

A CIVIL SOCIETY PERSPECTIVE FROM:
BANGLADESH, CHINA, GERMANY & INDIA

Climate Resilience and Pro-Poor Principles for Infrastructure Investments:

Aligning the Asian Infrastructure Investment Bank (AIIB)
with the Paris Agreement



Centre for Participatory Research and Development / Climate & Development Advice
Germanwatch / Greenovation Hub / Indian Network for Ethics and Climate Change / Laya

Imprint

Germanwatch

Kaiserstr. 201, D-53113 Bonn, Germany
Ph.: +49 (0) 228 60492-0
www.germanwatch.org/en



Climate & Development Advice

Türkenlouisweg 9, 69151 Neckargmünd
Ph.: +49 (0) 6223 48 77739
www.climate-development-advice.de/en



Center for Participatory Research and Development

House 1219, flat A-2, road 10, avenue 10
Mirpur DOHS, Dhaka 1216, Bangladesh
Ph.: +880 1729-259491
www.cprdbd.org



Greenovation Hub

Room 309, Wanbo Office Building, No.53,
Ganyu Hutong, Dongcheng District
100006 Beijing, PRC
Ph.: +86 10 8447 7697
www.ghub.org



LAYA / INECC

Laya Resource Centre
Plot No 110, D-No: 5-175/1, Behind Bay Crown Apartment,
Near Sun Senora Beach Campus, Yendada,
Visakhapatnam– 530045, Andhra Pradesh, India.
Ph.: +91 891 2526663
www.laya.org.in / www.inecc.net



Authors:

Thomas Hirsch (Lead author), Martin Voss, Guo Hongyu,
Ajita Tiwari Padhi, Md Shamsuddoha

With contributions by:

Yao Anqi, Nafisa D'Souza, Sophie Fuchs, David Ryfisch, Marie Rittich

Layout:

Designbüro honey-studio | www.honey-studio.de

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Abbreviations

ADB	Asian Development Bank		
AF	UN Adaptation Fund		
AfDB	African Development Bank		
AIIB	Asian Infrastructure Investment Bank		
CV	Climate Vulnerable Forum		
DFID	Department for International Development (UK)		
DRR	Disaster risk reduction		
EBRD	European Bank for Reconstruction and Development		
EIA	Environmental Impact Assessments		
EI	European Investment Bank		
ESF	Environmental and Social Framework		
ESS	Environmental and Social Safeguards		
GCG	Green Credit Guidelines		
GHG	Greenhouse gas		
IADB	Inter-American Development Bank		
IPCC	Intergovernmental Panel on Climate Change		
IsD	Islamic Development Bank		
KP	Key Performance Indicators		
KRI	Key Risk Indicators		
LDCs	Least Developed Countries		
MDB	Multilateral Development Bank		
NAP	National Adaptation Plan, National Adaptation Plans		
NAPA	National Adaptation Programs for Action		
NDB	New Development Bank		
NDC	Nationally Determined Contributions		
OHCHR	United Nations High Commissioner		
			for Human Rights
PA	Paris Agreement		
RMF	Risk Management Framework, Risk Management Framework		
SDG	Sustainable Development Goals		
SFDRR	Sendai Framework for Disaster Risk Reduction		
SIDS	Small Island Developing States		
UNDRR	United Nations Office for Disaster Risk Reduction		
UNFCCC	United Nations Framework Convention on Climate Change		
USAI	United States Agency for International Development		
WBG	World Bank Group		
WRI	World Resources Institute		

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Executive Summary

The 2020s will witness some USD 70 trillion invested into urban, energy, water, ICT, and transport infrastructure. 70% of those investments will be made in the developing world, mostly in Asia. Infrastructure investments, however, often do not consider in any depth the climate risks their projects are exposed to across their lifespans. Neither is it a standard process to assess whether adaptation options could be integrated into the infrastructure projects so that they actually promote the resilience of the communities they are located in. In some cases, the infrastructure even lowers the resilience of people it is meant to serve.

Climate risks will increase steeply in the decades to come. If we are to leave no-one behind in achieving the SDGs and mitigating climate risks, investments must diametrically shift their focus from business-as-usual infrastructure to transformative, i.e. low-carbon and climate-resilient infrastructure. Multilateral development banks (MDB) have a decisive role to play in shaping the future of infrastructure: Will it be climate-adaptive and pro-poor, or just business-as-usual? That question will be explored for the Asian Infrastructure Development Bank (AIIB), the fastest-growing MDB, as an example.

The Paris Agreement (PA), the Sendai Framework for Disaster Risk Reduction (SFDRR), and the Sustainable Development Goals (SDGs) are the main reference frameworks for climate-resilient and sustainable development pathways. AIIB has pledged to align their investments with them. But human rights-based approaches should be added to provide orientation when it comes to the respect for, protection of, and ultimately the fulfilment of the fundamental human rights of those disproportionately affected by climate change impacts. But how can the alignment commitments be realized effectively and lead to tangible results? This report suggests ten Pro-Poor Climate Resilience Principles:

Three **Climate Resilience Principles** aim at aligning infrastructure investments with the Paris Agreement:

1. **Do no harm** — AIIB infrastructure investments should not undermine the climate resilience of people and ecosystems, especially not of the poor and climate-vulnerable people and be in line with all efforts to limit global warming to 1.5°C.
2. **Climate proofing** — AIIB infrastructure investments should be protected effectively during their entire lifespan against value loss caused by adverse climate change impacts.
3. **Enhance systemic climate resilience** — AIIB infrastructure investments should be optimized such that they protect human systems and eco-systems against climate change impacts.

These climate resilience criteria should be always applied with a particular focus on the rights and needs of poor and climate-vulnerable people, ensuring that AIIB infrastructure investments expressly contribute to the climate resilience of those who are most in need of it. We propose the following seven **Pro-Poor Principles** to guide this process:

4. **Measurable value for the poor and vulnerable** — AIIB infrastructure investments should provide measurable client-value for poor and vulnerable populations in terms of their resilience.

5. **Transformation** — AIIB infrastructure investments should facilitate the structural transformation to climate-resilient, sustainable development pathways, including poor and climate-vulnerable people.
6. **Enabling policy frameworks** — AIIB should engage with country clients to support or incentivize the development of enabling policy frameworks to promote climate resilience that takes due note of the rights and particular needs of poor and climate-vulnerable people.
7. **Accessibility** — AIIB infrastructure investments should ensure access to infrastructure benefits for poor and vulnerable populations.
8. **Affordability** — AIIB infrastructure investments should ensure affordability of infrastructure services for poor and vulnerable populations.
9. **Participation** — AIIB infrastructure investments should ensure due participation of poor and vulnerable populations in all phases of the project cycle.
10. **Transparency** — AIIB infrastructure investments should ensure transparency in all phases of the project cycle, including due consideration of affected poor and vulnerable populations through prior information.

Concrete steps to implement these criteria and principles are proposed with respect to various areas of AIIB's work, which include project development, selection, approval and implementation, portfolio development, sector policies, strategic programming and budgeting, Environmental and Social Framework, the Risk Management Framework, and result and impact monitoring.

This leads to twelve general policy recommendations on how to put into practice AIIB's alignment commitment:

- Finalize all details of the joint MDB Paris Alignment Framework, including on climate resilience, based on best available science, and taking up the Pro Poor Climate Resilience Principles and related suggestions presented in this report, no later than by the end of 2020;
- Set a target date soon to align all AIIB policies, strategies, and projects with the Paris Agreement, including its climate resilience goal;
- Discuss the AIIB's resilience approaches already in use with the AIIB Board of Directors and test and assess their effectiveness;
- Review and revise the business plan, as well as the strategic programming, sector strategies, ESF, and risk management frameworks to ensure that all alignments with the Paris Agreement are measurable, reportable, and verifiable, as suggested in this report;
- Take up the suggestions made in this report with regard to project pipeline development in order to ensure that new investments are climate resilient and pro-poor;

- Make a strong effort to ensure that Covid-19 response measures financed by AIIB are strengthening resilience, including climate resilience, especially of poor and vulnerable people;
- For all projects, conduct a climate risk and resilience assessment and disclose assessment results, specifically on transition risks and physical risks analyses in project summary documents. The assessments should screen investments for 'do no harm' criteria, climate-proofing, and systemic improvement of climate resilience;
- For all projects, conduct an assessment regarding the application of pro-poor principles, as proposed in the previous chapter;
- Undertake an additional human rights assessment and identify the most vulnerable groups that might be affected, positively or negatively, by infrastructure investment projects;
- Based on the experience of lighthouse projects, develop a set of adaptation and resilience indicators to assess the impact and effectiveness of adaptation components in projects;
- Develop a methodology to quantify physical climate risks. Incorporate those risks into project economic and financial assessments;
- Incentivize medium- and small-scale people-centred resilience-building and green infrastructure projects. To date there is no specific window for such projects. Allocate a certain budget share for these projects and set a quantitative target (in the initial phase, 2–5 %).

The report concludes with more specific recommendations on how to align AIIB's infrastructure investments with the PA at the national level, taking Bangladesh, China, and India as examples.



1

Introduction

Investing in sustainable infrastructure is a prerequisite to lift hundreds of millions out of poverty, fulfil their basic rights to adequate food, access to water, health, education and housing, and to realize the Sustainable Development Goals (SDGs). By 2030, USD 6 trillion are projected to be invested in urban, energy, water, information and communications technology (ICT), and transport infrastructure every year (Global Commission on the Economy and Climate, 2016): 70% of it will occur in the developing world, mostly in Asia. The way this infrastructure is built will shape the future of its users.

Infrastructure investments, however, often do not often consider in any depth the climate risks to which their projects are exposed across their lifespans. Neither is it a standard process to assess whether adaptation options could be integrated into the infrastructure projects such that they actually improve the resilience of the communities they are located in. In some cases, the infrastructure even lowers the resilience of people it is meant to serve.

Climate risks will increase steeply in the decades to come. According to the Special Report of the Intergovernmental Panel on Climate Change (IPCC) on 1.5°C of Global Warming (2018), the 2020s represent our last opportunity to shift towards the sustainable, low-carbon, and climate-resilient socio-economic development pathways required to avoid catastrophic global warming above 1.5°C. Remaining below that threshold is a prerequisite to achieve the SDGs, as the IPCC report argues. The design of infrastructure development, particularly in the booming Asia-Pacific region, could come to make a critical difference as to whether or not global warming remains within the range of the Paris Agreement's temperature goals. Apart from the carbon footprint of infrastructure projects themselves, however, the improvement in resilience they achieve matters as well. Sea level rise, heat waves, more frequent and more extreme floods, droughts and storms, as well as other climate-induced slow and rapid onset events are threatening the livelihoods of billions of people. Sensibly designed, infrastructure can improve their climate resilience significantly.

The world is becoming increasingly more urban. So is its climate risk profile: Given the concentrations of population and infrastructure in urban areas, it is urban areas that will increasingly become the hotspots of climate risks. Increased temperature extremes, more severe heatwaves, higher coastal and riverine flooding, tropical cyclones, storm surges, and droughts will all affect cities disproportionately, simply because most of the planet's people already live in them. Nevertheless, the future is still open, since 60% of the area projected to be urban by 2050 is yet to be built. Today's and tomorrow's infrastructure investments can greatly contribute to lowering urban vulnerability.

The needs of the poor demand particular attention because they are often the most vulnerable towards adverse climate impacts. The special focus they deserve is well reflected in the strong call for inclusiveness of SDG 11 'Sustainable Cities and Communities', particularly its target to 'substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.'¹

Thus, if we are to leave no-one behind in achieving the SDGs and mitigating climate risks, investments must shift their focus diametrically from business-as-usual to transformative, i.e.

¹ <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-11-sustainable-cities-and-communities.html#targets>

low-carbon and climate-resilient infrastructure. The level of resilience of new infrastructure is crucial for the ability of societies and communities to adapt to climate change impacts.

The current Covid-19 pandemic also shows that Infrastructure must be resilient to be sustainable. The pandemic is unprecedented in its adverse impacts, and is demonstrating how important risk prevention and preparedness are. The consequences of the pandemic have shaken economic superpowers and are threatening the livelihoods of billions of people. The poor are being hit hardest. At the same time, a society is as resistant and safe as its most vulnerable members. Whether we want it or not: we are all in the same boat. Whether it is a pandemic or climate change: We will succeed only with a whole-of-society approach in resilience-building and infrastructure (health, water, sanitation, transport etc.) will play an important role in it.

To *'build back better'* means to improve our resilience with respect to risks through preventive action such that future damages and expectable shocks can be absorbed. Health care systems must be improved; social safety nets strengthened; housing for the poor, water and sanitation must comply with adequate hygienic standards; public transportation systems need improvement, and ICT infrastructure should be upgraded. Cities need to become greener, cleaner, and less fragile. Urban segregation might be overcome. The concept of a circular economy will gain traction and supply chains are to become more flexible and robust. To build resilience against the next pandemic is as important as building climate resilience. These considerations must be reflected in recovery programs.

The lessons these two crises teach for climate-resilient infrastructure are:

- Infrastructure itself needs to be resilient towards adverse impacts (*'asset-focused climate resilience'*).
- It must not contribute to undermining the climate resilience of poor and vulnerable people and ecosystems (*'do no harm to climate resilience'*).
- Rather, it must contribute explicitly to systemic climate adaptation, and thereby, contribute to achieving the Paris Agreement's climate resilience goal, the goals of the Sendai Framework for Disaster Risk Reduction, and the SDGs in alignment with the Addis Ababa Action Agenda on Financing for Development (*'system-focussed climate resilience'*).

Investors can trigger resilience-building: AIIB as well as the other multilateral development banks (MDBs) can play a decisive role in boosting resilience through infrastructure by shifting towards green and resilient investments. They have the financial capacity to realize enormous infrastructure developments. These developments are urgently desired by national and sub-national state authorities in developing countries. But by themselves, they cannot mobilize the capital that would be necessary to undertake them. Sub-national entities such as provinces or cities are even in a more difficult situation since they often cannot directly access MDB funding: They depend on the federal level to approve that some of the country's 'cap' is allocated for local or sub-national projects. Moreover, cities often do not have the financial capacity to take on loans of the size necessary to finance infrastructure investments. These difficulties are to be reflected and addressed by national governments. MDBs, too, can take measures, for instance by earmarking a certain quota of investment for sub-national borrowers and their efforts to build up resilience.

What matters, besides money, is political and technical advice. Many state authorities that are seeking investments are responsive to the advice provided by MDBs. AIIB is therefore in a crucial position to shape the future of infrastructure in Asia: Will it be low-carbon and climate-resilient, or business-as-usual infrastructure? While the former will lead the way to a better future, the latter will lock Asia into continuously high carbon emissions, rising loss and damage caused by climate change, and environmental degradation.

The private financial sector also relies on MDBs' involvement in long-term and large-scale infrastructure investments to bring down investment risks to levels that would typically be assumed by private investors. That, again, is particularly true for investments in adaptation infrastructure.

MDBs made an important pledge to shift infrastructure investments in the energy, water, transport, urban, and ICT sectors towards carbon neutrality and climate resilience when they committed to align themselves with the Paris Agreement (PA) in 2015.² Notwithstanding these nominal commitments, guidelines are needed to direct implementation if they are to be realized. This paper contributes to this endeavour by:

- Providing the key arguments for why climate resilience matters for infrastructure investment;
- Presenting the main reference frameworks for resilient infrastructure investments;
- Analysing the role of climate resilience in AIIB's sector policies, strategies, and frameworks
- Assessing the AIIB's project portfolio and project pipeline in this regard; and finally

Proposing a set of Climate Resilience and Pro-Poor Principles for Infrastructure Investments. While the former captures the core purpose of the PA's adaptation goal, the latter targets the fact that the poor are often those who are the most vulnerable to the climate, and are the populations that most rely on basic infrastructure to achieve the SDGs.

These criteria and principles may raise awareness and inspire discussions between the AIIB and its stakeholders. They hopefully will help shape AIIB's policies, investment strategies, and project decisions, and lead to proactive project pipeline development. For this to happen, the development of robust targets and indicators would be the logical next step, since abstract criteria and principles require a high level of concretization to become operational, measurable, and verifiable. Last but not least, the criteria and principles may also serve as a means for civil society organisations advocating for pro-poor, climate-resilient infrastructure to assess the impacts of AIIB investments in terms of climate resilience, particularly for poor and vulnerable groups.

2 <http://pubdocs.worldbank.org/en/784141543806348331/Joint-Declaration-MDBs-Alignment-Approach-to-Paris-Agreement-COP24-Final.pdf>

The alignment of AIIB's investments with the Paris Agreement's adaptation goal is not only a fundamental matter of compliance. It has at least three additional advantages:

- Reduce investment risks: Making infrastructure climate-resilient reduces the financial risks of climate change-caused stranded assets and maladaptive infrastructure, i.e. not adjusted adequately to a changing climate.³
- Strengthen social acceptance: Large-scale infrastructure projects often lack social acceptance. If they can demonstrate that they do not undermine the climate resilience of the communities they serve, social acceptance for them is likely to increase.
- Provide benefits for sustainable development: Infrastructure investments that boosts the climate resilience of at-risk sectors (e.g. water) or areas (e.g. coastlines) and that apply a dedicated pro-poor approach promise to mobilize sustainable development co-benefits.

While the criteria and principles we propose are universal, we will focus geographically on the Asia-Pacific region, where most of the AIIB's investments take place. In terms of sectors, we cover the water/sanitation, energy, ICT, transport, and urban sectors. We give the water sector special attention because AIIB's draft water sector strategy places especial emphasis on climate resilience. The urban sector is also focused on because a significant share of urban populations in developing countries live in informal settlements that are located in zones disproportionately impacted by climate change. Infrastructure is essential to addressing the need of these urban populations for sustainable development, including both poverty reduction and climate resilience outcomes.

The paper was developed in the broader context of an ongoing cooperation of partner organisations in AIIB's member countries around the world. These organisations do action-oriented research, raise awareness, dialogue, and build capacity around AIIB's contribution to the attainment of the PA's and SDGs' goals, as well as human rights responsibilities. A previous report focussed on AIIB's contribution to achieving carbon neutrality. This report looks into climate resilience. The next will shift its thematic focus towards urban infrastructure investments of the AIIB.

3 Stranded assets are assets that have suffered from unanticipated or premature write-downs, caused by a variety of challenges, including environmental challenges such as climate change. Stranded assets involve other sectors than fossil fuels, or 'unburnable carbon', including infrastructure like ports, bridges, roads or buildings, that are endangered by sea level rise, more extreme weather events, or other climate change impacts. For instance, annual losses caused by sea level rise exceeding 20 cm for Miami alone are estimated at USD 228,589 million (Standard & Poors, 2015). Caldecott et al (2016) have discussed a broad range of stranded assets for the Inter-American Development Bank (IDB).



2

Context
analysis

2.1 Why climate resilience matters for infrastructure investment



The main driver of infrastructure development is economic, population, and urban growth. By 2050, world population will grow to 10 billion, two thirds of which will live in urban areas. 90% of urban growth will occur in Asia and Africa (UN-DESA, 2014). Urbanization also drives climate change. 70% of all energy-related greenhouse gas emissions (GHG) originate in urban areas (WBGU, 2016).



By 2100 in a 2°C scenario, the loss of infrastructure asset values may reach USD 4.2 trillion, or 3% of currently manageable assets. But in a 6°C scenario, that figure would triple to USD 13 trillion.



Population change



Urbanisation
Demographic & social change
increased mobility

At the same time, cities are increasingly affected by climate change, as the IPCC has shown (2018), particularly cities in low-lying coastal areas that face multiple climate risks such as sea level rise, salinity, heat stress, flooding, and storm surge, in addition to other, no less severe problems such as air pollution, groundwater depletion, and land subsidence. The world's seven largest mega-cities Tokyo, Jakarta, Delhi, Seoul, Mumbai, Manila, and Shanghai are located in Asia. Apart from Delhi, all are coastal cities. Five of the seven largest metropolitan areas in both Africa and America are low-lying. Coastal cities – and especially those in warm climates – are critically endangered by climate change. Coastal cities are also the cities that are growing fastest – not only in terms of infrastructure investments, but also in terms of the climate risks they must endure. The intensity of extreme temperatures in China's urban agglomerations are expected to quadruple under 2°C of global warming relative to 1.5°C; the maximum 5-day precipitation is expected to double (Yu/Zhai/LU, 2018). Jakarta, Shanghai, Bangkok, Ho Chi Minh City, and particularly Guangzhou are expected to suffer enormous losses due to coastal flooding caused by sea level rise, often exacerbated by land subsidence resulting from excessive groundwater extraction. The increasing severity of tropical cyclones and storm surges will bring about rising economic costs as well, particularly in Bangladesh, China, India, Indonesia, and Vietnam, which are the countries with the largest exposed coastal populations. Guangzhou, Ho Chi Minh City, Jakarta, Kolkata, Mumbai, Shenzhen, and Tianjin – which already faced coastal flood-related losses totalling USD 1.5 billion in 2005 – are expected to suffer losses totalling at about USD 32 billion by 2050 (Dulal, 2019).

