The Adaptation Finance Gap Update - with insights from the INDCs

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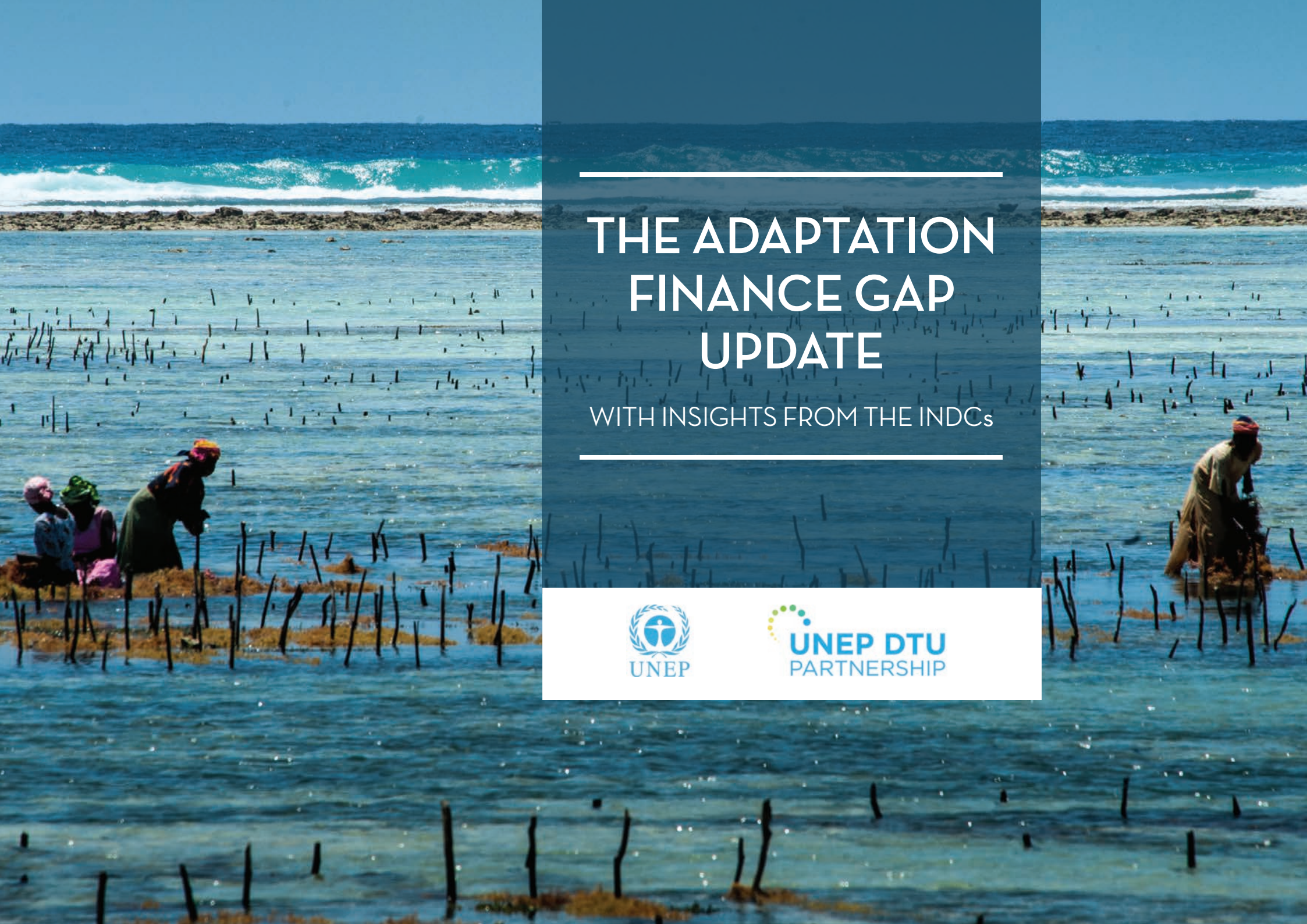

