of climate resilience metrics in the 2018 biennial assessment and overview of climate finance flows;

(b) Continuing to engage with relevant institutions, such as MDBs, the private sector, regulators and industry associations, to further discuss how to enhance financing for climate-resilient infrastructure projects on the basis of lessons learned and good practices, including considering the possibility of SCF engagement in relevant events;

(c) Producing outreach materials, including a publication to disseminate the outcomes of the 2017 SCF forum, as part of a broader outreach strategy to better promote the outcomes of SCF forums.