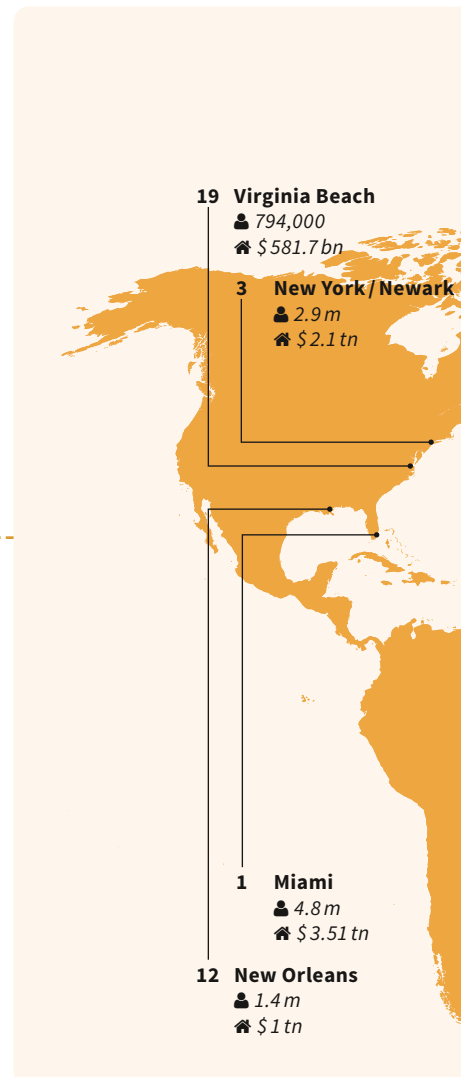


Figure 1: Underlying drivers of infrastructure needs. Source: PWC 2018

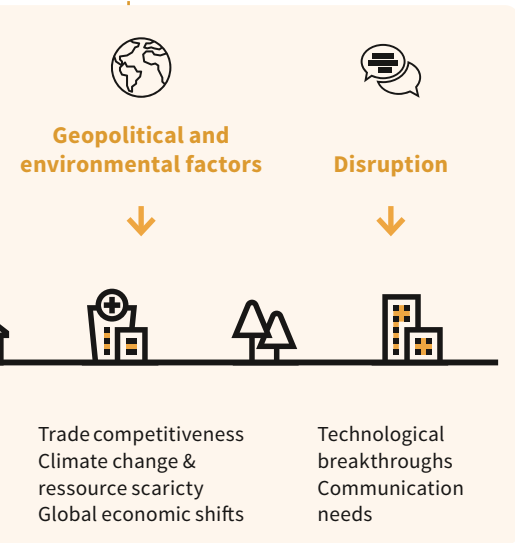


Figure 2: Infrastructure assets at risk depending on warming scenarios. Source: Economist Intelligence Unit 2015

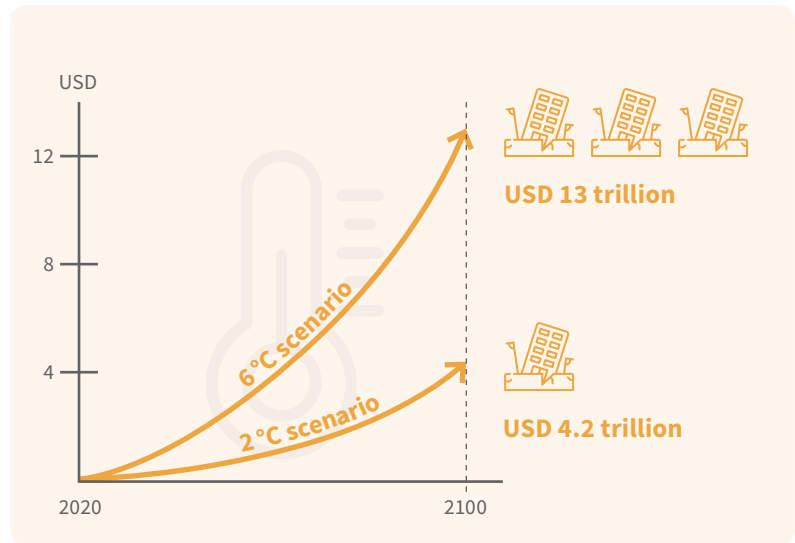
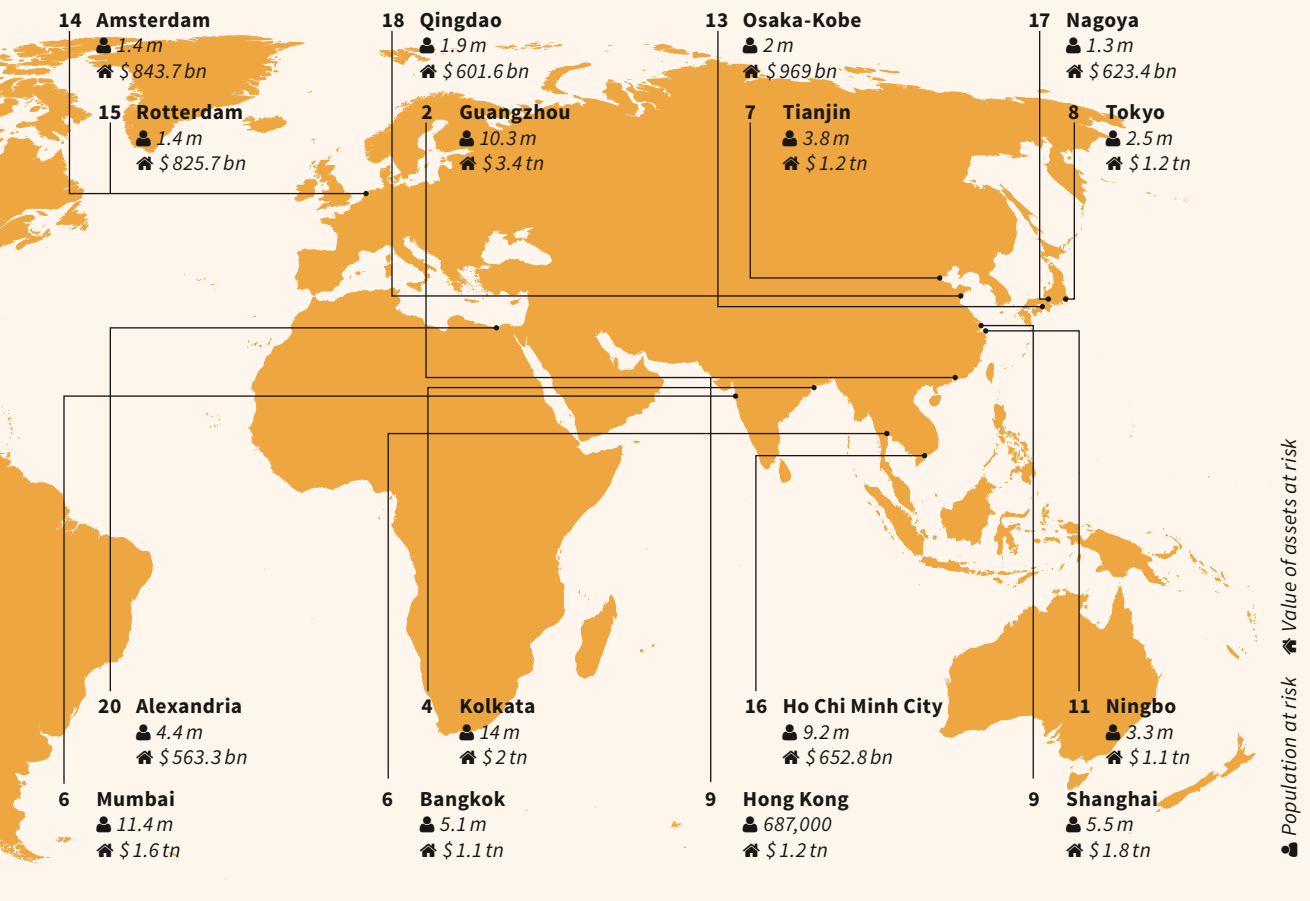


Figure 3: Top 20 cities vulnerable to climate extremes. Source: E&T Magazine 2012

Top 20 cities vulnerable to climate extremes

Estimated exposure of port cities to coastal flooding by 2017.

Top 20 cities shown in terms of assets at risk.



It is indispensable to protect critical infrastructure against these risks and minimising loss and damage. The best way to do so – apart from tackling the root causes of global warming – is to boost resilience through infrastructure (e.g. ensuring water supply even in case of further groundwater depletion, or protecting people through higher dykes against rising seas), and by making infrastructure itself climate-resilient (e.g. by ensuring that a river bridge is protected against higher levels of flooding). Considering that infrastructure projects are serious investments and have long lifespans, often of 40 years or more, the imperative to thoroughly assess future climate risks and ensuring climate resilience before the investment is made seems obvious.

Resilience-building goes beyond risk mitigation of extreme climate events. Slow-onset events can be no less hazardous. It should be an integral part of the planning and designing of infrastructure to analyze future climate risks arising from them. In addition, climate uncertainty has to be tackled adequately, which complicates planning all the more (Fay et al, 2010). In Kazakhstan, for example, extreme summer heat is softening road asphalt, which has led to restrictions for truck transportation and is necessitating higher road standards. However, regulators found it difficult to agree on new standards because of the uncertainty of climate projections regarding mid-term temperature increase (ibid.). Ho Chi Minh City expects more frequent and more extreme floods because of a combination of increasing monsoonal rainfalls, higher tides, as well as massive land subsidence. Accordingly, improved flood protection measures such as embankments, pumping stations, and drainage systems are required (World Bank, 2016).

Resilience-building in infrastructure design should go beyond these preventive risk reduction and adaptation measures. In view of the long lifespan and the high costs of infrastructure, it should be planned and designed in a flexible way that avoids path dependencies as far as possible. Such flexibility is essential not only to mitigate GHG emissions, but also to build resilience. To use Ho Chi Minh City as an example again: Business-as-usual design using cement and steel in the building sector should be avoided. Although buildings constructed with those materials may be resilient against the direct risks of flooding, a rapidly growing mega-city with thousands of new, heavy buildings further accelerates land subsidence, and thus exposes more and more urban and suburban areas to rising seas and flooding. A more sustainable approach would be to switch to lighter materials such as bamboo and wood, which not only can be used for tall buildings, but also have a far smaller carbon footprint than cement and steel. Carbon fibre may become another alternative construction material, and a viable business case for carbon capture and usage in the future.

Climate change leads to far more volatile climate conditions, including both higher intra-annual as well as inter-annual temperature and precipitation variability. Many regions will experience both, i.e. more floods as well as more droughts. Thus, infrastructure will have to become adaptive to drier and wetter, cooler and hotter conditions. Adapting, for instance, water and sewage systems to such changing conditions is more expensive, but necessary if stranded assets and malfunctions are to be avoided.

Infrastructure investments in developing countries should finally serve the key priority of contributing to the attainment of SDGs and infrastructure projects must be developed accordingly. In 2012, more than 850 million people were living in slums without adequate access to vital infrastructures in developing countries (UN-DESA, 2018). Pro-poor principles can guide infrastructure development to prevent an additional doubling or even tripling of the number of slum dwellers. ‘Pro-poor’ is a term that has become widely used in the development literature.

Pro-poor principles are aimed to directly target poor people, aimed at reducing poverty, at including poor people in processes, and at enhancing their assets and capabilities.⁴

Access to basic infrastructure services such as energy, water, housing, health, education, and transport, as well as the integration and maintenance of natural spaces are very important aspects of sustainable urbanization. If enormous parts of the population lack this access, societies and economies as a whole become fragile and vulnerable towards external shocks, as the Covid-19 pandemic has blatantly made plain. In order to avoid havoc, the compelling plea for resilience that this experience has made must be transferred to the field of climate action.

So far, the challenge of making infrastructure climate-resilient is reflected in two of AIIB's sector strategies, the 'Sustainable Cities Strategy' and the 'Water Strategy', both of which are analyzed in depth on page 41ff.

The 'Sustainable Cities Strategy' indicates that Asia has been and will continue to urbanize at unprecedented scale and speed, that adequate infrastructure to make Asian cities liveable engines of growth is lacking, and finally that climate change must to be addressed. Addressing these challenges is what AIIB considers to be the aim of its urban investments (AIIB, 2018b).

AIIB's 'Water Strategy' considers inadequate water supply and sanitation, water scarcity, and flood damage in the context of rapid urbanization, economic growth, continued environmental degradation, and climate change – already causing the loss of hundreds of billions of dollars every year – to be severe threats to the sustainable development of hundreds of millions of people (AIIB, 2019b). It points to the fact that risk exposure to extreme climate events is highest in Asia, that those exposed to flood as well as inadequate water supplies and sanitation are largely concentrated in urban areas; but also that investments into water infrastructure (such as flood protection, drinking water, irrigation, and sewage) are still largely neglected, and in 2014 represented only 5% of infrastructure investments in Asia. The water strategy's centrepiece is to help close the accompanying financing gap, estimated at USD 55–290 billion annually.

4 <https://www.odi.org/projects/28-understanding-pro-poor-policy-processes>

2.2 Reference frameworks for pro-poor climate resilience-building

2.2.1 The climate resilience goal of the Paris Agreement

The term ‘resilience’ was first used at COP13 Bali in 2007 (UNFCCC, 2008: 28), and then again at COP15 Copenhagen in 2009 in the context of reducing exposure to the adverse impacts of climate change (UNFCCC, 2008: 28, 2010: 6). At COP16 Cancún in 2010, climate resilience was firmly embedded in the adaptation framework, linking climate change adaptation and disaster risk reduction. The building of resilience in both socio-economic and ecological systems, as well as their interaction came to be understood as the ultimate goal of socio-economic and ecological climate adaptation, and climate disaster risk management (Peters et al, 2016).

The Paris Agreement (PA) is the first universal climate treaty. It has three legally binding commitments for all state parties:

1. To **limit global warming** to below 2 °C, and, if possible, to 1.5 °C: *‘Holding the increase in global average temperature to well below 2 °C [...] and to pursue efforts to limit the temperature increase to 1.5 °C ...’* [Article 2.1a]
2. To pursue the qualitative **climate resilience, or adaptation** goal: *‘Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience ...’* [Article 2.1b]
3. To pursue the finance goal to **shift investments** to resilient and low carbon development: *‘Making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development.’* [Article 2.1c]

The climate resilience, or adaptation goal, is further specified in Article 7.1: *‘Enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal’.*

The most important obligation of state parties is to make climate adaptation part of their Nationally Determined Contributions (NDC), i.e. their national climate targets. However, other than in the case of mitigation, where state parties are mandatorily bound to include GHG mitigation into their NDCs, it remains at the discretion of Parties if and how they include adaptation in their NDCs. Nevertheless, despite being a legally less binding obligation, almost 90 % of all NDCs submitted so far contain an adaptation component. At their discretion, states are also requested to set up and implement National Adaptation Plans (NAPs), which are meant to be of longer-term nature than their adaptation actions included in NDCs. While states tend to broadly cover adaptation in their NDCs, they have been much less responsive in submitting their NAPs to the UNFCCC: as of June 2020, only 20 developing countries had submitted their NAPs.⁵

Further requirements of the Paris Agreement regarding climate resilience building, and especially development countries’ adaptation efforts, are shown in the boxes below.

⁵ https://www4.unfccc.int/sites/NAPC/News/Pages/national_adaptation_plans.aspx



The PA's goal of 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change' (Article 7.1) has a strong notion of **enhanced preparedness to better understand, minimize, and absorb future climate risks**. Therefore, countries are strongly encouraged to step up efforts to formulate and implement national adaptation plans, drawing on both scientific and traditional knowledge. The PA mostly connects resilience to adaptation and risk management, linking the concept to socioeconomic and ecological systems, for example by recommending economic diversification and the sustainable management of natural resources, as well as emphasising the need to protect livelihoods and food production (Peters et al, 2016).



In terms of **regional foci** for climate resilience-building, the PA emphasizes the priorities and needs of developing countries, especially those that are particularly vulnerable to the effects of climate change and that have significant capacity constraints (Article 9.4). The PA refrains from defining precisely which countries are particularly vulnerable, although Small Island Developing States (SIDS), Least Developed Countries (LDCs), and African countries in general are referred to repeatedly.



With regard to **specific adaptation needs of particular groups of people**, the PA frequently refers to vulnerable people and communities (e.g. Article 7.5, 7.9c). In its preamble, the PA stresses the relationship between climate change and the struggle to overcome poverty, commits parties to gender and inter-generational justice, as well as respect for human rights. Since human rights are fundamentally rights of individuals and a human rights-based approach implies prioritising action in a way that restores the respect, protection, and fulfilment of victims' rights, it is unclear whether the PA targets individuals or groups of people when it requests state parties to prioritize them. In any case, the preamble highlights the special significance and rights of the temporarily or permanently most vulnerable people that are, therefore, in greatest need of protection. These include indigenous people, local communities, children, people with disabilities, as well as migrants (Hirsch et al., 2016).



Besides climate adaptation (Article 7), the PA addresses **comprehensive risk management**, including risk assessments and risk financing to promote resilience. Climate risk management is addressed in Article 8 on economic and non-economic loss and damage associated with climate change.

The PA is not overly prescriptive with respect to which socio-economic and environmental sectors are to be included in global adaptation goals. It stresses that eco-systems should



be included (Article 7.1–7.2), and that **adaptation should be integrated in all relevant socioeconomic and environmental policies and actions** (Article 7.5). A 2016 assessment of NDCs, NAPAs (National Adaptation Programs for Action), and NAPs revealed, however, that the prioritized sectors are agriculture, forest/land use, disaster risk reduction (DRR), water, coastal, housing, health, and energy infrastructure (ibid). The resilience of infrastructure is not explicitly addressed, but rather implicitly as part of the agriculture, DRR, and various eco-system sectors.



Adaptation is part of the **global stocktake** under the Paris Agreement and takes place every five years to assess progress towards the PA's goals. State parties are requested to contribute to it at their discretion, including by sharing their achievements and experiences in so-called adaptation communications, which should be submitted periodically to the UNFCCC (Article 7.10–7.13).

If '*risk-informed*' financing approaches were more common, investments would deliver more efficiently and would avoid locking in or introducing risks. If the anticipated USD 90 trillion in infrastructure investment over the next 15 years is not dominated by low-carbon and climate-resilient choices, the pace of climate change – and the world's vulnerability to it – will increase dramatically (Opitz-Stapleton, 2017). The UNFCCC, unlike many of the UN's other frameworks, as for instance the Sendai Framework for Disaster Risk Reduction, sits atop a number of specific funds that can finance adaptation and resilience-building activities in developing countries. The adaptation-specific funds (the Adaptation Fund and the Least Developed Countries Fund) have received contributions of around USD 2.55 billion since 2002, while the newer Green Climate Fund (which is directed to maintain a balanced portfolio between adaptation and mitigation) has received pledges worth close to USD 20 billion since 2015. In addition, the Paris Agreement has resulted in commitments to financing from the private sector to deliver the objectives and goals of the framework. These will be apportioned through initiatives such as the UN Secretary General's Resilience Initiative, which mobilized more than USD 2 billion to finance initiatives such as enhancing early warning systems, increasing access to insurance and building resilience in relation to El Niño.

2.2.2 The Sendai Framework for Disaster Risk Reduction

The Sendai Framework for Disaster Risk Reduction (SFDRR) is an international treaty that sets four specific priorities for disaster risk reduction (DRR) and seven associated targets to be achieved by 2030 in order to minimize disaster risks. Agreed upon in March 2015 in Sendai/Japan as the successor of the Hyogo Framework for Action, it sets the following priorities:

- To better understand disaster risks;
- To strengthen disaster risk governance and management;
- To invest in disaster risk reduction for resilience; and
- To improve disaster preparedness, including to ‘build back better’.