THE ADAPTATION FINANCE GAP UPDATE

WITH INSIGHTS FROM THE INDCs

UNEP

UNEP DTU PARTNERSHIP

ACKNOWLEDGEMENTS

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The Adaptation Finance Gap Update builds upon the UNEP 2014 Adaptation Gap Report as well as on the preliminary findings from the 2016 Adaptation Finance Gap Report, with key contributions from: Aaron Atteridge (Stockholm Environment Institute), Florent Baarsch (Climate Analytics), Francesco Bosello (Fondazione Eni Enrico Mattei), Kelly de Bruin (Umeå University), Gisela Campillo (Organisation for Economic Cooperation and Development), Enrica de Cian (Fondazione Eni Enrico Mattei), Federica Cimato (Paul Watkiss Associates), Pradeep Kurukulasuriya (United Nations Development Programme), Joanne Manda (United Nations Development Programme), Stephanie Ockenden (Organisation for Economic Cooperation and Development), Pieter Pauw (German Development Institute), Michiel Schaeffer (Climate Analytics), Pieter Terpstra (Netherlands Ministry of Foreign Affairs), Chiara Trabacchi (Climate Policy Initiative), Lola Vallejo (Organisation for Economic Cooperation and Development), Paul Watkiss (Paul Watkiss Associates), and Charlene Watson (Overseas Development Institute).

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Audrey Janvier designed the print version of the report. The graphs were prepared by weeks.de. Frederiksberg Bogtrykkeri printed the report in Nordic eco label-certified paper. Caroline Schaer provided review comments on earlier versions of this document.

ABOUT THIS UPDATE

In 2014 the United Nations Environment Programme (UNEP) published its first global Adaptation Gap Report (AGR 2014) (UNEP, 2014), which put forward a preliminary framework for assessing adaptation gaps along with an initial assessment in three selected areas: finance, technology and knowledge. Further to the positive reception of this report, several countries requested UNEP to produce follow up reports focusing on specific adaptation gaps. In response to these requests, UNEP has commissioned a new report with a special focus on finance gaps and options to bridge them. The report will be published in the spring of 2016.

This update is intended as an input to discussions at the 21st session of the Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change (UNFCCC). It brings together key findings on adaptation costs and finance from AGR 2014 and preliminary findings from the 2016 assessment. Furthermore, it draws on insights concerning adaptation costs and related finance needs, as stated in the adaptation components in the Intended Nationally Determined Contributions (INDCs) – the post-2020 climate actions that countries intend to undertake following a new global agreement on climate change.

The Sustainable Development Goals and the anticipated global agreement on climate change provide a new platform for enhanced climate change action

The year 2015 has witnessed significant efforts by the global community to put in place new frameworks to address two of the defining challenges of our time: sustainable development and climate change. In September 2015, the 193 Member States of the United Nations unanimously adopted a new sustainable development agenda, which has at its core a set of 17 Sustainable Development Goals, including climate change, to be achieved by 2030 (UN, 2015). In December 2015, countries will convene again at COP 21 in Paris, with the aim of establishing a new global agreement on climate change (hereafter the Paris Agreement) that can limit increases in global average temperatures to below 2°C or 1.5°C, compared to pre-industrial levels. Adaptation to climate change is now firmly on the national and international political agendas, and in the run up to COP 21 there have been repeated calls for a balance between mitigation and adaptation. Adaptation is thus expected to form an important part of the Paris Agreement. In addition, a number of key decisions are anticipated alongside finance, technology and capacity building.

Unprecedented broad engagement in developing Intended Nationally Determined Contributions

The Intended Nationally Determined Contributions (INDCs) form an important basis for negotiating the Paris Agreement. Reiterating the calls made in 2013 (UNFCCC, 2013), the Lima Call for Climate Action (UNFCCC, 2014) invited all convention parties to consider communicating their undertakings in adaptation planning or consider including an adaptation component in their INDCs. Although the Lima Call for Climate Action (UNFCCC, 2014) proposed some informational elements, it did not specify a reporting format (including, for example, timeframes, visions, goals, targets or indicators) for the adaptation components in an INDC. It has therefore been at the discretion of countries to interpret the role of their adaptation components in accordance with national priorities.

During 2015, parties to the convention have shown unprecedented broad engagement in developing INDCs, including both mitigation and adaptation. By 1 October 2015, an impressive 119 INDCs[1] representing 147 countries had been submitted. Of these, all include components on mitigation[2] and more than 80 per cent (97 submissions) include explicit adaptation components (UNFCCC, 2015a). Figure 1 shows the number and share of countries that have submitted INDCs including adaptation components out of the total number of countries in different income groups. It indicates that the majority of INDCs including adaptation components came from middle and low income countries, with only a handful submitted by high income countries. Furthermore, it highlights that the percentage of countries within an income group that have submitted an INDC containing an adaptation component decreases for higher income groups. Two UNFCCC parties (the EU and the USA) have submitted undertakings on adaptation separately (UNFCCC, 2015b), while two more (New Zealand and Norway) communicated their undertakings in adaptation planning by referring, in their INDCs, to chapters in their national communications (UNFCCC, 2015a).