Thus, investing in DRR for resilience is a top priority. All other priorities can be related to infrastructure investment as well, particularly in the urban and water sectors. The same is true for the following targets of the SFDRR:

- Substantially reduce global disaster mortality by 2030, aiming at lowering, relative to the period 2005-2015, the average global deaths per 100,000 people in the period 2020–2030
- Substantially reduce the number of affected people globally by 2030, aiming at lowering, relative to the period 2005-2015, the average number of people affected per 100,000 in the period 2020-2030
- Reduce direct disaster-induced economic loss in relation to global gross domestic product
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, including through the development of their resilience by 2030
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020
- Substantially enhance international cooperation with developing countries through adequate and sustainable support to complement their national actions for implementation of the framework by 2030
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030

While losses of lives and livelihoods caused by non-climate natural disasters have remained stable, as a result of climate change, those caused by climate disasters have dramatically increased over the last three decades. The estimated global risk protection gap amounts to USD 1.7 trillion, according to experts⁶, making disaster risk reduction a top priority in the fight against climate change. While cumulated economic losses caused by extreme weather events are still highest in North America and the Caribbean (USD 50.9 billion per year in the 2010s), Asia has experienced the steepest increase in terms of both the number of events and damages caused.

⁶ See Business Green, 23rd November 2017, at <https://www.businessgreen.com/bg/news/3021707/climate-disasters-set-to-make-2017-most-expensive-on-record-insurers-warn> (last accessed on June 11th, 2020)

There, average annual losses have increased by 600% between the 1980s and the 2010s (USD 7.7 billion to USD 46.3 billion), while during the same period they rose in North America and the Caribbean by 414% and in Africa by 76% (Hirsch et al., 2020).

While losses in absolute figures are significantly lower in poor countries due to their far smaller national economies, the relative importance and social sensitivity of these losses is usually much higher in poor countries with high climate risk exposure: Their loss per unit of GDP is significantly higher as the Germanwatch Climate Risk Index has shown (Germanwatch, 2019). It is the combination of high exposure to climate perils and a low socio-economic response capacity that makes countries particularly climate-vulnerable. The Germanwatch Climate Risk Index for the years 1999–2020 illustrates this phenomenon well: Apart from Puerto Rico, with its special political status as an unincorporated territory of the U.S., the top 10 list of the most climate-vulnerable countries is comprised only of developing countries that are either part of the Caribbean (2) or Asia (7). Five are categorized as LDCs (Germanwatch, 2019).

Table 1: Most climate-vulnerable countries according to the Climate Risk Index (Germanwatch 2019)

CRI 1999–2018 (1998–2017)	Country	CRI score	Death toll	Death per 100,000 inhabitants	Total losses in million US\$ PPP	Losses per unit GDP in %	Number of events (total 1999–2018)
1 (1)	Puerto Rico	6.67	149.90	4.09	4567.06	3.76	25
2 (3)	Myanmar	10.33	7052.40	14.29	1630.06	0.83	55
3 (4)	Haiti	13.83	274.15	2.81	388.93	2.38	78
4 (5)	Philippines	17.67	869.80	0.96	3118.68	0.57	317
5 (8)	Pakistan	28.83	499.45	0.30	3792.52	0.53	152
6 (9)	Vietnam	29.83	285.80	0.33	2018.77	0.47	226
7 (7)	Bangladesh	30.00	577.45	0.39	1686.33	0.41	191
8 (13)	Thailand	31.00	140.00	0.21	7764.06	0.87	147
9 (11)	Nepal	31.50	228.00	0.87	225.86	0.40	180
10 (10)	Dominica	32.33	3.35	4.72	133.02	20.80	8

Until recently, risk awareness has not been adequately promoted in most countries. Despite climate-induced loss and damage increasing every year, comprehensive disaster risk assessments, which lead to better preparedness and more robust resilience, are not well established in most countries. In the absence of climate risk management, the risk of stranded infrastructure assets is high. Assets must be protected from damage in order to retain their value. The mere risk of potential damage being caused by future climate extremes can lead to value loss. Such stranded assets are investments that have become worthless because they have lost value, become liabilities, and are subjected to unanticipated or premature write-downs. This danger is most evident with regard to flooding risks. The credit rating agency Standard & Poor's has analyzed the exposure of infrastructure in coastal cities to a sea level rise of 20 cm by 2050, concluding that substantial investments in flood barriers are needed to avoid multi-billion

assets becoming stranded due to the flooding of houses, roads, harbours, rail lines, bridges, and other private and public infrastructure. Without additional protection measures, the annual average economic losses resulting from a sea level rise of 20 cm would amount to as much as USD 4.791 billion for Miami in 2050 (Standard & Poor's Rating Services, 2015). Thus, without substantial investments in comprehensive climate risk reduction, coastal communities and cities all over the world will face considerable stranded assets, which could impact their entire infrastructure. The stranded asset risk and cost would be passed on to either consumers and tax payers, the public sector, or investors (Hirsch et al. 2019). Risk assessments as the one of Standard & Poor's Rating Services make the case why this should matter to the banks.

2.2.3 Human rights responsibilities

The human rights provisions in the Paris Agreement are in the preamble, where the parties agreed to fully respect human rights as part of any actions they implement in the interests of climate mitigation or adaptation. Specific reference is made to the right to development of the temporarily or permanently most vulnerable. These are also the people most in need of protection, and includes indigenous people, local communities, children, people with disabilities, and migrants (UNFCCC 2015, preamble).

Human rights are legally anchored in international human rights law such as the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, and the International Covenant on Civil and Political Human Rights. Human rights always oblige states to invest the maximum resources possible to respect, protect, and fulfil individual rights, including through international cooperation and support.

In 2014, the Office of the United Nations High Commissioner for Human Rights (OHCHR) compiled a report on human rights and climate change that demonstrated that climate change affects human rights negatively. It also indicated the human rights obligations of states that must be met if such human rights abuses are to be avoided in the future (UN-OHCHR, 2014a). The report reaffirmed that climate change threatens the realization of human rights, a conclusion which had already been reached before by the UN Human Rights Council in various resolutions, e.g. resolution 18/22 (2011) which states that '*Climate change is a global problem [...] and that effective international cooperation [...] is important in order to support national efforts for the realization of human rights implicated by climate change-related impacts*' (ibid p. 9). The Human Rights Council RC stressed '*that human rights obligations, standards and principles have the potential to inform and strengthen international and national policymaking in the area of climate change, promoting policy coherence, legitimacy and sustainable outcomes*' (ibid pp. 8–9). The same approach should be applied to infrastructure investments.

The advantage of a human rights-based approach to close climate risk gaps is that it is people-centred. In 2009, the OHCHR published its Climate Change Report, calling on states to protect individuals against foreseeable climate threats that are associated with human rights violations and to ensure the broadest possible stakeholder participation. In particular, the report calls for the consideration of the people who are most vulnerable to the effects of climate change when addressing the impacts of climate change (UN-OHCHR, 2009b). But what is the difference between a people-centred human rights-based approach and a sectorial approach to climate risk management and adaptation? According to human rights law, states have the primary obligation to protect and promote human rights: each party to international human rights treaties has to take steps, individually and through international assistance and cooperation, to ensure the maximal resources are made available to progressively achieve the full realization of

human rights. Furthermore, states undertake to guarantee that rights can be exercised without discrimination of any kind (UN-OHCHR, 2014b). In order to do so, particular attention is to be given to the most vulnerable people.

That is why climate resilience criteria for infrastructure investment should always be combined with pro-poor principles. These principles should include, inter alia, reference to human rights standards, as the provisions for the respect, protection, and fulfilment of human rights are of particular importance in the context of resilience-building. They are as follows:

Table 2: Human rights standards for climate risk management & adaptation policies and projects (Taken from ACT Alliance/Bread for the World/Germanwatch, 2016)

Areas of climate risks & vulnerabilities (see IPCC 2014)	Human rights threatened by climate change (see OHCHR 2014a)	States' corresponding human rights obligations (see ibid)
Human security	The human right to life Universal Declaration of Human Rights, Article 3 http://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf	To take appropriate steps to safeguard the lives of people within a state's jurisdiction
Food security	The human right to adequate food Universal Declaration of Human Rights (UDHR), Article 25 http://www.ohchr.org/Documents/Publications/FactSheet34en.pdf	To respect, protect, and fulfil (facilitate and provide) people's access to adequate food and use of resources and means of ensuring livelihoods, including food security
Freshwater resources	The human right to water Resolution 64/292, UN General Assembly, 2010 http://www.ohchr.org/Documents/Publications/FactSheet35en.pdf	To ensure everyone has access to a sufficient amount of safe drinking water, personal sanitation, water to wash clothes, prepare food, and for personal and household hygiene
Human health	The human right to health International Covenant on Economic, Social and Cultural Human Rights, Article 12 http://www.ohchr.org/Documents/Publications/Factsheet31.pdf	To ensure access to (i) health facilities, goods and services on a non-discriminatory basis, especially for vulnerable or marginalised groups; (ii) the provision of essential drugs; equitable distribution of all health facilities, goods and services
Low lying & coastal areas	The human right to adequate housing Universal Declaration of Human Rights, Article 25(1) http://www.ohchr.org/Documents/Publications/FS21_rev_1_Housing_en.pdf The human right to self-determination International Covenant on Civil and Political Rights, Article 1 http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx	To take steps, which should be concrete, deliberate and targeted, to fulfil the right to adequate housing. Each state should guarantee at least minimum essential levels of this right. For instance, they should ensure that significant numbers of people are not deprived of basic shelter and housing. To take positive action to facilitate the realization of and respect for the right of peoples to self-determination within the state's own jurisdiction and beyond

Livelihoods & poverty	Particular protection of vulnerable groups Conventions (i) on the right of the child, (ii) on the elimination of all forms of discrimination against women, (iii) others 'While (the human rights) implications affect individuals and communities around the world, the adverse effects of climate change will be felt most acutely by those segments of the population that are already in vulnerable situations, owing to factors such as geography, poverty, gender, age, indigenous or minority status and disability' (Human Rights Council Resolution 26/L.33 (2014).	To pay specific attention to the impact on vulnerable groups
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Human rights standards should be realized based on the basic human rights principles: Universality, inalienability, indivisibility, interdependence and interrelatedness, equality and non-discrimination, participation and inclusion, accountability, and the rule of law. To operationalize a human rights-based approach in the cycle of infrastructure investment projects, the following instruments are suggested. Their use should be laid down in the Environmental and Social Safeguards (ESS):

Table 3: Instruments to operationalize a human rights approach in climate adaptation
(Building on ACT Alliance/Bread for the World/Germanwatch, 2016)

Phase	Human rights instrument
Initial project design	Human rights due diligence checklist
Climate risk and vulnerability assessment	Human rights risk assessment and identification of most vulnerable groups
Project implementation	Ensure protection of most vulnerable groups and take concrete steps to fulfil their rights
Reporting/monitoring/evaluation	Human rights impact assessment and specific reference to prove that particular attention has been paid to vulnerable groups

Of all infrastructure sectors, housing and water/sanitation are particularly sensitive to human rights: The right to adequate housing, as a component of the right to an adequate standard of living, defines housing as a right, not a commodity, which contrasts with the decades-long rally in global markets that has shifted the perception from housing as the establishing of a home to housing as an investment. That has led to devastating consequences, particularly as a fallout of the 2008/09 financial crisis, in which millions were evicted by force, particularly in the Global South. It was sharply criticised by the UN Special Rapporteur on Housing.⁷ Today, global real estate represents nearly 60% of the value of all global assets or USD 217 trillion; residential real estate comprises 75% of it, USD 163 trillion (ibid). While the Special Rapporteur calls for governments to ensure that markets serve housing needs rather than investment priorities, and reminds states that they are first and foremost accountable to human rights (ibid), infrastructure investors, including AIIB, have human rights responsibilities, as well. Ensuring that their investments do not harm human rights is a core matter of accountability, including the right to

⁷ <https://www.ohchr.org/en/issues/housing/pages/housingindex.aspx>

housing, for example with regard to informal settlements that can easily become subject to forced evictions and involuntary displacement.

Climate change threats to the right to water are under particular threat. The OHCHR has mapped human rights obligations relating to the enjoyment of a safe, clean, healthy, and sustainable environment, with a focus on climate change (OHCHR, 2014a). The UN Committee on Economic, Social and Cultural Rights in its General Comment No. 15 called on state parties to adopt comprehensive programs that would ensure sufficient water for future generations by assessing the impacts of climate change *'that may impinge upon water availability'* (OHCHR, 2014a). Ensuring the resilience of water and sanitation infrastructure had already recommended in the 2009 position paper on Climate Change and the Human Rights to Water and Sanitation (OHCHR, 2009a).

The severe 2019 water crisis in India directly impacted 100 million people, made them dependent on water tankers, left them to wash in dirty water, and led to the warning by experts that India has just five years left to fix its water problem. That is a serious warning for how critical the climate change-induced threats to water infrastructure are. A tremendous investment into climate resilience is one of the prerequisites for millions of people to enjoy their human right to water.

To conclude, a multilateral bank like the AIIB, which is ultimately owned by state parties, should assess its investments always with a view to human rights responsibilities. The core human rights treaties should guide the AIIB throughout its entire infrastructure investment cycle. A particular focus should be put on the over 850 million people living in informal settlements – one quarter of the global urban population. While these people are affected by climate change impacts disproportionately, their needs are still underrepresented, as the UN Special Rapporteur on Human Rights made clear (Weichelt & Perucca, 2019). By adopting human rights-based pro-poor principles, the AIIB could signal its commitment to take the needs – and rights – of the poor seriously in a way that is closely aligned with international human rights treaties. While the AIIB Environmental and Social Framework (ESF) with its three Environmental and Social Standards (ESS) on Environmental and Social Assessment and Management (ESS 1), Involuntary Resettlement (ESS 2) and Indigenous People (ESS 3) sets mandatory standards, rules and procedures, it neither include substantive and explicit commitments to take a human rights-based approach, nor does it include mandatory implementation rules that would allow to operationalize a human rights-based approach (see figure 3).

2.2.4 Announcements and approaches of other Multilateral Development Banks

How do (other) MDBs factor in climate resilience and the needs of the poor and vulnerable in their investment policies, strategies, and project portfolios?

At the level of general commitments, all major MDBs, i.e. AIIB, World Bank group (WBG), Asian Development Bank (ADB), African Development Bank (AfDB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Inter-American Development Bank (IDBG), Islamic Development Bank (IsDB), and New Development Bank (NDB) joined forces in 2016 by issuing the following statement, in which they committed themselves to aligning their organisations with the goals of the Paris Agreement: *'In Paris, countries committed to make a leap forward towards achieving climate resilience and net-zero emissions from 2050 onwards. MDBs are deeply committed to this agenda and are aligning our organizations and our joint actions with it. We are developing together a joint climate action partnership aimed at developing a*

more collaborative and coherent approach, within our respective institutional mandates, to working with countries to implement their NDCs and develop their adaptive capacities. We will focus on scaling up low-carbon and climate-resilient investments for sustainable infrastructure, including in particular speeding the energy transition consistent with the Paris Agreement. We will do this by aligning our financial flows with the countries' pathways to low-carbon and climate-resilient development, by increasing the predictability and ease of access to concessional resources, such as the Green Climate Fund, and by leveraging private finance for climate investments' (AIIB et al., 2016).

This alignment commitment with the PA treats climate resilience and decarbonization as equally important dimensions of sustainable infrastructure investments. It was followed by another common statement of the group at the Global Infrastructure Forum 2018 that highlighted the need of 'spending more and spending better' to 'unlock inclusive, resilient, and sustainable technology-driven infrastructure' in a manner consistent with the PA, the SDGs, the New Urban Agenda, and the SFDRR.⁸

These commitments require MDBs to ensure that all their activities advance low-carbon, climate-resilient development pathways. But can this pledge be put into action? At COP24 Katowice in December 2018, they presented a framework for implementation that further specified how they envisaged to mainstream their aspirations, laid down in six building blocks. In the block on adaptation and climate-resilient operations, they committed to the following: '*We will be active in managing physical climate change risks, in a manner consistent with climate-resilient development, and in identifying opportunities to make our operations more climate-resilient. In addition, we will seek to support a significant increase in our clients' and their communities' ability to adapt to the adverse impacts of climate change*' (AIIB et al., 2018). They agreed to increase their contributions to the transition through scaled-up climate finance in order to help countries achieve their NDCs, to support climate policy development of their partner countries, as well as to develop tools and methods for monitoring and reporting on the results of their alignment commitments (ibid). While they pledged to develop common principles, frameworks, criteria, and a timeline, they also emphasized that each MDB will define its own ways and timing for implementation, acknowledging their different mandates, capabilities, and operational models (ibid).

Expert observers criticized that this approach remained rather vague, and that it would not provide sufficient guidance. They hoped that the MDBs would present more specific information. A first alignment progress report appeared at COP25 in Madrid in 2019, as promised by the MDBs in their 2018 communication (ibid). What they actually presented at COP25, however, provided few new details. NGOs criticized the slow delivery of the alignment commitment, particularly the MDBs announcement that their 2018 framework would not only not be fully implemented before 2023–2024. Thus, the Big Shift Global Coalition emphasized that MDBs '*were not on track*' (Big Shift Global Coalition, 2019).

To improve adaptation and climate-resilient operations, Germanwatch/NewClimate Institute/World Resources Institute (Westphal et al., 2020) recommend that MDBs (i) ensure that all investments are climate-resilient by adopting robust quantitative processes that incorporate climate risks and adaptation options in project design and analysis, and (ii) improve the quality of adaptation projects by adopting climate adaptation and resilience metrics. Thus, to implement the building blocks on resilience and adaptation of the 2018 framework of the MDBs, it is

⁸ See also <http://sdg.iisd.org/news/infrastructure-forum-explores-technologys-role-in-sustainability-accessibility-resilience/>

necessary not only to ensure the resilience of infrastructure projects themselves, but also to make them adaptive.

Considering the longevity of infrastructure and the dynamically changing climate, climate risk analysis for infrastructure projects, to be truly robust, should incorporate climate risk projections up to the end of the century. And given their inherent uncertainty, precaution should be factored into decision-making as well (ibid). In addition, MDBs should introduce resilience metrics to measure the effectiveness of their adaptation projects across sectors, rather than only tracking the quantity of adaptation investments. That is the only way they will be better able to assess and improve the quality of infrastructure projects' resilience and adaptation potential. These resilience metrics, apart from measuring ex-post benefits, should already be introduced in the project design phase (ibid), and may encompass indicators as well as indices, i.e. composites of indicators. They could be applied at all points in the project result chain, i.e. input, activities, output, outcome, and impact (ibid). A possible outcome indicator could be the number of people, disaggregated by sex and income group/poverty status, supported for adaptation, and an impact indicator the level of damage avoided. It is important, however, that they be applied at the very least for output and outcomes in order to evaluate the effectiveness of the implemented resilience measures. Preferably, MDBs should agree to harmonize their respective practices as far as possible. The MDB's proposed framework distinguishes between metrics that describe the quality of project design and metrics that describe project results. Project design metrics include those related to project diagnostics, inputs and activities, while project results metrics include output-, outcome- and impact-related metrics (ibid).⁹

The adaptation metrics for effectively assessing resilience benefits can be surprisingly simple. The EBRD's Green Economy Transition, for example, tracks increased water availability (in m³/year/€), energy availability (in MWh/year/€), reduced weather-related disruption (in days/year/€), and reduced weather-related damage (in €) in the face of increasing climate variability (EBRD, 2018). Most other MDBs, by contrast, focus merely on the number of beneficiaries – a rather unspecific indicator with neither a strong impact orientation, nor regard for distributional and human rights impacts of investments. But paying attention to the rights and needs of the poorest and most vulnerable populations is of particular importance, as discussed in the previous chapter on human rights. Therefore, we recommend that the AIIB and other MDBs address these shortcomings by using the pro-poor principles (see section 4) as a second layer to complement their climate resilience criteria.

⁹ See also https://www.idfc.org/wp-content/uploads/2018/12/mdb_idfc_lessonslearned-full-report.pdf

2.3 Screening other approaches for climate resilient infrastructure building and investment

In this chapter, we screen additional institutions dealing with climate resilience of and through infrastructure for specific lessons that may be learnt. They all are worth considering by the AIIB.

2.3.1 Green Climate Fund (GCF): Transformational and innovative programming, also for smaller cities

Because of the Covid-19 pandemic, GCF's work on the new strategic plan 2020-2023 was still ongoing when this paper was written. Essentially, the GCF aims to promote a paradigm shift towards climate-resilient development that embraces adaptation (defined by GCF as the ability to change in response to changing circumstances) and resilience (defined as the ability to recover from disasters). To achieve its goals, the GCF follows a strategic programming approach that defines eight result areas and four enablers of a paradigm shift for the period 2020-2023. Regarding resilience-building, where GCF intends to scale up innovative financing with a focus on particularly vulnerable developing countries, people, and communities, NAPs are identified as the very basis for transformational programming. The AIIB, mentioning NAPs as well, could take a similar approach.

Another issue emphasized by GCF is the catalysing of innovation in adaptation practices, business models, and approaches, as well as an accelerated deployment of high-impact adaptive and climate-resilient solutions (Green Climate Fund, 2019). These goals could also be taken up by AIIB in its sector policies, which could serve to incentivize a more proactive development of the project pipeline, with projects that are both innovative and scalable, and go beyond stand-alone solutions. The GCF considers the climate-resilience of infrastructure, particularly of urban infrastructure, to be very important, particularly since over 50% of all NDCs highlight the importance of resilient infrastructure. The GCF's possible contributions to countries' infrastructure-related NDC objectives are very similar to those that AIIB may be interested in investing in as well. They include conducting risk assessments based on a variety of climate scenarios, identifying portfolios of critical infrastructure, developing an enabling policy environment, and financing new or upgrading critical climate-resilient infrastructure. According to the GCF, these areas are particularly important for SIDS, LDCs, and African states facing frequent climate-related disasters. The GCF is discussing the challenge of how to ensure that urban infrastructure investments should not be limited to mega cities, which usually have less difficulty in accessing finance compared to secondary and smaller cities. Looking at the current AIIB portfolio, the AIIB apparently faces a similar challenge. In response, the AIIB could consider earmarking a certain proportion of its funds for projects in secondary and smaller cities.

With regard to the GCF's result indicators, work is ongoing to update its results management framework. Its advantage is that it is widely applicable. Unfortunately, it does not cover adaptation efforts that have been successful, such as climate-induced economic losses that have been avoided, or human health and life that has been protected. As the GCF stresses that it focusses on the most vulnerable populations, additional beneficiaries could be identified based on income (beneficiaries above/below the poverty line) and climate vulnerability (beneficiaries directly exposed to climate risks). The AIIB should also specify along these lines which target groups could benefit from its projects. Such an approach would underpin the pro-poor principles with actual indicators. A broad variety of these indicators, in fact, is already being used by

various organisations. The UN Adaptation Fund (AF), in its strategic results framework, for instance, is measuring the percentage of households and communities that sustain climate-resilient livelihoods.

2.3.2 Global Commission for Adaptation: Prioritizing the needs and inclusion of vulnerable people

In its Global Call for Leadership in Climate Resilience the Global Commission for Adaptation (2019) highlighted cities' resilience-building efforts. It brought attention to the importance of better risk and vulnerability analysis in the planning phase, nature-based solutions, targeted strengthening of the adaptive capacities of the most vulnerable populations, and higher investments in general as key ingredients for success. With regard to infrastructure, the Commission called for climate resilience to be integrated into all infrastructure assets throughout their lifespans, and to prioritize the needs of the most vulnerable (ibid). The Commission also stressed the inclusive and climate-informed infrastructure planning, emphasizing that the data it would require is still lacking in most countries. Therefore, investments in data and tools could provide widespread benefits, the basis on which to make truly climate-informed decisions, as well as strategically smarter infrastructure planning (ibid). The corresponding call for not only concerted investment into, but also capacity-building of ICT, particularly at the local level, could be taken up by AIIB and other MDBs.

Other suggestions made by the Commission that could resonate well with the AIIB's specific goals and abilities include mobilizing more private sector capital for resilient infrastructure. Moreover, the Commission highlighted the importance of using risk financing tools such as risk insurance to prepare adequately for the eventuality of infrastructure being damaged by extreme weather events. Since not all climate risks can be eliminated in a cost-efficient way, it is vital to financially cover residual risks in order enable rapid rebuilding and minimize disruption.

2.3.3 United States Agency for International Development (USAID): Monitor impact on vulnerable people

USAID, in its Climate Change & Development Strategy '*Climate Resilient Growth*' (USAID, 2012), stipulated that all projects in climate-sensitive sectors, including infrastructure – regardless of whether or not it receives direct funding for climate-resilience-building – should incorporate the impacts of climate change into project design and implementation. In '*Working with Marginal Populations*' (USAID, 2015), an annex to its aforementioned framework, USAID also stressed the importance of pro-poor approaches, calling, inter alia, for a highlighting of actions that can reduce the vulnerabilities identified in the scoping and assessment stages of a project. With regard to project monitoring and evaluation, USAID promotes criteria that also measure how far marginal populations benefit from projects. It calls for including these populations already in the criteria development (ibid). With regard to the content, they propose to measure, inter alia, the effectiveness, feasibility, unintended consequences (for marginal populations), and equity of additional project benefits.

2.3.4 The EU Taxonomy

The EU Taxonomy, as developed by the Technical Expert Group (TEG) in March 2020, provides a useful example of a classification system for proposed projects and activities (TEG 2020). The

underlying principles to guide the realization of the EU's mitigation and adaptation goals can serve as an inspiration to AIB. In contrast to mitigation, adaptation necessities are dependent on the concrete context and location of a proposed activity. Therefore, the EU Taxonomy provides a set of general guiding principles that are also applicable to infrastructure investments. To evaluate the conformity of proposed projects with adaptation and resilience criteria a process-based approach is applied. The Taxonomy considers both adapted activities as well as such activities that enable adaptation (ibid.).

The taxonomy stipulates that investments be restricted to activities that delimit material physical climate risks as comprehensively as possible. In order to ensure this objective, a detailed assessment of both chronic as well as acute climatic risks is required, taking into consideration the concrete circumstances. Moreover, economic activity to provide or improve infrastructure shall not undermine adaptation efforts of other sectors or projects. In order to enable objective investment decisions and assessments of progress, monitoring and measurement of adaptation results shall be applied where possible. The overarching aim of all activities under the EU Taxonomy is to prevent significant harm to the other EU environmental goals. To ensure this, detailed analyses, including Environmental Impact Assessments (EIAs) and, in case of water-related infrastructure, River Basin Management – are demanded (ibid.).

While these general principles on adaptation apply to all adaptation-relevant projects, they are especially relevant in relation to infrastructure investments, as shown by the detailed resilience analysis concerning different sectors in the TEG's report. As presented there, land and water transportation infrastructure as well as infrastructure distributing electricity, heating and cooling, water collection, treatment and supply as well as hydrogen infrastructure face numerous material physical climate risks, both chronic and acute (ibid.). By naming clear technical screening criteria interconnecting the overall EU climate goals, the EU Taxonomy provides for a comprehensive approach that – if applied properly – can support low-carbon and resilient growth.

2.3.5 Climate Resilience Investment Principles of Climate Bonds Initiative, World Resources Institute and Climate Resilience Consulting: Climate resilience principles for investments

Climate Bonds Initiative, World Resources Institute (WRI), and Climate Resilience Consulting developed climate resilience principles as a framework to assess climate resilience investments and guide the integration of criteria for climate resilience and adaptation into the Climate Bond Standard & Certification Scheme (Climate Bond Initiative et al., 2019). The Climate Bond Standard was developed to certify so called '*green bonds*'. Until recently, its focus was mostly on GHG emissions mitigation and, thus, meeting the mitigation goal of the PA. However, in light of rapidly increasing climate-induced loss and damage, as well as the obvious need to improve climate resilience, the Scheme's plans to include more climate resilience criteria and the principles it developed will guide the development of respective criteria (ibid.). This approach is very similar to the one taken by our own paper, with the difference that principles in their case would be applicable to green bonds across all sectors, while in our case, the focus is on infrastructure investment only.

Climate Bonds Initiative et al. distinguish, as we do, in terms of asset-focussed resilience (i.e. the investment itself has to fulfil climate resilience criteria) and system-focussed resilience (i.e. the investment improves the resilience of a broader system, or resilience through investment). Their framework includes six climate resilience principles, as follows (ibid):

Table 4: Climate Resilience Principles for Investments

(Taken from Climate Bonds Initiative, World Resources Institute & Climate Resilience Consulting, 2019)

Principle	Brief Description
1. Boundaries and interdependencies for assessing climate risks and resilience impacts are clearly defined	<p>Issuers must define the boundaries of the climate resilient investment and associated assets and activities, as well as the internal and external interdependencies between the broader system affected by those assets and activities.</p> <p>These boundaries and interdependencies are important for scoping risk and benefits assessments, and ensuring the asset or activity being invested in is fit-for-purpose and does no harm to the system of which it is part, per the further principles defined below.</p>
2. Physical climate risk assessment undertaken	<p>Issuers must perform an assessment of the physical climate hazards to which the subject asset or activity will be exposed and vulnerable over its operating life.</p> <p>Issuers should use both top down risk assessment methods using a broad range of climate models and observed data. RCP 4.5 and 8.5 emissions scenarios should guide these top down assessments. Bottom up risk assessment methods that look at inherent system vulnerabilities in local context should also be used.</p>
3. Risk reduction measures undertaken	<p>Issuers must demonstrate that the risks identified have been mitigated to a level such that the subject asset or activity is 'fit for purpose' in the face of coming climate change over its operational life, and does no significant harm to the resilience of the system of which it is a part.</p> <p>It is recognised that there will be uncertainty about future climate change impacts, which influences on what it means to be 'fit for purpose'. Therefore, flexible solutions that are robust in a variety of scenarios are encouraged.</p>
4. Climate resilience benefit assessment undertaken	<p>Issuers are to assess the climate resilience benefits of system-focussed assets and activities and demonstrate that they are 'fit for purpose' in the sense that they significantly contribute to enhancing climate resilience at a systemic level, again with flexibility to take into account the inherent uncertainty around future climate change impacts.</p>
5. Mitigation trade-offs	<p>Climate mitigation requirements may be lowered for climate resilience focused assets or activities whose resilience benefits considerably outweigh associated emissions or serve to avoid GHG emissions in the event of a disaster. In these instances, a trade-off analysis is required. Discussion is ongoing as to a rule set to determine under what circumstances such a trade-off might be permitted and the nature of the trade-off analysis in the circumstance.</p> <p>In every case, the asset or activity must not lock in fossil fuels or undermine any international or national commitments.</p>
6. Ongoing monitoring and evaluation	<p>Issuers are required to undertake ongoing monitoring of climate risks and benefits to determine whether the subject assets and activities continue to be fit for purpose and maintain any climate resilience benefits as climate risks evolve.</p> <p>In its reporting to the Climate Bonds Initiative, the issuer must annually verify this ongoing monitoring and evaluation of the climate resilience performance.</p>

These principles would require certified climate bond issuers to prove that they understand the climate risk at a systemic scale and scope (going beyond the narrow scope of the risk for the investment itself), that they minimize the risk by risk reduction and risk management measures, that they deliver systemic resilience benefits, and that they apply a monitoring and evaluation approach that would allow to flexibly adjust adaptive measures, if needed. The principles provide a framework for more detailed climate resilience criteria, still to be developed.

2.4 Climate resilience of infrastructure: Policies, strategies and programs in China and India

Infrastructure investments must always follow national regulations, apart from standards developed by AIIB. Therefore, it is important to understand the requirements for climate resilience-building that are already in place. China and India together are home to over a third of the world's population and half the world's most climate-vulnerable people. Even a superficial screening reveals, however, that their respective regulations are not developed equally well. In most countries of the world, climate resilience-building is an implicit, subordinated category to environmental risk management. Robust climate risk assessments that aim at current and future climate risks are not often required by law in the design phase of infrastructure projects.

2.4.1 China

The 18th National Congress of Communist Party of China in 2012 brought up '*Ecological civilization construction*' as one of the most important agenda items for national development planning. It emphasized the importance of environmental and ecological conservation for sustainability and resilience-building. It highlighted conservation measures such as expanding the coverage of forests, lakes and wetlands, biodiversity protection, water conservancy construction, natural hazard prevention, and response system building (Sichuan News Network, 2012).

According to the '*UN Climate Action Summit: China's Position and Action*', China has been emphasising the importance of both mitigation and adaptation, from its national strategy all the way to its local actions.¹⁰ The National Climate Change Adaptation Strategy is a powerful expression of adaptation efforts. Underpinned by a people-oriented principle, China has broadened technological support, has integrated adaptation into economic and social development, and has strengthened adaptation actions in climate-sensitive and vulnerable areas, thus improving public awareness of adaptation, as well as supporting resilience.

China has been enforcing and strengthening actions in sustainable regional and urban planning and development. Related approaches and initiatives with particular focus on energy conservation, emission reduction, risk reduction, and poverty alleviation have been adopted, such as the Action Plan for Urban Adaptation to Climate Change, the Climate Adaptive City, the Resilient Cities Program, and the Sponge City Construction Guideline.

The '*Sponge City Construction Guideline*' issued by the Ministry of Housing and Urban-Rural Development of People's Republic of China (MOHURD), defines a '*Sponge City*' as a city which has taken specific measures to promote resilience against environmental change, natural disasters,

10 <https://global.chinadaily.com.cn/a/201909/27/WS5d8d9e4fa310cf3e3556ddcd.html>

and extreme weather events, particularly with regard to flood control. By the end of 2018, a total of 538 cities in China made special plans for building a Sponge City. More than 4,900 related pilot projects were conducted.¹¹ However, there has not been a comprehensive plan for building resilient cities, and many Sponge City projects are piloted in an area within a city, rather than at city-level. A recent study has recommended that China should incorporate the concept of a resilient city in the existing Sponge City design, and incorporate the greenhouse gas emission accounting (China Industry Research, o. J.).

Despite being one of the leading countries in terms of green finance policies and products, China is still at an early stage of building a comprehensive climate-sensitive investment and finance system. In August 2019, the Ministry of Ecology and Environment, the Ministry of Finance, the National Development and Reform Commission, the People's Bank of China, the Banking Regulatory Commission, and other relevant departments promoted the establishment of the Chinese Society of Environmental Science's Climate Investment and Financing Professional Committee. It provides a platform on which to encourage the exchange of information in the field of climate investment and financing, industry and financial docking, and international co-operation.

Driven by the demand for quality growth, pollution control, and climate action, China has been developing its green finance policies and guidelines since 2012. China has also incorporated issues of climate resilience, environmental and social risk management, as well as public health. All of these could help lay the foundation for a comprehensive design, and the development of climate-resilient, Paris-aligned financial policies. Analysis has shown that such 'green finance' measures could help mobilize financial resources for addressing the funding gap to combat climate change (Chai et al., 2019). These guidelines, however, have not addressed climate resilience on the same level as GHG emissions mitigation and energy efficiency. However, indicators such as disaster response, natural environment conservation and risk management are related to supporting climate resilience, and are incorporated in the incentive and constraint mechanisms for institutions that provide financial services, including banks, insurance companies, and other financial sector actors.

Two articles of the 'Guidelines for Establishing the Green Financials System'¹², released in 2016, are of particular relevance to climate-related risk management:

Article 23: Encourage and support insurance institutions to innovate green insurance products and services. Establish and improve the catastrophe insurance system related to climate change. [...]

Article 24: Encourage and support insurance institutions to participate in the construction of environmental risk governance systems. Encourage insurance institutions to take their best roles in disaster prevention and mitigation, [...] study and establish an environmental risk monitoring and early warning mechanism for environmental pollution liability insurance insurers, carry out real-time risk monitoring, conduct regular risk assessments, promptly indicate possible risks, and improve efficiency on insurance claims. Encourage insurance institutions to give full play to their professional advantages in risk management and conduct environmental risk management knowledge sharing and awareness building for enterprises and the general public.

11 <https://global.chinadaily.com.cn/a/201909/27/WS5d8d9e4fa310cf3e3556ddcd.html>

12 See http://www.mee.gov.cn/gkml/hbb/gwy/201611/t20161124_368163.htm or https://www.chinadaily.com.cn/business/2016hangzhou20/2016-09/04/content_26692931.htm

The 2012 Green Credit Guidelines (GCG) and its associated standards, including Key Performance Indicators (KPI), set a milestone for sustainable finance by obliging and encouraging financial institutions to align their investments with the recipient country's laws, regulations, and international norms (Friends of the Earth US, 2017). The KPIs of GCG invites financial investors in their environmental and social risk assessments to address community health and safety, biodiversity protection, and sustainable natural resources management, environmental and social risk on the supply chain, environmental and social risk assessment, and management systems of clients.

The Handbook on Environmental Risk Management Initiative for China's Overseas Investment (GreenovationHub, 2019) provided suggestions for public and private investors that operate on China's overseas investment to improve their environmental, social and climate performance. It calls for the protection of biodiversity, the maintenance of ecosystems, and the promotion of the sustainable management of biological resources. The impact on biodiversity and ecosystems should be addressed throughout the entire project cycle of investments, including the identification of both direct and indirect impacts of the project on biodiversity and ecosystem services, to prioritize project plans that are designed to avoid or minimize the impact of biodiversity and ecosystem services, and, when impact is inevitable, to undertake measures to redress or restore biodiversity and eco-systems.

The Handbook pointed out that the following risks should be taken into consideration:

Table 5: Environmental, social and climate dimensions of Chinese overseas investments

Community health, safety and development	Possible risks to the safety of community	The possible impact to existing infrastructure and facilities, severe hazard risks such as fire, explosion, etc., and whether the emergency plan is in place and covers the community.
	Possible risks to the ecologic environment of the community	Increase of natural hazards, impact to water quality and livelihood led by changes of land use, reduction of wetlands, reversal of ecological functions
	Community engagement and consultation	Actively interact with the local residents, improve the quality of education, healthcare and living, establish easy-to-access communication channels, ensure feedback receiving, timely responding, and effective solutions.

2.4.2 India

So far, there are no specific legally binding standards for infrastructure investments in India at the state union level. If at all, climate resilience is partly addressed by Environmental Impact Assessments (EIA), which are obligatory in India for all large-scale construction projects, including in the power, mining, transport, and urban sectors. However, India's EIA regulations from 2006 are currently under revision. The notification of the revision, published in mid-March 2020, received much criticism with respect to both the new EIA provisions, as well as the process itself. The new draft EIA regulations have been criticized for weakening rather than strengthening the environmental protection in order to further the '*ease the doing business*' approach of the current government. The process has been criticized for not providing sufficient space for stakeholder consultations on the draft EIA regulations, particularly in the wake of the lock-down

situation caused by the Covid-19 crisis. The call for extending the deadlines has remained unheard (Raghu, 2020).

Neither the previous, nor the proposed new EIA reporting template refers to climate resilience explicitly. However, both cover aspects that are important for resilience-building, such as biodiversity, land use change, water flow and quality, as well as conservation practices. Likewise, State Action Plans on Climate Change (SAPCC) promote adaptation action at the level of Indian states. They include many measures, but neither include specific requirements for infrastructure projects to be designed in a climate-resilient way, nor do they promote systemic climate resilience.

2.5 First interim conclusions

Available data indicating annual double-digit percentage growth rates of loss and damage associated with climate change (e.g., Climate Bond Initiative et al., 2019) demonstrate that climate resilience-building matters. An enormous proportion of these losses and damages affect infrastructure assets. Moreover, infrastructure that suffers from climate impacts leads to further losses of the sectors and populations that heavily rely on functioning infrastructure to withstand climate extremes, be it water and electricity supply, ICT, transportation, urban, or coastal infrastructure. That is particularly the case for those who are the most vulnerable and whose needs and rights deserve utmost attention.

The Paris Agreement, the Sendai Framework for Disaster Risk Reduction, and the SDGs are the three main reference frameworks agreed upon by the international community in 2015 that provide guidance for climate resilient sustainable development pathways to minimize these risks. Infrastructure has an important role to play in climate resilience-building. MDBs have pledged to align their investments with the goals of the PA, the SFDRR, and the SDGs, rightly so. But human rights-based approaches should also provide further guidance when it comes to the respect for, protection and ultimate fulfilment of fundamental human rights of the most vulnerable populations, for it is they that bear the brunt of climate change. Securing access to basic infrastructure provisions, such as water, health, and housing plays a crucial role in boosting their climate resilience.