There is increasing attention to adaptation and adaptation gaps – including in the INDCs

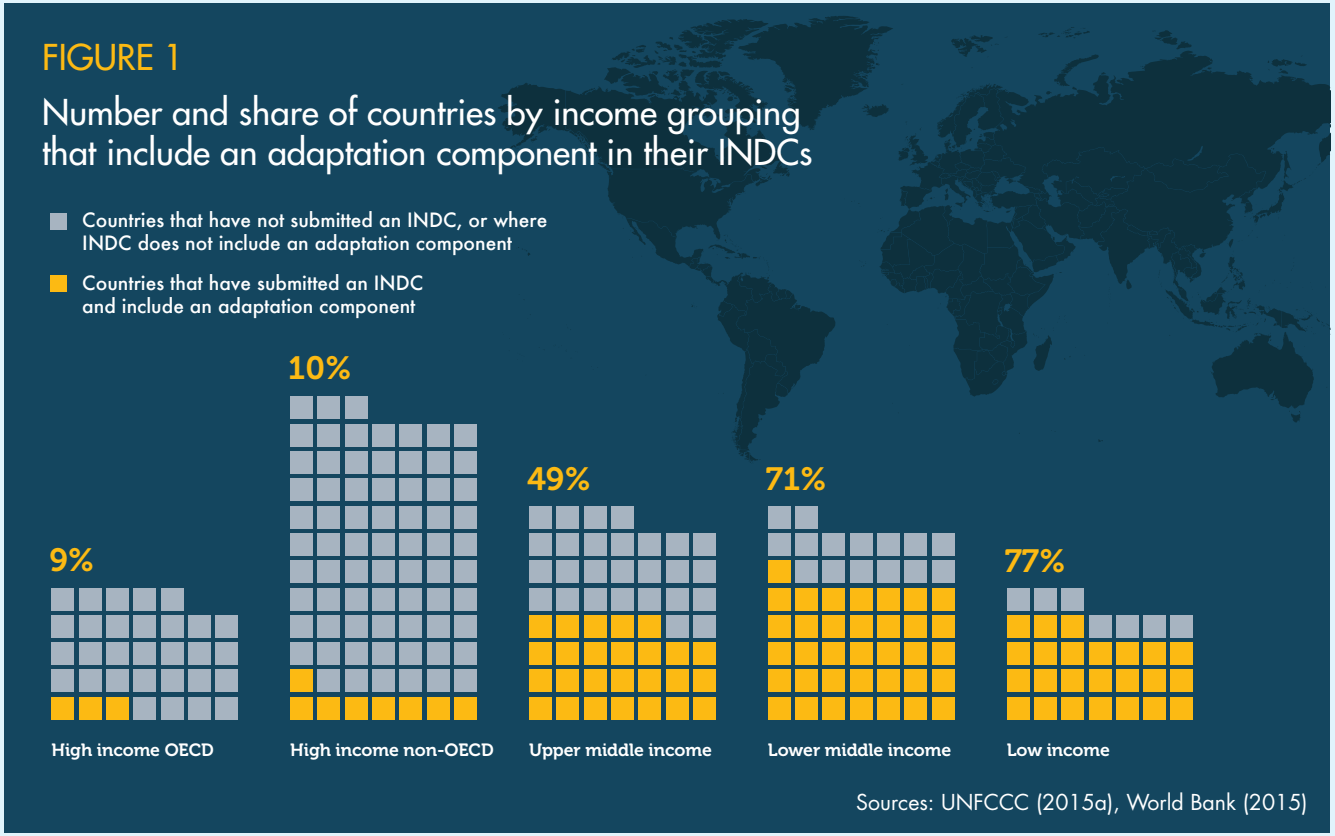
The increased attention to adaptation referred to above has been accompanied by a growing awareness about the gap between where we are (achievements) and where we want to be (needs) in terms of climate change adaptation (Box 1).