But how can these general alignment commitments be put into action effectively? How can they lead to tangible results? These crucial questions have been and continue to be discussed by MDBs. Five years after their alignment commitment with the PA, however, they are yet to be answered. Infrastructure investment decisions are still being taken without a robust framework. Guidelines on how to adequately ensure climate resilience of and through infrastructure projects are lacking.

The basic screening of national regulations for China and India above has revealed that a lot remains to be achieved in terms of climate resilience of infrastructure projects. Though there are various policies at national, provincial, local, and sectoral levels to support adaptive capacity and resilience in China, and, to lesser extent, in India, appropriate guidance to ensure climate-resilience of infrastructure projects is still lacking in many regards.

Our screening of approaches and practices of other finance, support, and service providers in the field of climate resilient infrastructure has shown that the question of how to integrate criteria for climate resilience in infrastructure design and implementation, including in result monitoring frameworks, has widely gained importance over the last ten years. Approaches, however, are still fragmented. A general understanding has emerged that

- Infrastructure assets have to be better protected against climate impacts,
- Infrastructure investments are very relevant to promote systemic resilience across all infrastructure sectors,
- Infrastructure in fast-growing urban areas, and particularly coastal locations, face particular challenges in terms of climate resilience; and finally, that
- The needs of vulnerable populations require a special focus.

Nevertheless, approaches to deal with these challenges, reaching from climate impact assessments to implementation guidelines and indicators for impact monitoring have not yet been harmonized. Thus, some of the practices discussed in our overview may be instructive for AIIB as well, such as:

- By adopting human rights-based pro-poor principles and implementation guidelines, AIIB could signal its commitment to take the rights of the poor seriously in a way that is closely aligned with international human rights treaties and can realistically be put into practice.
- Considering the longevity of infrastructure and the dynamically changing climate, climate risk analyses for AIIB infrastructure projects could incorporate climate risk projections until the end of the century.
- AIIB could introduce resilience metrics to measure the effectiveness of their adaptation projects across sectors, rather than only tracking the quantity of adaptation investments. These resilience metrics, apart from measuring ex-post benefits, should already be introduced in the project design phase, and may encompass indicators as well as indices, i.e. resulting in composites of indicators.
- The adaptation metrics, on top of measuring general adaptation benefits, could specifically assess benefits for poor and climate-vulnerable populations as a second pro-poor layer.
- To ensure that urban infrastructure investments are not limited to mega cities, which usually have less difficulty in accessing finance compared than secondary and smaller cities, AIIB could consider earmarking a certain proportion of its funds for investment projects in secondary and smaller cities.
- To address the challenge that the required data for inclusive and climate-informed infrastructure planning is still lacking in most countries, AIIB could also invest in the provision of respective data and tools, as well as in capacity-building.
- AIIB's specific ability to mobilize more private sector capital for resilient infrastructure could be instrumental to scale up infrastructure investments for resilience building.

- Effectively measuring to what extent poor and vulnerable populations benefit from infrastructure projects is vital. Including these populations already in the criteria development is an important prerequisite. AIB could make this a key element in the entire project cycle from planning to result-monitoring.

These elements will be taken up again for our proposed own set of principles. In the next step, however, we will first take stock of approaches to deal with climate resilience in AIB's existing policies, strategies, and frameworks, and in how far they already capture the aforementioned approaches.



3

**Analysis of
AIIB's current
focus on climate
resilience**

3.1 The role of climate resilience in AIIB's policies, strategies and frameworks

AIIB is a member of the group of seven MDBs that have committed to align their investments with the Paris Agreement to catalyze low emission and climate-resilient development. At COP24 Katowice (2018), adaptation and climate resilient operations were laid out as one of six areas to bring this pledge into action (the other five areas are mitigation, climate finance, engagement and policy development support, transparency and reporting, and internal activities). At COP25 Madrid (2019), they announced the first elements of an alignment framework for adaptation and climate-resilient operations, although it still requires developing. Our paper is intended as a contribution, and makes suggestions for the development of this framework.

MDBs defined the area of *'adaptation and climate-resilient operations'* as follows in their 2018 statement in Katowice: *'[...] we will be active in managing physical climate change risks, in a manner consistent with climate-resilient development, and in identifying opportunities to make our operations more climate-resilient. In addition, we will seek to support a significant increase in our clients' and their communities' ability to adapt to the adverse impacts of climate change'* (AIIB et al., 2018).

Closely related to that and their future investment priorities, they commit to an accelerated contribution to the transition through climate finance, and, more specifically to resilience building (ibid): *'We will strive to actively support [...] climate-resilient development pathways through our interventions. To that end, we will further scale-up the provision of climate finance. We will operationalize new approaches to bridge the climate finance gap and accelerate the transition in order to effectively support countries in achieving the goals articulated in their Nationally Determined Contributions (NDCs), including adaptation plans. [...] We will do this in support of ambitions agreed to under the United Nations Framework Convention on Climate Change (UNFCCC) and in line with science-based evidence identified by the IPCC.'*

In terms of policy development support, they pledge to *'support the NDCs' revision cycle and develop services for countries and other clients to put in place long-term strategies and accelerate the transition to [...] climate-resilient development pathways. In developing these new services, we will ensure consistency with the SDGs and establish collaborative partnerships with other institutions and private sector actors while scaling-up outreach and knowledge-sharing initiatives'* (ibid).

On reporting, they announced to *'further develop tools and methods for characterizing, monitoring and reporting on the results of our Paris-alignment activities. Where possible, we will collaborate to harmonize our respective approaches'* (ibid).

Finally, on aligning internal activities, they intend to *'progressively ensure that our internal operations, including facilities and other internal policies, are also in line with the objectives of the Paris Agreement'* (ibid).

These pledges are the starting point to develop a framework for implementation. On adaptation, it was agreed that MDB project evaluation teams consider both the resilience of potential investments and the broader resilience gains that can be achieved through potential investments in resilience. They should ask whether a robust assessment of physical climate risks and ample consideration of climate resilience opportunities have been part of the project design.

Westphal et al. (2020) rightly argue, however, that this approach provides too little guidance to project teams. Neither are the particular steps required for a '*robust assessment of physical climate risks*' specified, nor are '*resilience opportunities*' defined. Therefore, they propose that

- MDBs should develop a common process for quantifying physical climate risks and incorporating those risks, along with adaptation options, into project economic and financial assessments, and that
- MDBs should define a range of adaptation and resilience metrics that would allow them to assess the impact and effectiveness of adaptation finance.

Taking these two suggestions as a simple first set of benchmarks, we will now analyze to what extent they are reflected in the current AIIB policies, sector strategies, and frameworks. Additional questions for our analysis, reflecting commitments from the joint MDB Katowice statement, are:

- What guidelines on the management of climate risks are provided in the sector strategies, the Environmental and Social Framework (ESF), and the Risk Management Framework?
- How should opportunities to make operations more climate-resilient and to support the climate resilience of clients and their communities be identified?
- What approaches can be taken to bridge the climate finance gap and to support countries in achieving the climate resilience goals in their NDCs, in line with science-based evidence identified by the IPCC?
- Which policy development support is being provided, or envisaged to be provided, to clients to accelerate the transition to climate-resilient development pathways?
- What tools and methods are being used and developed further to monitor and report on the Paris-alignment activities?
- Which activities are undertaken to ensure progressive alignment with the climate resilience goal of the PA?

The analysis covers the AIIB's business plan and strategic programming, Environmental and Social Framework (ESF), Risk Management Framework (RMF), strategies for the sectors of energy, water, transportation, ICT, and cities, and a brief assessment whether there are any other policies and directives that specifically deal with climate change, climate resilience, or adaptation. Results from interviews are considered – where appropriate – as well.

3.1.1 Business Plan and Strategic Programming (2020)

2020 is the last year of the Bank's five-year start phase. Its main institutional priority was to complete the first Corporate Strategy to provide strategic directions for the subsequent ten years (AIIB, 2019a). Another institutional priority for 2020 was to complete the roll-out of its project prioritization and quality frameworks, including the review of the Environmental and Social Policy. The addressing of climate change and climate resilience-building, however, are not mentioned at the level of institutional priorities. It remains to be seen whether and how they are reflected in the Corporate Strategy. Not investing in more ambitious climate action, including placing climate resilient infrastructure as a top priority for the 2020s, would be a severe threat to the commitment to *'accelerate the transition in order to effectively support countries in achieving the goals articulated in their [...] NDCs, including adaptation plans, [...] in line with science-based evidence identified by the IPCC'*. The IPCC (2018) made it crystal clear that without the most ambitious climate action in the 2020s, global warming will inevitably overshoot the 1.5°C temperature threshold, potentially with disastrous consequences.

In its Strategic Programming (AIIB 2020b), the Bank has set three thematic priorities:

- Sustainable infrastructure: Promoting green infrastructure and supporting members to meet their environmental and development goals;
- Cross-border connectivity: Prioritizing cross-border infrastructure, ranging from roads and rail, to ports, energy pipelines and telecoms across Central Asia, and the maritime routes in Southeast Asia, South Asia, the Middle East, and beyond.
- Private capital mobilisation: Devising innovative solutions that catalyze private capital, in partnership with MDBs, governments, private financiers and other partners.

While the first priority on sustainable infrastructure may include climate resilience-building, climate resilience-building is not made explicit. A deeper look at the sector strategies is required to better understand what is meant here. Currently, neither the *'Business Plan 2020'* nor the *'Strategic Programming'* provide a robust indication that the Bank considers climate risks posed to the Bank's investments and climate resilience achieved through infrastructure projects as top priorities. To reflect the alignment commitment with the PA properly, that must change.

3.1.2 Environmental and Social Framework (ESF, 2019)

The ESF, in its updated version from 2019, explicitly refers to the Bank's commitment to support the three aims of the Paris Agreement of December 2015 to strengthen the global response to the threat of climate change. It uses the wording from the MDB alignment commitment.

The Bank 'supports the global adaptation goal of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. In the context of sustainable development, the Bank stands ready, through its financings, to assist its Clients in achieving their nationally determined contributions, including through mitigation, adaptation, finance, technology transfer and capacity-building. It may, through its financings, support Clients' formulation of long-term, low greenhouse gas emission development strategies. The Bank recognizes the challenges presented by climate change and the need to support both mitigation and adaptation measures in a Project facing such challenges. The Bank supports its Clients in their evaluation of both the

potential impacts of the Project on climate change and the implications of climate change on the Project. To this end, the Bank plans to prioritize investments promoting [...] climate resilient infrastructure, including actions for [...] climate proofing' (AIIB, 2019b).

Within the ESF, the Environmental and Social Standard No. 1 (ESS1) on Environmental and Social Assessment and Management is the standard that is most relevant for climate resilience:

- Firstly, the 'do no harm' approach that mandates that projects must not harm climate resilience is reflected in paragraph 29. It requires that the Environmental and Social Impact Assessments of projects (ESIA) must assess and document possible negative impacts of projects on climate resilience. It also requires that the Environmental and Social Management Plans (ESMP) 'assess the impacts of the Project on climate change.'
- Secondly, the ESIA must assess the possible implications of climate change on the project and must propose measures to make the infrastructure project climate-resilient: 'Assess [...] the implications of climate change for the Project, [...] incorporating climate-proofing into the Project'.
- Thirdly, the ESIA should 'identify opportunities for [...] enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.'

Specific attention must to be paid to the needs and rights of the most vulnerable populations, in alignment with the PA, the SDGs and responsibilities arising from international human rights law, as pointed out before. The ESF, in paragraph 39, sets standards with regard to vulnerable groups, emphasizing non-discrimination to ensure access, but refraining from calling for preferential access through 'positive discrimination': 'Assess social risks and impacts that affect vulnerable groups or individuals, and any discrimination toward groups or individuals in providing access to development resources and Project benefits, particularly towards vulnerable groups. As necessary, incorporate measures to ensure that any discrimination is mitigated to the extent possible' (ibid).

It also becomes clear that the ESS is primarily considered a means to ensure the right of defence of those whose rights might have been violated by the project. Thus, it is a 'last resort' measure to ensure the 'do no harm' approach, rather than being a proactive means of supporting climate resilience-building: 'The objective of non-discrimination is to enable access of affected people to the benefits of Projects financed by the Bank so that they do not suffer disproportionately from adverse project impacts' (ibid).

The ESF may provide an effective protection against social and environmental (including climate) harm caused by adverse project impacts. It is a means to ensure that the benefits of projects are shared in a non-discriminatory way. In other words, it serves the purpose of the defensive 'do no harm' principle. Nevertheless, it falls short in proactively promoting either the climate resilience of systems, or merely the infrastructure itself – despite the fact that these aspects are also anchored in paragraph 29, as shown above.

The definition of vulnerable groups used by the AIIB is also relatively narrow in the sense that it defines vulnerability as being either at higher risk of being affected negatively by the project, or simply less able to benefit from the project's benefits: 'Vulnerable groups or individuals refers to people who, by virtue of factors beyond their control: (a) are more likely to be adversely affected by

the Project's environmental and social impacts; and (b) are more likely than others to be limited in their ability to claim or take advantage of Project benefits' (ibid).

This definition does not, however, include people who are climate-vulnerable in the sense of being exposed to higher climate risks, for example due to their lack of adaptive capacity, socio-economic vulnerability, fragility, or geographical risk exposure. A wider definition of climate vulnerability, however, could require identifying these people in the project design phase and considering measures to ensure that vulnerable people in particular can benefit from an infrastructure project, leading to systemic climate resilience-building by design. Unfortunately, the actual definition achieves none of that.

The gender dimension is considered in a separate paragraph. It calls for the identification of *'any potentially adverse gender-specific risks and impacts of the Project, and develop mitigation measures to reduce these. Where relevant, use gender disaggregated data and analysis, and consider enhancing the design of the Project to promote equality of opportunity and women's socio-economic empowerment, particularly with respect to access to finance, services and employment'* (ibid., paragraph 34).

To conclude:

1. The ESF formally covers the building blocks of the PA alignment commitment. However, the approach chosen is still fragmented. The ESF might be the best place to anchor the 'do no harm to climate resilience' approach. To put it into action effectively, the guidance on how to assess and quantify the impacts economically and financially must gain in precision.
2. The present, narrowly defined ESF cannot be expected to identify opportunities to contribute to the systemic resilience-building of clients and their communities. That would include supporting countries in achieving their NDCs' climate resilience goals and accelerating their transition to climate-resilient development pathways through policy development support. For such purposes, sector strategies and their result monitoring frameworks are probably more appropriate.
3. Ensuring the climate resilience of the infrastructure itself is also not at the core of the ESF. In this regard, the risk management framework could be considered the more suitable instrument.

3.1.3 Risk Management Framework (2019)

The risk management framework (AIIB, 2019c), as well as its related policies and directives provide the instruments for financial risk management. The framework's principles are designed to provide the foundation for effective key risk management, to assess and mitigate (current and emerging) credit risk, operational, and compliance risks. Given the relevance of climate-induced risks to infrastructure investment, one could expect that these risks (as well as the way they may unfold in terms of credit risks) be captured in the risk management framework. However, this is not the case, at least not in an explicit way.

Without factoring in analytical climate risk data, investments are exposed to higher risks. Therefore, from an outside perspective, it is difficult to understand, for instance, why project investees' and sovereign counterparties' susceptibility to climate risks are not reflected explicitly in

AIIB's Key Risk Indicators (KRI). Tellingly, credit rating agencies like Moody's or S&P have developed indicator-based tools that highlight the potential credit impact and relative susceptibility of rated sovereigns to climate risks over a number of years. One of the transmission channels (or impact chains) modelled by Moody's, explicitly looks at damage to infrastructure (Moody's Investor Service, 2016). Reinsurance companies translate the implications of well-developed climate risk models into financial metrics, and build their financial business on them. The AIIB, however, seems to lag behind, like other banks as well. Therefore, to ensure the climate resilience of infrastructure assets vis-à-vis extreme and slow-onset events, AIIB should close this gap by further developing its KRI, using metrics to quantifying physical climate risks, and incorporate those risks into financial risk management. That could also lead to a more elaborate understanding of the economics of climate adaptation, creating additional benefit for the Bank's clients.

3.1.4 Energy Sector Strategy 'Sustainable Energy for Asia' (2018)

AIIB's energy sector strategy aims at 'providing the framework, principles, and operational modalities to guide the Bank's energy sector engagement, including the development of its project pipeline' (AIIB, 2018a). The strategy aligns itself with the Sustainable Energy for All Initiative, the SDGs, especially SDG 7 on Affordable and Clean Energy, as well as the Paris Agreement (but without explicit reference to its climate resilience goal). Climate adaptation projects, however, are promoted under sectoral approaches, which state that:

'Climate change adaptation is emerging as an MDB business line in association with grant facilities, such as the Green Climate Fund (GCF), GEF and climate change trust funds. A recent study on infrastructure finance noted 'it was estimated that between 10 and 15% of the (future) required infrastructure investment could be attributed to making such investment (including adaptation) sustainable, by ensuring lower emissions, higher efficiency and resilience to climate change.' The Bank will partner with MDBs and bilateral agencies to support such efforts in the Asian countries most threatened by climate change' (ibid).

No further information is provided regarding:

- Respective policies, directives, or guidelines on resilience building or risk management in the energy sector;
- Opportunities to make energy infrastructure more climate-resilient, and how renewable energies and energy efficiency can make societies more resilient to crises;
- Ways to support investees technically or in policy development, and, last but not least;
- Ways to address specific needs of vulnerable populations.

Furthermore, in the Results Monitoring Framework of the Energy Sector Strategy,

- Climate adaptation and resilience are not captured either.

The only exceptions are perhaps the implication of a significant financial relevance of resilience-building, and the rather general commitment to seek partnerships for addressing the climate challenge.

Altogether, the energy sector strategy only superficially addresses climate resilience. No specific tools and instruments seem to be available. Impact monitoring is scarcely even possible due to the absence of indicators.

3.1.5 Transport Sector Strategy ‘Sustainable and integrated Transport for Trade and Economic Growth in Asia (2018)’

AIIB’s transport strategy (AIIB 2018c) aims at *‘financing the development of sustainable and integrated transport systems that promote trade and economic growth in Asia’*, with a focus on *‘high quality and sustainable infrastructure that would improve connectivity’* (ibid). The strategy does not mention the Paris Agreement, let alone an alignment commitment, although it does refer to the SDGs. Climate resilience is not explicitly referred to. It might be covered, implicitly, under the promotion of environmental and social sustainability:

‘Environmental and social sustainability contribute to the long-term viability of infrastructure. Decisions about infrastructure can help to make an economy green and inclusive. AIIB recognizes strategic environmental and social assessments (SESA) as a means of integrating environmental and social considerations into the project identification process. The Bank encourages its clients to undertake strategic, sectoral, or regional assessments, as appropriate, and stands ready to assist clients in achieving their sustainable objectives through the projects it finances. All projects need to minimize environmental and social risks and impacts during implementation and operation, in line with the provisions of AIIB’s Environmental and Social Framework and Policy’ (ibid).

While AIIB stresses the relevance of the ESF, it does not set climate resilience-related criteria and measurable result indicators that put general alignment commitments effectively into action.

Regarding pro-poor principles, the transport sector strategy explicitly promotes universal access, equity of opportunity and non-discrimination. It mentions women specifically, as well as disabled, older, and younger people: *‘Stakeholder engagements need to ensure that the voices of these population groups are heard and taken into account in both the preparation and operational phases of the investments’* (ibid).

3.1.6 Sustainable Cities Strategy ‘Financing Solutions for Sustainable Cities in Asia’ (2018)

The urban strategy *‘Financing Solutions for Sustainable Cities in Asia’* (AIIB, 2018b) places a strong focus on resilience. In fact, resilience is one of five objectives of the strategy (which are: to be *‘green’*, *‘resilient’*, *‘efficient’*, *‘accessible’*, and *‘thriving’*). The urban strategy draws attention to climate disaster risks and sea level rise, calls for development of the ability to withstand both sudden and slow-onset impacts through climate adaptation, and defines as a project level outcome that people should benefit from such projects with a climate adaptation component (ibid). All of these considerations indicate that the AIIB intends to contribute, through its infrastructure investments in the urban sector, to what we call system-focused climate resilience, i.e. it goes beyond the resilience of the infrastructure itself: *‘Enhance resilience against climate change and natural disasters, including through nature-based solutions where feasible, within urban boundaries’* (ibid). Possible investments are solid waste management, water supply and sewerage, wastewater treatment, urban drainage, and flood protection.

A strong pro-poor component is included in the strategy as well. The provision of better access to infrastructure and social services for vulnerable people and low-income households is one of the four key investment areas. Public housing is mentioned as one possible investment. Indicators for result-based monitoring of both the promotion of resilience and better infrastructure accessibility for the poor are firstly, absolute investments in USD, and secondly, the percentage of financing.

The resilience focus in the cities strategy reflects the fact that cities and urban areas are identified by the IPCC (2018) as one of the four critical global systems requiring fundamental transformation. Cities, much like other subnational actors, are important implementers of NDCs. Still, the lack of bankable projects and access to long-term finance is a significant barrier for urban infrastructure investments, especially in cities other than the few mega cities of the developing world. Addressing these gaps could become a unique selling point of AIIB, well in line with its investment priorities.

3.1.7 Draft Digital Infrastructure Strategy (2020)

With the draft Digital Infrastructure Strategy, AIIB envisions *‘to play a leading role in financing the growth of Digital Infrastructure in Asia, with the objectives of supporting AIIB members’ efforts in bridging the digital divide, increasing competitiveness of their economies and the efficiency of infrastructure. To do so, AIIB will leverage and mobilize financing, develop its partnerships, manage risks, and play a catalytic role in building knowledge for the financing of Digital Infrastructure. AIIB expects to go beyond its traditional financing role to help build a strong ecosystem and foster the adoption of technology in infrastructure through the demonstration of its benefits’* (AIIB, 2020a).

In the strategy, digitalization is considered a key driver of economic effectiveness, technological innovation, and growth. Unfortunately, the important fact that digitalization can also make systems more resilient towards external shocks (for instance in terms of climate risk data analysis, or as integral parts of early warning systems, as stressed in the SFDRR) has not yet been reflected in the draft strategy at all. The current Covid-19 pandemic, including its economic fallout, should be taken as an important lesson about the importance of resilience, be it of health systems or economies. Driven by market forces, economic efficiency has been prioritized far too much and far too long. As a result, the world is currently in the process of learning that robustness and flexibility of systems are very important to build resilience to external shocks like a global pandemic. Digitalization, too, plays an important role herein. We therefore strongly recommend considering these aspects in the final version of the strategy, as well as making climate resilience an integral part of it.

3.1.8 Water Sector Strategy (2019)

The water strategy is the most advanced sector strategy with regard to climate resilience. A key challenge it identifies is the lack of access to adequate drinking water supply and sanitation services for more than a billion people in Asia. Moreover, it predicts a potentially ever-widening gap between water supply and demand (AIIB 2020c).

The strategy also points to Asia's high exposure to extreme climate events. Although the populations exposed to flooding are largely concentrated in urban areas, the strategy points out

that water infrastructure (flood protection, drinking water, irrigation, and sewage) has so far been disproportionately underinvested in. It represents only 5% of infrastructure investments in Asia:

‘Against this backdrop, investments in water infrastructure become crucial for the region to achieve its economic and social development goals while also managing resources and adapting to climate change. When water risks are not adequately managed, economic impacts are significant. At least USD 360 billion are lost annually across Asia due to inadequate water supply and sanitation, water scarcity and flood damage alone’ (ibid).

Altogether, the strategy identifies as the two main drivers of Asia’s diverse water challenges environmental degradation and climate change:

‘From increased threats to densely populated coastal cities from sea-level rise and coastal storms; to accelerated glacial melt in the Himalaya and Karakoram mountains [...] People living in Asia are now four times more likely to be affected by natural disasters, mostly floods and droughts, than those living in Africa, and 25 times more likely than those living in Europe or North America. Exposure to climate change related disasters is compounded by urbanization, with Asia having the largest number of cities facing extreme risk of water-related disasters. 770 million are perennially exposed to flood risks, largely concentrated in urban centers. Strengthening the ability to adapt to the wide range of changes in a manner that mitigates risks and negative impacts is vital for sustainability. [...] While the benefits of investing in water are clear, a significant financing gap remains. Of the approximate USD 880 billion spent on infrastructure regionally in 2015, only 5% or USD 44 billion went to water [...]. Using the Sustainable Development Goals (SDG) as a base for assessing investment needs, an average of USD 120-330 billion is required per annum until 2030 to address these issues. That represents 2.5 – 7.5% of regional GDPs’ (ibid).

Building on that analysis, the draft water strategy commits to placing a stronger focus on the climate change threat, on sustainability, and the SDGs, committing to supporting its members’ efforts to *‘ensure the availability and sustainable management of water and sanitation for all, in line with the SDGs’* (ibid) with an investment focus on the provision of water services, resource management, and resilience. Resilience covers the reduction of losses from flooding, droughts, and other disasters through physical infrastructure and institutional/system improvements, including better hydrological monitoring, disaster warning, and contingency planning (ibid).

To maximize outcomes, the Bank pledges to consider (ibid):

- Social risks and impacts, including access to and affordability of water, whereby special attention is to be paid to women and vulnerable groups,
- Environmental risks and impacts, and
- Climate change, including an assessment of how resilience measures can be integrated to reduce vulnerability, and how to support adaptation.

The proposed result-monitoring framework for the draft water strategy includes metric portfolio level indicators (ibid). To measure impact in terms of climate resilience-building – with regard to the strategic objective to reduce losses caused by floods – the strategy proposes to use three indicators: (i) The number of beneficiaries from flood protection, (ii) the land protected through flood control measures in hectare, and (iii) the amount invested in flood protection in

USD (ibid). Similar indicators at the portfolio level have been suggested for water supply, sanitation, wastewater management, water resource management, irrigation and drainage, disaster management (e.g., number of beneficiaries of protection measures, land area protected from water-related disasters, reduction of average flood depth, number of hydro-meteorological station set up/improved, number of early warning systems installed, and of contingency plans adopted), and the inclusion of gender and vulnerable groups (*'incorporation of consultation and design for improved access for women and vulnerable groups'*) (ibid).

Thus, it can be concluded that the draft water sector strategy – to a far greater extent than the other sector strategies – places climate resilience at the core of its particular infrastructure investment. It addresses all three dimensions:

- That water infrastructure itself needs to be resilient towards adverse impacts (asset-focused climate resilience),
- That it does not contribute to undermining the climate resilience of poor and vulnerable people and ecosystems (do no harm), and
- That it contributes to climate adaptation, and thereby, to achieving the Paris Agreement's climate resilience goal, the goals of the Sendai Framework for Disaster Risk Reduction, and the SDGs (system-focussed climate resilience).

To measure impact in terms of resilience-building, the strategy also includes metric result indicators at the portfolio level, which is a great advantage compared to the other strategies. Precise guidance on how to assess climate risks in a robust way and how to incorporate those risks, along with adaptation options, into economic and financial project assessments has not yet been included. Needless to say, portfolio-level result indicators should also be accomplished by project-level adaptation and resilience metrics that would allow to assess the impact and effectiveness of adaptation options on the project.

3.2 The role of climate resilience in AIIB's project portfolio

In this chapter we present the results of a screening of AIIB's project portfolio as of 28 April, 2020. Projects that were not yet approved but listed in the project pipeline are also included. Projects were screened only superficially based on the project description provided on the AIIB's website. The question we asked was how responsive they were to the climate resilience goal of the PA. We applied our set of pro-poor climate resilience principles, and categorized the projects as follows:

- Infrastructure projects explicitly contributing to systemic climate resilience-building;
- Projects delivering climate resilient/climate-proofed infrastructure;
- Infrastructure projects that apply the 'do no harm' principle regarding climate resilience of third parties;
- Infrastructure projects that have a particular focus on poor or climate-vulnerable populations;
- Miscellaneous infrastructure projects where none of the aforementioned criteria seemed to be applied or which could not be categorized due to a lack of information.

As mentioned before, the categorization was completed based on a screening alone. Our results reflect tendencies of how far climate resilience-building matters in the project portfolio. An in-depth analysis would be needed to come to robust and specific assessments at the level of single projects.

On April 28, 2020, AIIB's project portfolio included 70 approved projects. Another 36 projects were in the project pipeline. From the approved projects totalling USD 13.74 billion in investments, eight were approved in 2017, 15 in 2017, 12 in 2018, 28 in 2019, and 7 in 2020. AIIB has invested in 21 countries. The investments were classified according to sectors and their sums aggregated as follows:

- Energy sector 30 %
- Financing of financial intermediaries 23 %
- Transport sector 20 %
- Water sector 14 %
- Cities sector 6 %
- Information & communications technology (ICT) 3 %
- Others 4 %.

The project pipeline of proposed projects included another 36 projects requesting USD 10.44 billion from the AIIB. Compared with the approved projects, the main focus of the pipeline projects has shifted toward the transport sector (34%) and Covid-19 response (20%). Energy projects dropped from 30% to 17%; investments in financial institutions from 23% to 6%. The other investment areas have remained relatively stable.

Screening results for approved and pipeline projects are shown in Figure 5. The screening was done more intensively for the water and sustainable cities sector, given the higher priority for climate resilience in those sector's strategies. The screening of the transport sector was more superficial and the energy sector screening was done only very roughly.

The main findings with regard to the questions posed above can be summarized as follows: The alignment with the climate resilience goal of approved projects is relatively weak, except in the water sector, where it is strong. For the pipeline projects, alignment seems to be even weaker. However, that may to some degree be the result of the information available on pipeline projects, which is less detailed. In any case, the information provided is overall not sufficient. Exceptions are the projects co-funded by others. In those cases, much better information is often available via the websites of the co-founders (in most cases, World Bank).

For the pipeline projects, alignment with the SDGs (which necessarily entails a pro-poor or pro-vulnerable focus), is either very weak or cannot be assessed at all. The SDG alignment is better for the approved projects, and again, strongest in the water sector, followed by projects belonging to the cities sector strategy.

Table 6: Climate resilience screening of the AIIB project portfolio (Including pipeline projects)

Approved projects						
Sector	Project no.	Volume in %	No. of projects that contribute to systemic climate resilience-building	No. of projects that deliver climate-proofed infrastructure	No. of projects that take measures to prevent harm to the climate resilience of third parties	No. of projects that apply a dedicated pro-poor or vulnerability approach
Water	10	15%	6	5	2	7
Cities	4	7%	1	1	1	2
ICT	2	2%	0	0	0	0
Transport	13	20%	1	4	1	3
Energy	21	28%	Not assessed	Not assessed	Not assessed	Not assessed
Financial intermediary	17	24%	No info	No info	No info	No info
Other	3	4%	1	1	1	1
Subtotal	70	100%	9	11	5	13

Project pipeline						
Water	4	8%	0	0	No info	0/no info
Cities	3	3%	0	0	No info	0/no info
ICT	1	1%	0	0	No info	0/no info
Transport	12	37%	0	1	No info	0/no info
Energy	6	18%	0	0	No info	0/no info
Financial in-termediary	2	7%	0	0	No info	0/no info
Other	7	26%	0	0	7	3
Subtotal	35	100%	0	1	7	3
Total	105	100%	9	12	12	16

3.3 Second interim conclusion

There is significant need for improvement in order to make the AIIB's sector strategies and the project portfolio truly transformative, well-aligned with the climate resilience goals, and tangibly address pro-poor principles.

A positive exception is the water sector. AIIB's draft water strategy is an example of good practice, although it has further room for improvement with respect to how the PA's climate resilience goal can be factored in a sector strategy. A similar approach should be taken for the sustainable cities strategy, since many Asian cities are facing just as many climate risks as the water sector. For the transport, ICT, and energy sectors, the relevance of climate risks might be a little less obvious. Nevertheless, pro-poor climate resilience principles should be followed for these strategies as well. *'Do no harm'* and *'climate proofing'* are essential for each and every infrastructure project, but *'pro-poor principles'* are no less essential to align infrastructure development with SDG implementation.

The PA alignment commitment provides the reference framework for effectively addressing climate resilience in infrastructure projects. The ongoing cooperation with other MDBs offers a space for mutual peer-learning and the co-development of instruments to effectively implement the alignment commitment. So far, other MDBs such as the EBRD are more advanced. Given the fact that AIIB is the most outspoken on being a *'post-Paris Agreement bank'*, is calling itself a green bank, and focuses its investments on the most climate-vulnerable regions, the AIIB should feel encouraged to tackle the challenge, further develop its approaches to climate resilience, and to become a front runner.

The main conclusions, to be taken up in the following chapter, can be summarized as follows:

-
- Currently, neither the *'Business Plan 2020'* nor the *'Strategic Programming'* provide a robust indication that the Bank counts as top priorities climate risks to the Bank's investments and climate resilience through infrastructure projects. To reflect the alignment commitment with the PA properly, that must change.
 - The ESF formally covers the commitments arising from the PA alignment commitment but the approach is fragmented: (i) The ESF might be the best place to anchor the 'do no harm to climate resilience' approach. To put it into action effectively, the guidance on how to assess and quantify the impacts economically and financially must gain in precision. (ii) The present, narrowly defined ESF cannot be expected to identify opportunities to contribute to the systemic resilience-building of clients and their communities. For such purposes, sector strategies and their result monitoring frameworks are probably more appropriate. (iii) Ensuring the climate resilience of the infrastructure itself is not at the core of the ESF. In this regard, the Risk Management Framework could be considered the more suitable instrument.
 - The Risk Management Framework has gaps, too. To ensure climate resilience of infrastructure assets vis-à-vis sudden and slow-onset events, the Key Risk Indicators should be further developed, using metrics to quantify physical climate risks, and incorporate those risks into financial risk management.
 - The Energy Sector Strategy only superficially addresses climate resilience and Transport Sector Strategy and the draft Digital Infrastructure Strategy are only marginally better.
 - The Cities Strategy and especially the Water Strategy reflects climate resilience much better, although there is further room for improvement.
 - In the project portfolio, alignment of approved projects with the climate resilience goal is relatively weak, except in the water sector. For pipeline projects, alignment seems to be even weaker. However, that may to some degree be the result of the information available on pipeline projects, which is less detailed.



4

Proposal
for climate
resilience
and pro-poor
principles

The world is at a crossroads. The Covid-19 pandemic illustrates how vulnerable we all are towards environmental shocks. Resilience is a determining factor for a safe and better future. Apart from emissions reduction, climate resilience-building is crucial to minimize climate-induced risks and to raise adaptive capacity to the levels required. These two aspects should guide AIIB's infrastructure investments in terms of policies and portfolios. To make that happen, more is needed than merely political promises to implement the PA. To improve climate resilience – with a particular focus on the respective needs of the poorest and most vulnerable populations – a first step would be to set up basic criteria and principles, which could then, in a second step, guide the development of more specific guidelines, benchmarks and indicators for operationalization.

But only mainstreaming climate resilience is not enough to make *'the future we want'* happen. Rapid and profound transformation is needed to make possible a sustainable future for the urban, food, water, biodiversity, transportation, and energy sectors. Climate resilience is an integral part of sustainability in a world that is characterized by accelerating climate risks, biodiversity loss, and a rapidly growing world population, exposing more and more people to higher risks. Resilient infrastructure lowers climate risks. Badly designed infrastructure, conversely, increases risks.

Apart from protecting populations, resilience-building serves the purpose of protecting infrastructure assets themselves against climate-induced loss and damage. Since the adverse impacts of climate change is expected to intensify over the lifespan of all newly built infrastructure, assets face a high risk of drastically losing value long before investments are amortized. It follows that striving for climate resilience of infrastructure should essentially be a matter of financial risk management.

Pro-Poor & Climate Resilience Principles

Climate Resilience Principles

We propose the following three **Climate Resilience Principles** to align infrastructure investments with the goals of the Paris Agreement:



1. **Do no harm** – AIIB infrastructure investments should not undermine the climate resilience of people and ecosystems, especially not of the poor and climate-vulnerable people and be in line with all efforts to limit global warming to 1.5°C.



2. **Climate proofing** – AIIB infrastructure investments should be protected effectively during their entire lifespan against value loss caused by adverse climate change impacts.



3. **Enhance systemic climate resilience** – AIIB infrastructure investments should be optimized so that they protect human systems and eco-systems against climate change impacts.

Pro-Poor Principles

These climate resilience criteria should always be applied with a particular focus on the rights and needs of poor and climate-vulnerable people, ensuring that AIIB infrastructure investments expressly contribute to the climate resilience of those who are most in need of it. We propose the following **seven Pro-Poor Principles** to guide this process:



4. **Measurable value for the poor and vulnerable** – AIIB infrastructure investments should provide measurable client-value for poor and vulnerable populations in terms of their resilience.



5. **Transformation** – AIIB infrastructure investments should facilitate the structural transformation to climate-resilient, sustainable development pathways, including equality for poor and climate-vulnerable people.



6. **Enabling policy frameworks** – AIIB should engage with country clients to support or incentivize the development of enabling policy frameworks to promote climate resilience that takes due note of the rights and particular needs of poor and climate-vulnerable people.



7. **Accessibility** – AIIB infrastructure investments should ensure access to infrastructure benefits for poor and vulnerable populations.



8. **Affordability** – AIIB infrastructure investments should ensure affordability of infrastructure services for poor and vulnerable populations.



9. **Participation** – AIIB infrastructure investments should ensure due participation of poor and vulnerable populations in all phases of the project cycle.



10. **Transparency** – AIIB infrastructure investments should ensure transparency in all phases of the project cycle, including towards poor and vulnerable populations through prior information.

To implement the Climate Resilience and Pro-Poor Principles, concrete steps should be taken, verified and documented in different areas of AIIB's work:

Project development, selection, approval and implementation:

Climate risk awareness: Conducting a climate risk assessment, incorporating climate model-based risk projections that cover all possible climate hazards that may occur during the expected lifespan of the investment, including under a worst-case high-emissions scenario RCP 8.5.¹³ The risk assessment should explore in its analysis:

- How the investment project could harm the climate resilience of people or eco-systems being affected by the infrastructure,
- how the investment itself could face loss or damage caused by climate impacts, and how adaptation options could be included in the infrastructure investment such that it promotes the climate resilience of human systems and eco-systems.

Climate vulnerability assessment: Conducting a climate vulnerability assessment to identify the most vulnerable populations affected by the project, considering climate risk exposure and socio-economic vulnerability, and options how to reduce their vulnerability. Measuring, based on indicators, how vulnerable target groups could benefit from the project, would underpin the pro-poor principles. A broad variety of these indicators is already being used by various organisations. The UN Adaptation Fund, for instance, is measuring the percentage of households and communities that see their climate-resilient livelihoods sustained by a project.

Climate risk reduction: Taking all necessary adaptive and resilience-building measures, based on the results of the risk assessment.

- If there is a possible risk that the investment undermines the climate resilience of people and eco-systems, risk mitigation measures must be developed and implemented to ensure that the 'do no harm' criteria is fulfilled.
- If there is a possible risk that the investment itself might be hampered by climate change impacts, respective risk prevention measures are to be defined and implemented. If risk prevention does not allow the mitigation of all climate risks, risk reduction and risk preparedness measures are to be defined and implemented. If there remain residual risks, they must be quantified and covered by risk financing measures such as climate risk insurance.
- If the investment has the potential to improve the climate resilience of surrounding human systems and eco-systems, this potential should be further explored and integrated into the project design, whenever possible.

Applying such a rigorous approach to all projects will significantly improve the climate resilience and transformative quality of projects. It may require higher upfront investments, but it will pay back. The AIIB should enlarge the Project Special Fund and allow the use of the fund's financial means to co-finance climate risk assessments and other preparatory costs that serve climate resilience purposes of possible infrastructure investments, including capacity development of investees, if required.

¹³ RCP, or Representative Concentration Pathway, is a GHG concentration trajectory adopted by the IPCC and used for climate modelling and research. RCPs describe different climate futures that are all possible depending on the amount of GHG emitted in the next decades.

Considering for instance, that the data required for inclusive and climate-informed infrastructure planning is still lacking in many countries, investments in data and tools as well as in related capacity building is strongly suggested to AIIB, as a basis on which to make truly climate-informed decisions and plan strategically smarter infrastructure.

To conclude, we recommend that the AIIB be more proactive in contributing to the development of projects of high-grade climate resilience. They could serve as blueprints, on the basis of which to upscale and replicate infrastructure investments that are truly geared for the challenges of the 21st century.