1 Counting the EU as one.

2 Covering 85-88 per cent of global greenhouse gas emissions in 2012 (UNEP, 2015).

FIGURE 1

Number and share of countries by income grouping that include an adaptation component in their INDCs



Sources: UNFCCC (2015a), World Bank (2015)

Countries are already facing considerable challenges in adequately responding to current climate variability and extremes. Furthermore, even if emissions of greenhouse gases were stabilized at levels consistent with the ultimate goal of the UNFCCC, the risks, impacts and costs of climate change are expected to increase significantly in coming decades. In other words, there is a need for enhanced action to respond to existing, as well as future, adaptation gaps. The AGR 2014 argued that adopting a strategic framework for adaptation with clear goals and targets would help set the stage for, and track progress of, adaptation at local, national and international levels – including under the UNFCCC. In this context, the AGR 2014 advocated for the adoption of an adaptation gap approach – with its focus on targets as well as on the potential for, and limits to, adaptation.

Many of the adaptation components in the INDCs include specific qualitative and quantitative targets for adaptation in key sectors and for key vulnerabilities that are of interest in relation to discussions under the UNFCCC. However, it should be noted that countries have chosen different points of departure and used different definitions and assumptions in the development of the adaptation components in their INDCs. This limits the extent to which information in the adaptation components can be compared and aggregated.

The following paragraphs provide an update of key messages from AGR 2014 regarding the costs of adaptation, the finance available to meet those costs and the likely gap between the two. These findings are supplemented with information from the adaptation components in the INDCs.

The costs of adaptation in developing countries are significant and increasing, and call for immediate enhanced mitigation action

Earlier global estimates of the costs of adaptation are likely to be significant underestimates and there is scope for improving their robustness and comparability

The Fifth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) (Chambwera et al., 2014) reported global estimates of the costs of adaptation in developing countries of between US$70 billion and US$100 billion per year in the period between 2010 and 2050[3]. These estimates are based on global scenario-based sectoral integrated assessment modelling. The IPCC report notes that there is low confidence in these estimates because there is compelling evidence pointing to important omissions and shortcomings in the data and methods. In line with other studies (see for example Parry *et al.*, 2009), the AGR 2014 suggested these estimates represent a significant underestimate, particularly for the period after 2030. Based