Project and portfolio level

At the portfolio level:

- All projects should fully respect the ‘do no harm’ criterion. Non-fulfilment should lead to an exclusion from investment.
- All projects should be in line with the 1.5°C limit – this means i. a. no support for fossil fuels.
- All projects should be climate-proofed such that climate-induced losses are minimized over the entire life span of the infrastructure.
- A significant proportion of projects should contain adaptation components that build the climate resilience of human systems and eco-systems (e.g., in the water and urban sectors) that are well aligned with NDCs, NAPs, or other adaptation policies and programs, and that, preferably, target specifically those sectors and populations that are most in need.
- To measure impact in terms of resilience-building, metric result indicators at the portfolio level, such as those already established in the water strategy, should be extended to all other strategies. Portfolio-level result indicators should be based on project-level adaptation and resilience metrics that would allow to assess the impact and effectiveness of adaptation options on the project.
- Urban infrastructure investments should not be limited to mega cities, which usually have less difficulty in accessing finance compared to secondary and smaller cities. A certain proportion of funds should be earmarked for investment projects in secondary and smaller cities.



Sector policies

At the sector policy level, the aforementioned criteria and implementation steps should be referred to explicitly.

A financial target for investments in adaptation projects should be definitely set in the urban and water strategies, and preferably in the ICT strategy as well.

Furthermore, all sector policies, following the example of the water strategy, should describe relevant climate risks briefly, which challenges they pose to infrastructure development, and how AIIB envisions to respond to these challenges in view of its alignment commitments.

Building on this analysis, climate resilience-related objectives should be set for all sector strategies, and then reflected in indicator-based result and impact monitoring frameworks.

Cities, much like other subnational actors, are important implementers of NDCs. Still, the lack of bankable projects and access to long-term finance is a significant barrier for urban infrastructure investments, especially in cities other than the relatively few mega cities of the developing world. Addressing these gaps could become a unique selling point of AIIB, well in line with its investment priorities.



Strategic programming and budgeting

Neither the *'Business Plan 2020'* nor the *'Strategic Programming'* provide a robust indication that the Bank counts climate risks to the Bank's investments and climate resilience through infrastructure projects as its top priorities. That must change. The alignment commitment with the PA, including its climate resilience goal, should be referred to.

Then, a respective strategic objective with indicators should be formulated.

Finally, a significant proportion of the budget should be earmarked for infrastructure investments that boost climate resilience.



Environmental and Social Framework (ESF)

The ESF formally covers the commitments arising from the PA alignment commitment, but in a still fragmented way. The *'do no harm to climate resilience'* approach should be firmly anchored in the ESF. To put it into action effectively, precise guidelines should be developed on how to assess and quantify adverse impacts (economically as well as financially).

It is further recommended that AIIB adopts a human rights-based approach for the ESF, including mandatory implementation rules that would allow to operationalize this approach.



Risk Management Framework

AIIB should amend its Key Risk Indicators (KRI) in the Risk Management Framework. Thus, the AIIB would become able to assess and quantify possible financial risks and losses caused by sudden and slow-onset climate events to infrastructure investments. All monetizable climate risks and opportunities should be included in the economic assessment of the project. Results of the economic assessment should be disclosed in project summary documents. In addition, a qualitative assessment of non-monetizable climate risks and mitigation options as well as resilience opportunities, including those with respect to poor and vulnerable population groups,

should be conducted and disclosed. This would help ensure the climate resilience of the infrastructure built.

Since not all climate risks can be eliminated in a cost-efficient way, it is vital to financially cover residual risks by using risk financing tools such as (public-private) risk insurance instruments in order to adequately prepare for the eventuality of infrastructure suffering climate-induced damage.



Indicator-Based Result and Impact Monitoring

Rather than only tracking the quantity of adaptation investments, AIIB should introduce, at the level of indicator-based result and impact monitoring, resilience or adaptation metrics across all the aforementioned work areas, but particularly at the level of all sector policies, risk management, portfolio development, and single projects. That is the only way to assess and improve the quality of infrastructure projects' resilience and their adaptation potential. These resilience metrics, apart from measuring ex-post benefits, should already be introduced in the project design phase, and may encompass indicators as well as indices, i.e. composites of indicators. They could be applied at all points in the project result chain, i.e. input, activities, output, outcome, and impact. A possible outcome indicator could be the number of people, disaggregated by sex and income group/poverty status, supported for adaptation, and an impact indicator the level of damage avoided. It is important, however, that they be applied at the very least for output and outcomes in order to evaluate the effectiveness of the implemented resilience measures.

In order to agree on harmonized metrics that encompass a set of indicators and indices, resilience or adaptation metrics could be developed in close cooperation with other MDBs as part of the implementation of the PA climate resilience commitment. As shown in this paper, a number of MDBs, particularly the EBRD, are already employing simple indicators such as increased water availability (in m³/year/€), energy availability (in MWh/year/€), reduced weather-related disruption (in days/year/€), and reduced weather-related damage (in €), all of them in the face of increasing climate variability (EBRD, 2018). EIB is using indicators at the project level as well. Unfortunately, they are not available publicly. ADB measures land size (in hectares) that is improved through irrigation, flood protection, and other measures, as is the IsDB.

But none of these banks actually capture aspects of vulnerability well enough in their monitoring frameworks. Paying attention to the rights and needs of the poorest and most vulnerable populations is of particular relevance, as this paper has argued repeatedly. Therefore, we have developed Pro-Poor Principles, as a complementary second layer to the Climate Resilience Principles. These Pro-Poor Principles could and should be reflected at the indicator level as well. For instance, the number of people (including the poor and the vulnerable, disaggregated by sex) made less vulnerable to climate and disaster risks as a direct result of the investment, the extent to which people's resilience (including the poor and the vulnerable, disaggregated by sex) has been improved, and the level of damages avoided should be used as indicators

Developing a meaningful set of indicators for quantitative and qualitative result and impact monitoring takes time. It should be done in consultation with various stakeholders, including marginal populations. Inclusion of these populations should already start with

criteria development. With regard to the content, the effectiveness, feasibility, unintended consequences (for marginal populations), and equity of additional project benefits should be measured.

If done ambitiously, meaningful indicators can guide infrastructure investments towards climate resilience in all its dimensions, with particular focus on vulnerable groups.



5
Final
conclusions
and
recommen-
dations

Investing in sustainable infrastructure development in line with the 1.5°C limit is a prerequisite to lifting hundreds of millions of people in Asia out of poverty, fulfilling their basic rights to adequate food, access to water, health, education and housing, and finally to achieving the SDGs.

For infrastructure, like any other socio-economic structure, to be sustainable, it must be resilient. The current global crisis caused by Covid-19 pandemic has made that clear. The unexpected pandemic is unprecedented in its adverse impacts, and clearly demonstrates how important risk prevention and preparedness are. The AIIB should integrate the lessons learned from these experiences by ensuring that the infrastructure itself does not contribute to unmanageable climate change and that it is resistant against its adverse impacts, that it does not contribute to undermining the climate resilience of poor and vulnerable people and ecosystems, but that it, – conversely – actively fosters their climate resilience, and thus contributes to achieving the Paris Agreement’s adaptation goal, the goals of the Sendai Framework for Disaster Risk Reduction, and the SDGs.

Our previous report *‘Aligning the Asian Infrastructure Investment Bank (AIIB) with the Paris Agreement and the SDGs: Challenges and Opportunities’* (Hirsch et al., 2019b) demonstrated how relevant and timely it has been to raise the AIIB’s awareness at societal and political levels in the countries covered. Five years after its inception and 18 months after the launch of the aforementioned report, the AIIB is still scarcely known in many of its member countries, and it continues to operate with unfinished guidelines. Therefore, it has become a matter of urgency to close the gaps that remain in its policies and guidelines.

By committing to support the achievement of the Paris Agreement’s temperature and adaptation goals, as well as the goal to shift all finance flows in a way coherent with the mitigation and resilience goals, the world’s leading MDBs have made a very important pledge to shift the financial flows that drive future infrastructure development. As compared with other MDBs, however, the AIIB is not yet setting new standards in terms of Paris-alignment. This has been demonstrated in the previous report with a focus on the Agreement’s decarbonisation goal, as well as in this report on the adaptation goal. The Bank and its members are strongly encouraged to fulfil their responsibility and take the bold steps needed to better align their operations with their commitments. Other stakeholders – CSOs in particular – are strongly encouraged to actively support the Bank in these tasks.

Our conclusions lead to the following recommendations.

5.1 General policy recommendations on Paris-alignment of AIIB investments and operations

- Finalize all details of the joint MDB Paris Alignment Framework, including the building block of climate resilience, based on best available science, and taking up the Pro Poor Climate Resilience Principles and related suggestions presented in this report, no later than by the end of 2020;
- Set a target date soon to align all AIIB policies, strategies, and projects with the Paris Agreement, including its climate resilience goal;

- Discuss the resilience approaches already used by the AIIB with the AIIB Board of Directors and test and assess their effectiveness;
- Review and revise the business plan, as well as the strategic programming, sector strategies, ESF, and risk management frameworks to ensure that all alignments with the Paris Agreement are measurable, reportable, and verifiable, as suggested in the previous chapter.

5.2 General policy recommendations on projects, project portfolio and pipeline development

- Take up the suggestions made in this report with regard to project pipeline development in order to ensure new investments are not only decarbonised but climate resilient and pro-poor;
- Make a strong effort to ensure that Covid-19 response measures financed by AIIB are strengthening resilience, including climate resilience, especially of poor and vulnerable people;
- For all projects, conduct a climate risk and resilience assessment and disclose assessment results, specifically on transition risks and physical risk analyses in project summary documents. The assessments should screen investments for 'do no harm' criteria, climate-proofing, and systemic improvement of climate resilience, as suggested in the previous chapter;
- For all projects, conduct an assessment regarding the application of pro-poor principles, as proposed in the previous chapter;
- Undertake an additional human rights assessment and identify the most vulnerable groups that might be affected, positively or negatively, by infrastructure investment projects; give them the right to participate in the planning; and create viable complaint mechanisms for instances in which identification or participation do not take place.
- Based on the experience of lighthouse projects, develop a set of adaptation and resilience indicators to assess the impact and effectiveness of adaptation components in projects;
- Develop a methodology to quantify physical climate risks. Incorporate those risks into projects' economic and financial assessments;
- Incentivize medium- and small-scale people-centred resilience-building and green low-carbon infrastructure projects. To date there is no specific window for such projects. Allocate a certain budget share for these projects and set a quantitative target (in the initial phase: 2–5%).

5.3 Country-specific policy recommendations – The case of Bangladesh

Bangladesh has been implementing six AIIB financed projects being worth USD 2954.43 million, of which AIIB's loan share is of around 42 percent (USD 1244 million). Besides, Bangladesh is expecting AIIB to invest in four pipeline projects worth USD 1628.2 million, of which AIIB's share is around 68 percent (USD 1103.9 million). Based on an analysis of AIIB's investments in Bangladesh, the following recommendations with regard to a better alignment of investments with the PA and the SDGs arise.

Energy sector

AIIB energy infrastructure investments in Bangladesh mainly focus on building or upgrading power transmission systems and distribution lines to reduce leakage and loss of power from a weak distribution system. These AIIB investments do not facilitate the transformation from a fossil fuel-based energy system to a renewable energy system and climate resilience building does not play a role either. On top of that, adverse social-economic and human rights impacts are being reported. The construction of power sub-stations, distribution and extension lines causes temporary disruption of local businesses, loss of agricultural land and vegetation, soil erosion, air and sound pollution, and deforestation as well. In order to ensure project alignment with the Paris Agreement, it is recommended:

- To align all AIIB investments in energy projects with Bangladesh's Renewable Energy Policy and the NDC;
- To prioritize renewable energy, energy efficiency and climate resilience building in the energy sector;
- To ensure a careful implementation of the ESF, especially in the case of land acquisition;
- To ensure a robust grievance redress mechanism in case of forced displacement and involuntary resettlements.

Transport sector

Investments in road infrastructure have become AIIB's second highest sector priority in Bangladesh, with a focus on improving intercity and cross-border connectivity to ease land-based export and import of goods. These projects are expected to reduce travel times for light and heavy goods vehicles. The huge construction works cause involuntary relocation of road-side markets, private businesses and households. The '*Sylhet to Tamabil Road Upgrade Project*' alone will involuntary relocation of approximately 620 residential units, 914 commercial units and 170 units having both residence and shops.¹⁴ Moreover, climate resilience is not ensured. Thus it is recommended:

¹⁴ https://www.aiib.org/en/projects/details/2020/approved/_download/Bangladesh/PSI-P000153-Bangladesh-Sylhet-Tamabil-Road-Post-Approval-PSI-April-3-2020.pdf

- To assess current and future climate risks and to ensure that the transportation infrastructure is resilient itself and contributes to the country's resilience;
- To also invest in developing and strengthening low cost and environment friendly modes of transportation like waterways and railways:
- To go beyond traditional infrastructure development and contribute to develop smart, green and rapid mass transportation systems.

Water sector

AIIB investments in water and sanitation projects aim at ensuring sustainable water supply and sanitation facilities, and thereby strengthening resilience, in particular of vulnerable people. Nevertheless, the construction of sewerage trunks, secondary and tertiary sewerage networks and a wastewater treatment plant as parts of the Dhaka Sanitation Improvement Project cause involuntary relocation in the context of land acquisition.¹⁵ AIIB's investment focus in the water sector in Bangladesh is major cities like Dhaka and Chittagong, where the projects will benefit many people in achieving SDG 6 (clean water and sanitation), SDG 3 (good health and wellbeing) and SDG 11 (sustainable cities and communities). In future, however, AIIB should also support resilience building in rural areas, which are usually even poorer. A particular focus could be put on adaptive water management in coastal areas that are severely suffering from salinity, due to sea level rise and a changing river hydrology, due to climate change. It is recommended:

- To align investments in the water sector with the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), and the upcoming National Adaptation Plan (NAP).
- To invest in desalination and portable water supply projects in the salinity-prone coastal areas;
- To invest in the conservation and locally led management of public goods such as watersheds and wetlands, ensuring people's ownership and access to those resources.

5.4 Country-specific policy recommendations – The case of China

2020 is a crucial year for nations to update their enhanced Nationally Determined Contributions and communicate long-term low greenhouse gas emissions development strategies. However, due to the impacts of the Covid-19 pandemic, many countries, especially developing countries, are facing multiple challenges of responding to the health emergency, recovering the economy, and fulfilling climate pledges.

AIIB has been providing a laudable rapid response in releasing emergency funds for member states to support their health system. As nations are struggling for an economic recovery,

¹⁵ https://www.aiib.org/en/projects/details/2020/approved/_download/Bangladesh/20200416-P000240-BGD-DSIP-final-PSI.pdf

mutual support and cooperation in green, climate-resilient and socially-inclusive economic recovery is critical for developing countries to deal with the current global Covid-19 and climate crises.

This was also stressed by leaders at AIIB's 2020 Annual Meeting: AIIB President Jin Liqun stated that AIIB is committed to do its part by supporting climate change commitments, cooperating across regions and striving to build a world that is financially, socially, environmentally and economically sustainable.¹⁶ Chinese President Xi Jinping also gave a speech at the opening ceremony, saying that 'the AIIB should commit itself to serving the development needs of all its members and providing more high-quality, low-cost and sustainable investment for both traditional and new types of infrastructure. This will give renewed impetus to economic and social development in Asia and beyond.' The Minister of Finance and Economic Affairs of Iceland, the Vice Chair of AIIB Board of Governors, emphasized that the AIIB must ensure that future crisis response measures are *'heavily aligned with climate change goals, including incorporating a strong message on climate change into corporate strategy'*.¹⁷ AIIB needs to be committed to continue to engage host countries to develop ambitious NDCs.

Cooperation on pro-poor and climate-resilient investment between AIIB and China, the country that initiated the establishment of the AIIB, and the largest developing country, could provide valuable knowledge and experience for China as well as for other AIIB members, especially developing nations, to achieve a green, climate resilient recovery. Therefore, we recommend the following:

- Firstly, AIIB should scale up climate finance to 50% of overall operations, in line with best practice, and with a further target for adaptation and resilience finance, leveraging public and private investment. At the country level, one of the two energy projects in China is a Category A project, focusing on low-carbon energy transition and air quality improvement, through increasing the availability of natural gas to help reduce coal consumption and related emissions in the Beijing-Tianjin-Hebei region. Tianjin is one of the coastal cities with the highest vulnerability to climate impacts including sea level rise, storms, flooding, and land subsidence, and Beijing is increasingly suffering from floods. However, the project did not conduct any climate risk assessment and did not take adaptation measures.
- Secondly, AIIB should help client countries build a just, inclusive, and sustainable future in the post-Covid-19 era, by advancing pro-poor and climate-resilient policies, principles and good practices in client states' banking sectors. One of the approaches is the greening of China's banking sector, by building up its institutional system of managing environmental, social and climate risks, and conducting green and climate-resilient investment. AIIB could engage with China's financial regulators, financial institutions, and other stakeholders to promote AIIB's climate finance commitments, and help China's financial actors build up capacity in shifting financial flows towards climate resilient areas via the following avenues:
 - Engagement with policymakers and financial regulators to support the development of enabling policy frameworks to promote climate-resilient investment that takes into consideration the rights and needs of the poor and most climate-vulnerable people;

16 <https://www.aiib.org/en/news-events/news/2020/2020-AIIB-Annual-Meeting-Opening-Ceremony-Speech-by-AIIB-President-Jin-Liqun.html>

17 https://www.aiib.org/en/news-events/events/2020-annual-meeting/_common/_download/Remarks-Hon-Bjarni-Benediktsson-Vice-Chair-of-the-Board-of-Governors-AIIB-and-Minister-of-Finance-and-Economic-Affairs-Republic-of-Iceland.pdf

- Policy dialogues and knowledge sharing with China’s financial regulators and think tanks such as Chinese Society for Environmental Sciences’ Climate Investment and Finance Association on a climate finance definition, principles and criteria;
 - Exchange with China’s policy banks on building institutional system of managing environmental, social, and climate risks, and conducting green, climate-resilient investment with pro-poor principles, applying sectoral focuses.
- Thirdly, AIIB could break new grounds and deliver innovative climate financing models on resilience building together with China and other client states and stakeholders. In 2019, the Ministry of Finance of China, together with AIIB and seven other multilateral development institutions, including the Inter-American Development Bank, the Asian Development Bank, the EBRD, the New Development Bank and the World Bank, established the Multilateral Cooperation Center for Development Finance (MCDF).¹⁸ As a multilateral platform for infrastructure financing, the MCDF is designed to encourage development banks and other institutions to support infrastructure connectivity through information sharing, project preparation and capacity building. In July, 2020, approved by the Board of the Directors, AIIB has become the trustee and the executive agency of the Centre’s projects and the associated fund, and will set up a secretariat to support the Centre’s operation. China, Egypt, Saudi Arabia, Hungary, Cambodia, and the Philippines have jointly committed to donate a total of USD 180.2 million to the MCDF fund. The Centre could be an opportunity for AIIB and China, together with seven other MDBs, to deliver transformational change in pro-poor, climate-resilient investment, through information sharing, project preparation and capacity building – e.g.:
- By designing and conducting transformational investment in system-level resilience, identifying systematic priorities and originating project pipelines for client states;
 - By exploring the feasibility of financing small-scale, pro-poor infrastructure projects in client states that meet the needs of the poor and climate-vulnerable groups.
- Fourthly, in view of AIIB’s Cities Strategy with its focus on resilience, AIIB is well positioned to engage with China to support the development of policy frameworks for building up the systemic climate resilience of cities, including through information sharing, policy dialogues, capacity building, and project finance.

5.5 Country-specific policy recommendations – The case of India

If AIIB is to play a leadership role in aligning its infrastructure investments with the Paris Agreement’s climate resilience goal, country-specific circumstances become very relevant.

India is well placed to deliver on the climate resilience goal as part of its commitments under the Paris Agreement and the Agenda 2030: Four out of its eight missions in the early National Action Plan on Climate Change (2007) were focused on resilience-building. These missions relate

¹⁸ http://www.china.org.cn/business/2019-04/26/content_74725509.htm

to sustainable agriculture, increasing water use efficiency, sustaining the Himalayan ecosystem, and creating sustainable habitats. India's NDC, as well, has a strong resilience focus. However, so far India has been promoting mostly mainstream projects. India delivered little in that regard, especially for the poor. Thus, India should revise its plans and better align them with pro-poor, climate-resilience principles, preferably with the support of MDBs, including AIIB. Prime Minister Modi's announcement of the Coalition for Disaster-Resilient Infrastructure (CDRI) in 2019 opens the door for such opportunities.