3 These estimates are largely based on a study by the World Bank (WB, 2010).

BOX 1

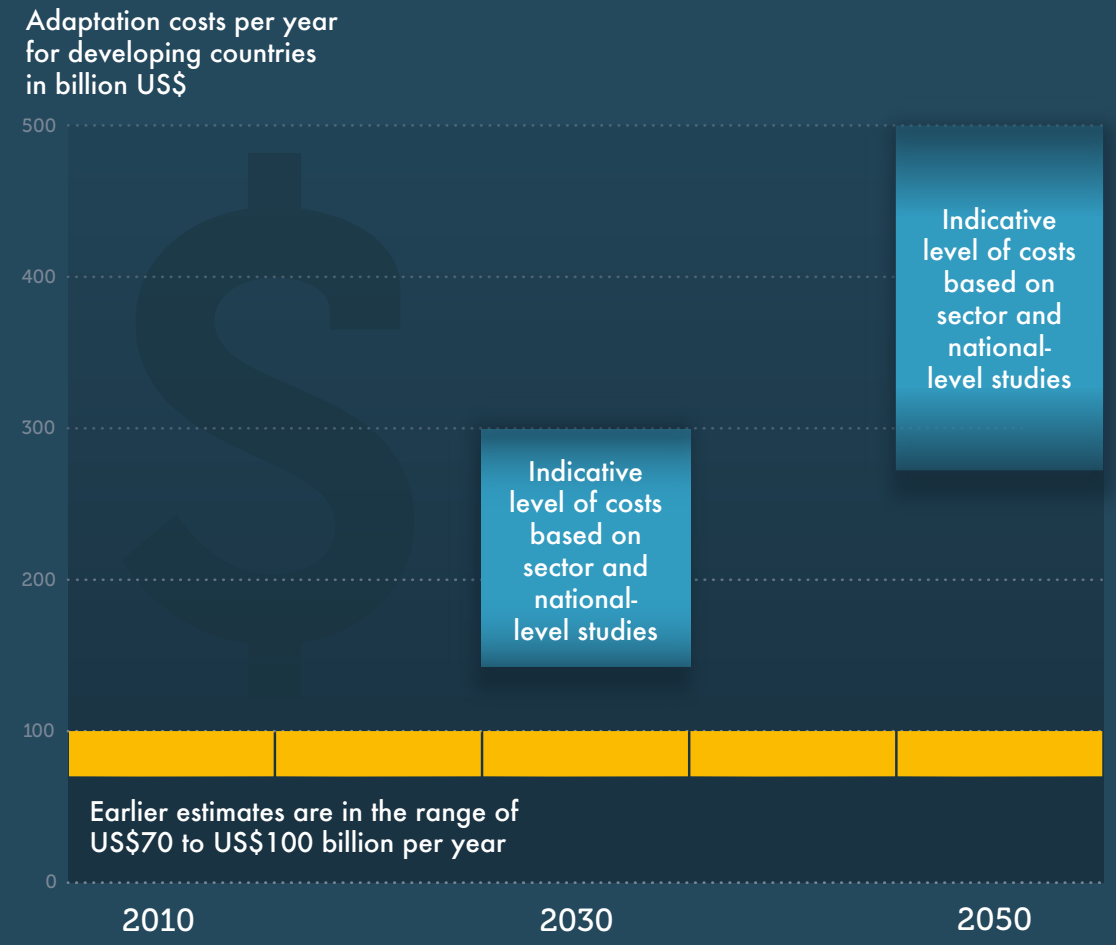
Adaptation gap definitions

The **adaptation gap** can be defined generically as the difference between the level of adaptation actually implemented and a societally set target or goal, reflecting nationally determined needs related to climate change impacts, as well as resource limitations and competing priorities.

The **adaptation finance gap** can then be defined and measured as the difference between the costs of meeting a given adaptation target and the amount of finance available to do so. Assessment of the adaptation finance gap is facilitated by the availability of a common monetary metric. However, it must be noted that finance is a means rather than an end – availability of funds does not guarantee that such funds are used efficiently and effectively to increase climate resilience and reduce vulnerability.

FIGURE 2

Global estimates of the costs of adaptation up to 2050



Source: UNEP (2014)

on an assessment of national and sector studies, the AGR 2014 indicated that by 2030 the costs of adaptation could be two to three times higher than the range cited in the IPCC, and plausibly four to five times higher by 2050 (UNEP, 2014). This is illustrated in Figure 2. Preliminary findings of the forthcoming 2016 Adaptation Finance Gap Report reinforce the validity of these estimates and, furthermore, indicate that costs may be even higher than reported in AGR 2014.

The wide range of estimates of the costs of adaptation reflects major differences in objectives, methods, assumptions and coverage across studies. Adaptation costs also vary across regions, because future impacts are location specific. Nonetheless, there are some factors and choices that can help to explain the large differences found between older aggregated studies and more recent national and sector-based assessments. Box 2 provides a brief summary of some of these. The forthcoming 2016 Adaptation Gap Report goes into further detail in assessing these factors.

Enhanced mitigation action is essential to limit adaptation costs

The AGR 2014 presented new integrated assessment modelling projections to indicate possible global adaptation costs under different future greenhouse gas emission scenarios. A key finding was that adaptation costs are emissions dependent even in early decades. The analysis found that adaptation costs increase quickly un-

BOX 2

Key factors that influence adaptation cost estimates and explain differences between them

Estimates of the costs of adaptation are influenced by the goal or target chosen, and the degree of trade-off between the impacts of climate change, the costs of adaptation, and the residual costs after adaptation. This choice involves perspectives on economic efficiency versus equity.

The costs of adaptation depend on the coverage of sectors and risks: more comprehensive studies will produce higher adaptation cost estimates.

Cost estimates differ with the future emissions pathway and associated projected temperature increases. Estimates are higher, even in early years, for higher warming scenarios. Costs also increase if uncertainty from future warming scenarios and climate model uncertainty is considered. However, costs are also influenced by future socio-economic development, and this can reduce future costs in some cases.

There will be limits to adaptation and the potential for adaptation to substitute for mitigation. Potential limits include physical and ecological limits, technological limits, financial barriers, information and cognitive barriers, and social and cultural barriers. These are not yet factored into cost estimates and have the potential to increase the estimates, though the knowledge base, and thus the scale of the effect, is largely unknown.