The screening of AIIB infrastructure investments in India across sectors, however, reveals that the current project portfolio does not contain transformational projects yet. Therefore, the AIIB, based on its alignment commitment, together with the Indian government, should in future prioritize projects that are truly adaptive, highly sustainable, and are also pro-poor in the sense that they take into consideration respective national contexts of socio-economic inequity. It is noteworthy that the ESF lays out many of these concerns (e.g. reference to climate proofing, vulnerable groups, safeguarding biodiversity etc.). But it is imperative that these criteria be translated into infrastructure that benefits the poorest and most vulnerable people, for whom resilience building matters the most.

A sectoral analysis of AIIB investments in India since 2016 leads us to various suggestions which will be presented in the following.

Energy sector: Create space and accelerate the promotion of decentralized energy systems

So far, energy projects prioritize renewable energy and energy grids. Traditional transmission and distribution infrastructure anchored around centralized fossil fuel-based power generation does not necessarily favour the poor and is not aligned with the mitigation and adaptation goals of the PA. The recent boom of renewable energies in India has led to massive investments in medium and large-scale wind and solar projects, which are of strategic importance to meet India's goal of installing 175 GW renewable energy by 2022. However, it is important to note that large-scale PV projects have implications for land acquisition by the state and corresponding land alienation of local landowners. As it is often the case, these large-scale projects, despite compensation for the land owners, can undermine long-term resilience of poor farmers and small land holders who have to forcefully give up their small parcels of land.

Increasing the renewable energy basket for a fast-growing economy like India is needed urgently and has to be encouraged, but in an even more balanced way than merely by promoting large-scale power plants or the recent extension to PV roof-top solutions. Decentralized renewable energies holds much mitigation potential as well, while also promising benefits local populations. They strengthen the resilience of the power generation system, the entire economy, and society during and after disasters. Studies indicate that states in India which are increasingly exposed to frequent disasters like floods, such as Assam, prefer to rely on decentralized solar systems for electricity generation. In this context, the proposed transmission and distribution project in Assam (which has been declared a flood-prone state) should be reviewed, as it undermines climate resilience, and contributes to growing emissions. Further, recognizing that these energy projects are all Category A projects – with very high social and environmental impacts – provides sufficient reason to consider alternatives in form of innovative, decentralized renewable energies. High priority should be given to energy projects in the following areas, for instance:

- Decentralised renewables, particularly mini grids across villages and sub-urban areas for electricity access
- Renewable energy applications in agriculture (including irrigation), food processing, and storage and distribution infrastructure
- Renewable energy generation for public healthcare institutions
- Biomass-based, energy efficient, clean cooking systems
- Renewable energy generation for cottage industries
- Decentralized waste-to-energy systems
- Sustainable / RE cooling of buildings, particularly cool rooms in villages and sub-urban areas for the health sector (vaccine storage, cool rooms for poor to avoid heat stroke, etc.), food sector (cool chains), but also for schools and public buildings

Water sector: Revive local and traditional water harvesting and management systems

Despite India's rich experiences with traditional water management systems, investments in water infrastructure for India as an already water-stressed-country, is vital for achieving its economic and social development goals in an ecologically sound, climate-resilient, and climate risk-preventive way. However, most large water infrastructure projects also bring about large displacements of poor and marginalized communities. The trade-off between building resilience and displacing communities and impacting local ecosystem must be addressed in a more thoughtful way. Local water management systems should be given priority, such as:

- Reviving traditional water systems for households such as rainwater harvesting and efficient water use
- Low-cost, low-emission, quality-guaranteeing drinking water technologies
- Low-cost, low-emission, efficient irrigation systems like drip irrigation
- Water-shed management
- Wastewater treatment
- Flood management systems at local level
- Water conservation and water harvesting systems for agriculture

Urban Sector: Sustainable urbanization in the context of changing realities

The urban sector requires special attention in view of the rapidly accelerating trend toward urbanization. The Covid-19 pandemic has revealed the stark reality of unsustainable cities. The key lesson from this experience is that if cities are to become viable, they need to place their

carrying capacity at the centre of the planning process. Large cities without proper infrastructure are unsustainable and pose severe risks to their citizens. Cities in India should be re-invented so that they offer livelihood opportunities and services that go beyond particular concentrated clusters (the so-called commercial business districts) and modern residential societies. In this context, there is a need to rethink the process of urbanization by placing greater emphasis on infrastructure development of satellite towns and smaller cities, while simultaneously improving the infrastructure in larger cities. Hence, some of the priority areas for infrastructure development in the urban sector may include:

- Integration of climate resilience in urban planning processes and any urban infrastructure
- Infrastructure development of satellite towns
- Climate-resilient and low carbon housing for the poor
- Public health infrastructure
- Upgrading infrastructure for public municipal schools and colleges
- Improved early warning and disaster management
- Sustainable mobility systems of public transportation, pedestrian and cycling pathways (see below)
- Rooftop renewable energy systems

Transport Sector: Resilience-building and low carbon mobility for all

So far, resilience-building in transport infrastructure as part of a holistic concept for sustainable mobility is largely missing. Instead, especially urban metro projects are promoted to ease the traffic flow in crowded cities. 40% of ongoing and planned AIIB investments in India are transport-related. Given the size and scale of these transport projects, the AIIB's approach to transport infrastructure has, on the one hand, severe construction-related environmental and social implications. On the other hand, it positively contributes to the improvement of urban public transport. It should be reviewed through the lens of future low-carbon mobility systems. Also, linear, metro-centric thinking needs to be reconsidered and tailored to the present and future climate challenges posed by India's variegated geographies. Imagination should be expanded in a way that includes improved means of mobility for the rural poor and people living in small towns where basic transport remains a challenge. So far, those spaces have been left almost untouched by AIIB's projects in India. Innovation through technologically advanced local transport systems which move people across geographical settings in a low-carbon and inclusive way, while safeguarding local environments is not yet present in the AIIB portfolio. Innovative projects may include:

- Low-carbon transport infrastructure not only in the megacities but also in smaller cities and even rural areas
- Last-mile connectivity projects

- Electric mobility, also for rural areas and small towns
- Pedestrian paths and cycling lanes
- Further research and development for holistic (low carbon, resilient, etc.) local transport systems.

Bibliography

- ADB, AIIB, EIB, IADB, EBRD, WB, IsDB, NDB, & AfDB. (2016). Statement by Multilateral Development Banks:** Delivering on the 2030 Agenda.
<https://www.worldbank.org/en/news/press-release/2016/10/09/delivering-on-the-2030-agenda-statement>
- ADB, AIIB, EIB, IADB, EBRD, WB, IsDB, NDB, & AfDB. (2018). The MDBs' alignment approach to the objectives of the Paris Agreement:** Working together to catalyse low-emissions and climate-resilient development.
<http://pubdocs.worldbank.org/en/784141543806348331/Joint-Declaration-MDBs-Alignment-Approach-to-Paris-Agreement-COP24-Final.pdf>
- AIIB. (2018a). Energy Sector Strategy:** Sustainable Energy for Asia.
<https://www.aiib.org/en/policies-strategies/strategies/sustainable-energy-asia/index.html>
- AIIB. (2018b). Sustainable Cities Strategy:** Financing Solutions for Developing Sustainable Cities in Asia.
<https://www.aiib.org/en/policies-strategies/operational-policies/sustainable-cities/index.html>
- AIIB. (2018c). Transport Sector Strategy:** Sustainable and Integrated Transport for Trade and Economic Growth in Asia.
<https://www.aiib.org/en/policies-strategies/strategies/transport-strategy.html>
- AIIB. (2019a). 2020 Business Plan and Budget Summary.** https://www.aiib.org/en/policies-strategies/_download/business-plan-2018/Summary-of-2020-Business-Plan-and-Budget.pdf
- AIIB. (2019b). Draft Water Strategy.** <https://www.globaleverantwortung.at/download/?id=2526>
- AIIB. (2019b). Environmental and Social Framework.**
<https://www.aiib.org/en/policies-strategies/framework-agreements/environmental-social-framework.html>
- AIIB. (2019c). Risk Management Framework.**
<https://www.aiib.org/en/policies-strategies/framework-agreements/risk-management-framework.html>
- AIIB. (2020a). Digital Infrastructure Sector Strategy.** AIIB's Role in the Growth of the Digital Economy of the 21st Century.
<https://www.aiib.org/en/policies-strategies/operational-policies/digital-infrastructure-strategy/index.html>
- AIIB. (2020b). Strategic Programing.** <https://www.aiib.org/en/policies-strategies/strategies/index.html>
- AIIB. (2020c). Water Sector Strategy.** https://www.aiib.org/en/policies-strategies/operational-policies/public-consultation-draft-water-sector-strategy/.content/_download/Water-Strategy-Final.pdf
- Big Shift Global Coalition. (2019).** Multilateral Development Banks fail to deliver on joint Paris Alignment promise at COP25. The Big Shift Global.
<https://bigshiftglobal.org/multilateral-development-banks-fail-deliver-joint-paris-alignment-promise-cop25>
- Caldecott, B. et al (2016):** Stranded Assets: A Climate Risk Challenge.
<https://lpdd.org/wp-content/uploads/2020/03/Stranded-Assets-A-Climate-Risk-Challenge.pdf>
- Chai, Q., Fu, S., Wen, X., & Zhong, Y. (2019).** 中国气候投融资发展现状与政策建议. 中华环境.
- China Industry Research. (2019).** 2020–2026 年中国海绵城市建设市场现状调研分析及发展前景报告 (Nr. 2378105).
<https://www.cir.cn/5/10/HaiMianChengShiJianSheShiChangXi.html>
- Climate Bonds Initiative, World Resources Institute, & Climate Resilience Consulting. (2019).** Climate Resilience Principles. A framework for assessing climate resilience investments.
<https://www.climatebonds.net/files/files/climate-resilience-principles-climate-bonds-initiative-20190917.pdf>
- DFID. (2012). Defining Disaster Resilience:** A DFID Approach Paper.
https://www.fsnnetwork.org/sites/default/files/dfid_defining_disaster_resilience.pdf

- DFID. (2020). Managing Climate Risks for Urban Poor – Project Data.**
<https://devtracker.dfid.gov.uk/projects/GB-1-203842>
- Dulal, H. B. (2019). Cities in Asia: How are they adapting to climate change?** *Journal of Environmental Studies and Sciences*, 9, 13–24.
- E&T Magazine (2012).** Top 20 cities vulnerable to climate change flooding – an annotated graphic. <https://engtechmag.wordpress.com/2012/11/06/top-20-cities-vulnerable-to-climate-change-flooding-an-annotated-graphic/>
- Eckstein, D., Künzel, V., Schäfer, L., & Winges, M. (2019).** Global Climate Risk Index 2020. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2018 and 1999 to 2018. Germanwatch e.V. https://germanwatch.org/sites/germanwatch.org/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020_10.pdf
- Economist Intelligence Unit. (2015).** The Cost of Inaction.
<https://eiuperspectives.economist.com/sustainability/cost-inaction/white-paper/cost-inaction>
- Fay, M., Iimi, A., & Perrissin-Fabert, B. (2010).** Financing greener and climate-resilient infrastructure in developing countries – Challenges and opportunities. 15(2), 34–58.
- Friends of the Earth (US). (2017).** Investing in a Green Belt and Road? Assessing the Implementation of China's Green Credit Guidelines Abroad. <https://foe.org/resources/investing-green-belt-road-assessing-implementation-chinas-green-credit-guidelines-abroad/>
- Global Commission on Adaptation. (2019).** Adapt Now: A Global Call for Leadership on Climate Resilience.
- Global Commission on the Economy and Climate. (2016).** The Sustainable Infrastructure Imperative: Financing for Better Growth and Development (The New Climate Economy).
http://newclimateeconomy.report/2016/wp-content/uploads/sites/4/2014/08/NCE_2016Report.pdf
- Green Climate Fund. (2019).** Adaptation: Accelerating action towards a climate resilient future. <https://www.greenclimate.fund/sites/default/files/document/accelerating-action-towards-climate-resilient-future.pdf>
- GreenovationHub. (2019).** Handbook on Environmental Risk Management Initiative for China's Overseas Investment.
<http://www.ghub.org/wp-content/uploads/2019/04/中国对外投资环境风险管理参考手册-.pdf>
- Hirsch, T., Ahmed, S. J., & Minninger, S. (2019).** Climate Risk Financing. A Brief Analysis of Financial Coping Instruments and Approaches to Close the Protection Gap (Nr. 87; Analysis). Bread for the World. https://www.brot-fuer-die-welt.de/fileadmin/mediapool/2_Downloads/Fachinformationen/Analyse/Analysis_87_Climate_Risk_Financing.pdf
- Hirsch, T., Bartosch, S., Anqui, Y., Hongyu, G., Menshova, J., Tiwari Padhi, A., Shamsuddoha, Md. (2019b).** Aligning the Asian Infrastructure Investment Bank (AIIB) with the Paris Agreement and the SDGs: Challenges and Opportunities.
https://germanwatch.org/sites/germanwatch.org/files/AIIB_Report_web_0.pdf
- Hirsch, T., Bijoy, Mi. R., Etubi, O. B., Imuton, L. K. J., Jiva, G., Masaba, A., Minninger, S., Mwanga, S., Orach, K., Rahman, M. M., Rajabu, W., & Schmidt, G. (2020).** Climate Finance for Addressing Loss and Damage (Nr. 91; Analysis). Bread for the World. https://reliefweb.int/sites/reliefweb.int/files/resources/ClimateFinance_LossDamage.pdf
- Hirsch, T., Minninger, S., Wirsching, S., Kreft, S., Künzel, V., Chinoko, V., Chhetri, R., Kassa, E., Lottje, C., Mandal, T., & Shamsuddoha, M. (2016).** Making Paris Work for Vulnerable Populations. Closing the Climate Risk Gap (Nr. 65; Analysis). Bread for the World. https://www.brot-fuer-die-welt.de/fileadmin/mediapool/2_Downloads/Fachinformationen/Analyse/Analysis_65_Making_Paris_work.pdf
- International Climate Initiative. (2018).** Guidelines on results-based project/programme planning and monitoring in the International Climate Initiative (IKI). https://www.international-climate-initiative.com/fileadmin/Dokumente/2018/20181004_Guidelines_on_project_and_programme_planning_and_monitoring.pdf

- IPCC. (2018).** Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf
- Moody's Investors Service. (2016).** How Moody's Assesses the Physical Effects of Climate Change on Sovereign Issuers. <https://www.eticanews.it/wp-content/uploads/2017/01/Moodys-climate-change-and-sovereigns-November-7.pdf>
- Opitz-Stapleton, S., Nadin, R., Kellet, J., & Watson, C. (2017).** Climate change, migration and displacement: The need for a risk-informed and coherent approach. <https://doi.org/10.13140/RG.2.2.27795.37925>
- People's Bank of China, China Ministry of Finance, National Development and Reform Commission, & Ministry of Environment Protection. (2016).** Guidelines for establishing the green financials system. https://www.chinadaily.com.cn/business/2016hangzhou20/2016-09/04/content_26692931.htm
- Peters, K., Langston, L., Tanner, T., & Bahadur, A. (2016).** Resilience' across the post-2015 frameworks: Towards coherence. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11085.pdf>
- PWC. (2018).** Seizing greenfield infrastructure opportunities in ASEAN. Infrastructure Series Report 2. <https://www.pwc.com/sg/en/publications/cpi-greenfield-infrastructure-opportunities.html>
- Raghu. (2020, Mai 10).** EIA Notification 2020: Not now, not ever! PeoplesDemocracy. https://peoplesdemocracy.in/2020/0510_pd/eia-notification-2020-not-now-not-ever
- Sichuan News Network. (2012, November 16).** 大力推进生态文明建设. 十八大报告全文摘要和解读. <http://scnews.newssc.org/system/2012/11/16/013671492.shtml>
- Standard & Poor's Ratings Services. (2015).** Climate Risk: Rising Rides Raise the Stakes (Insights). of Standard & Poor's Financial Services L.
- UN-DESA. (2014).** World Urbanization Prospects: The 2014 Revision, Highlights. United Nations.
- UN-DESA. (2018).** World Urbanization Prospects: The 2018 Revision. United Nations.
- UNFCCC. (2015).** Paris Agreement. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- UN-OHCHR. (2009a).** Report of the Office of the United Nations High Commissioner for Human Rights on the relationship between climate change and human rights. <https://www.ohchr.org/Documents/Press/AnalyticalStudy.pdf>
- UN-OHCHR. (2009b).** Climate Change and the Human Rights to Water and Sanitation. https://www.ohchr.org/Documents/Issues/Water/Climate_Change_Right_Water_Sanitation.pdf
- UN-OHCHR. (2014a).** Mapping Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment. Focus report on human rights and climate change. <http://srenvironment.org/sites/default/files/Reports/2018/ClimateChangemapping15-August.pdf>
- UN-OHCHR. (2014b).** The Right to Adequate Housing. Fact Sheet No. 21. https://www.ohchr.org/documents/publications/fs21_rev_1_housing_en.pdf
- USAID. (2012).** Climate Change & Development. Clean Resilient Growth. <https://www.climatelinks.org/sites/default/files/asset/document/PDACS780.pdf>
- USAID. (2015).** Working with Marginal Populations. An annex to the USAID Climate-Resilient Development Framework. https://pdf.usaid.gov/pdf_docs/PA00KPP9.pdf
- WBGU. (2016).** Humanity on the move: Unlocking the transformative power of cities. WBGU – German Advisory Council on Global Change. https://www.wbgu.de/fileadmin/user_upload/wbgu/publikationen/hauptgutachten/hg2016/pdf/hg2016_en.pdf

Weichelt, C.-L., & Perucca, J. (2019). The Nexus between the Right to Housing and Climate Change – Insights from the Climate Conference COP24 in Katowice, Poland. International Alliance of Inhabitants. [the_nexus_between_the_right_to_housing_and_climate_change_insights_from_the_climate_conference_cop24_in_katowice_poland](#)

Westphal, M., Sidner, L., Wings, M., & Fekete, H. (2020). Enhancing Adaption and Climate-Resilient Operations within the Multilateral Development Banks.

World Bank. (2016). Technical Deep Dive on Integrated Urban Flood Risk Management. Summary Report.
<http://documents1.worldbank.org/curated/en/953691492588097441/pdf/114350-WP-PUBLIC-IntegratedUrbanFlood-RiskManagementTechnicalDeepDiveSummaryReport.pdf>

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Germanwatch

Following the motto of Observing. Analysing. Acting. German watch has been actively promoting global equity and livelihood preservation since 1991. We focus on the politics and economics of the Global North and their worldwide consequences. The situation of marginalised people in the Global South is the starting point for our work. Together with our members and supporters, and with other actors in civil society, we strive to serve as a strong lobbying force for sustainable development. We aim at our goals by advocating for prevention of dangerous climate change and its negative impacts, for guaranteeing food security, and for corporate compliance with human rights standards. www.germanwatch.org/en

Climate & Development Advice

Climate & Development Advice is an international consultancy network specializing in climate and sustainable development issues. This includes research, policy analysis and advice, capacity development and the provision of guidance on how to innovatively solve questions related to transformational change. www.climate-development-advice.de/en

LAYA | INECC

LAYA works with the Adivasi communities on a range of initiatives that demonstrate an alternate paradigm to sustainable development.

To respond to the climate crisis, LAYA is constantly exploring and introducing climate-friendly, low emission technologies, which harness renewable resources to facilitate the wellbeing of Adivasis.

INECC is a national network of organizations and individuals who connect on the issue of climate change from the perspective of marginalised communities and works to bring their concerns into policy dialogues regionally, nationally and internationally. Its bye line is “People’s Voices in Policy Choices”. www.laya.org.in | www.inecc.net

CPRD

The Center for Participatory Research and Development (CPRD), one of the progressive think tanks in Bangladesh, is engaged in research and political advocacy aiming at directing global climate policies and associated investments towards achievement of the Paris Agreement goals with regard to climate justice, as well as reduced inequality and vulnerability. www.cprdbd.org

Greenovation Hub

Greenovation Hub is an environmental Think-Do organization with a global outlook. We promote the development and implementation of sound climate and environmental friendly policies through conducting in-depth analysis and research, and fostering dialogues among stakeholders, in order to drive China’s green transition towards a sustainable, equitable and climate resilient future, contributing to the reduction of global ecological footprint. www.g-hub.org