Costs are determined by the existing adaptation gap, which is higher in developing countries. The costs of addressing this gap may not be classified as adaptation only as there are significant overlaps with development. However, unless they are tackled first, they reduce the effectiveness/increase the costs of adaptation.

So far, the primary focus has been on assessing the costs of planned proactive adaptation, primarily undertaken by the public sector. This excludes or omits household or private adaptation: inclusion of this autonomous adaptation increases the estimated costs of adaptation, potentially very significantly.

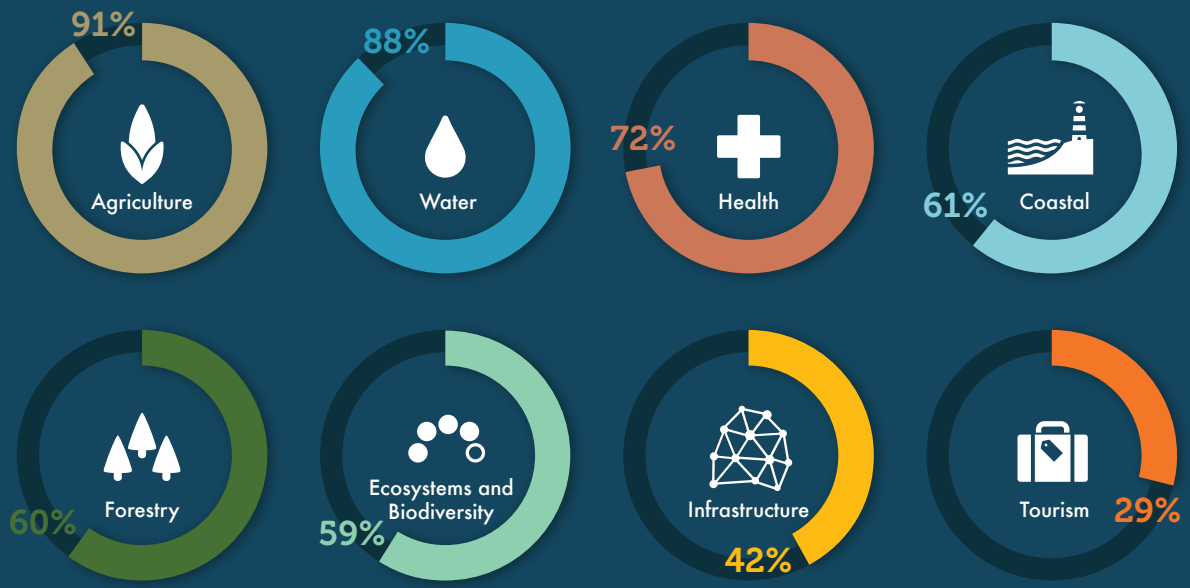
Most current studies are based on technical (engineering) costs. Analysis shows these underestimate costs due to various opportunity and transaction costs. There are also additional costs associated with implementation due to governance challenges. Countering this, non-technical options, learning and innovation all have the potential to reduce future costs.

der higher-emission scenarios. By 2050, costs under a 4°C emissions pathway could be double those of a 2°C stabilization pathway. Moreover, adaptation costs for different future emission scenarios could start to diverge from as early as 2020. These findings are highly relevant in light of the findings of the new Emissions Gap Report (UNEP, 2015): this report concludes that full implementation of the mitigation components in the INDCs is most consistent with long-term scenarios that limit global average temperature increase to below 3-3.5°C by the end of the century (with a greater than 66 per cent chance).

Sectoral coverage in global and country-level studies is improving but major gaps remain – also for sectors prioritized in the INDCs

FIGURE 3

Key adaptation sectors prioritized in the INDCs



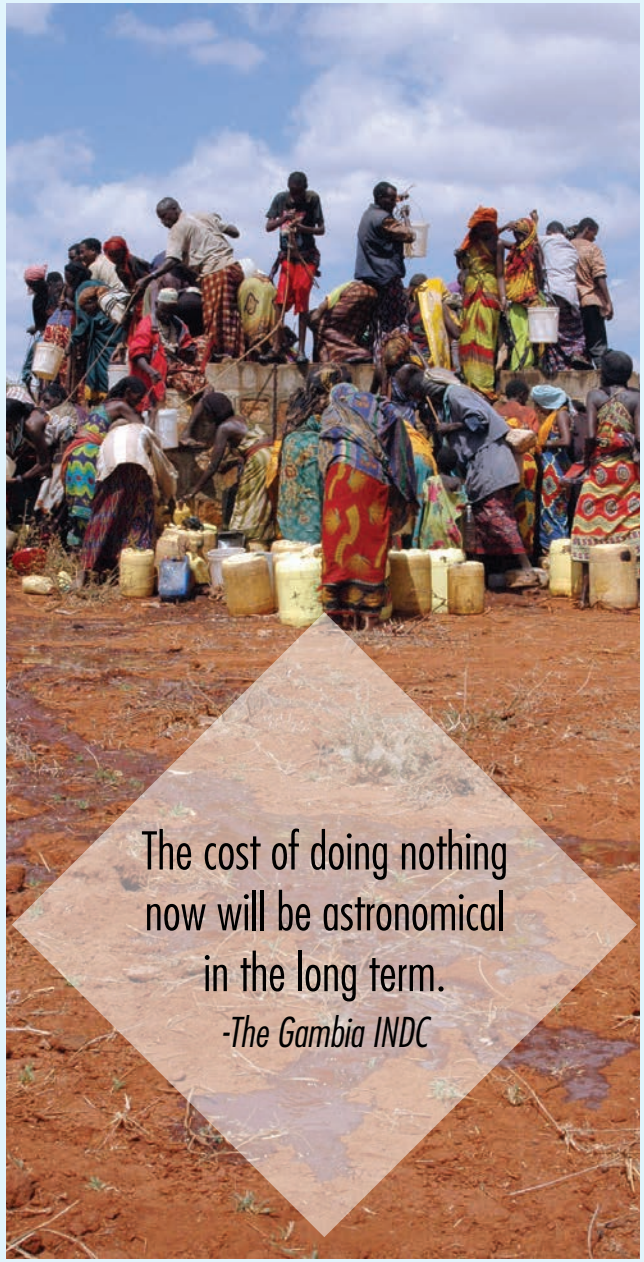
Source: UNFCCC (2015a)

The most comprehensive information on the costs of adaptation is for coastal zones and agriculture. Preliminary findings of the 2016 Adaptation Finance Gap report show that, while sectoral coverage is expanding, major gaps still remain in several other areas, notably for biodiversity and ecosystem services. Furthermore, even in areas with high coverage, such as coastal protection, there are still important risks that are not covered, for example, changes in sea surface temperature and ocean acidification. Figure 3 shows which sectors have been specifically highlighted for adaptation action in the INDCs. Each INDC highlights multiple sectors as key recipients for adaptation action, with the majority of commitments and needs being expressed in the agricultural sector, followed closely by the water and health sectors.

However, it is apparent from the sectors highlighted in the INDCs that more needs to be done on estimating the costs for the water and health sectors, in order to arrive at a more robust estimate of adaptation costs. Furthermore, the lack of reliable cost estimates in other key sectors, such as ecosystems and biodiversity, is a matter of significance given that over half of the adaptation INDCs articulated this as a significant sector.

INDCs confirm that countries anticipate significant adaptation costs and highlight a need for improved cost studies

Of the 97 adaptation components in INDCs submitted by 1 October, 52 (all by non-annex I devel-



oping countries) include quantification of adaptation costs and financing needs. Most of the needs expressed refer to the period 2015-2030. In most cases the coverage of the reported costs and finance needs is unclear, whereas in other cases only selected risks for a few specific sectors are included. Interestingly, the 12 countries that break their adaptation costs down by sector estimate that costs for the water and coastal sectors are two to three times higher than the cost estimates for other sectors.

The estimates reported only cover a subset of all developing countries. They are thus of a partial and highly preliminary nature. Nonetheless, they signify that developing countries currently experience and anticipate considerable adaptation costs. It is also apparent that most countries find it difficult to measure and produce reliable adaptation cost estimates, and that additional support would enhance the robustness and comparability of cost estimates.

Adaptation finance flows have increased, but current levels fall short of adaptation needs

The previous section illustrates that adaptation is associated with significant costs and that these are expected to increase substantially in the coming decades. To assess whether an adaptation finance gap exists now and is likely in the future, information about the availability of adaptation finance is needed. Adaptation finance originates from four basic sources: national or international budgets, and public or private sector sources. These are discussed in more detail below.

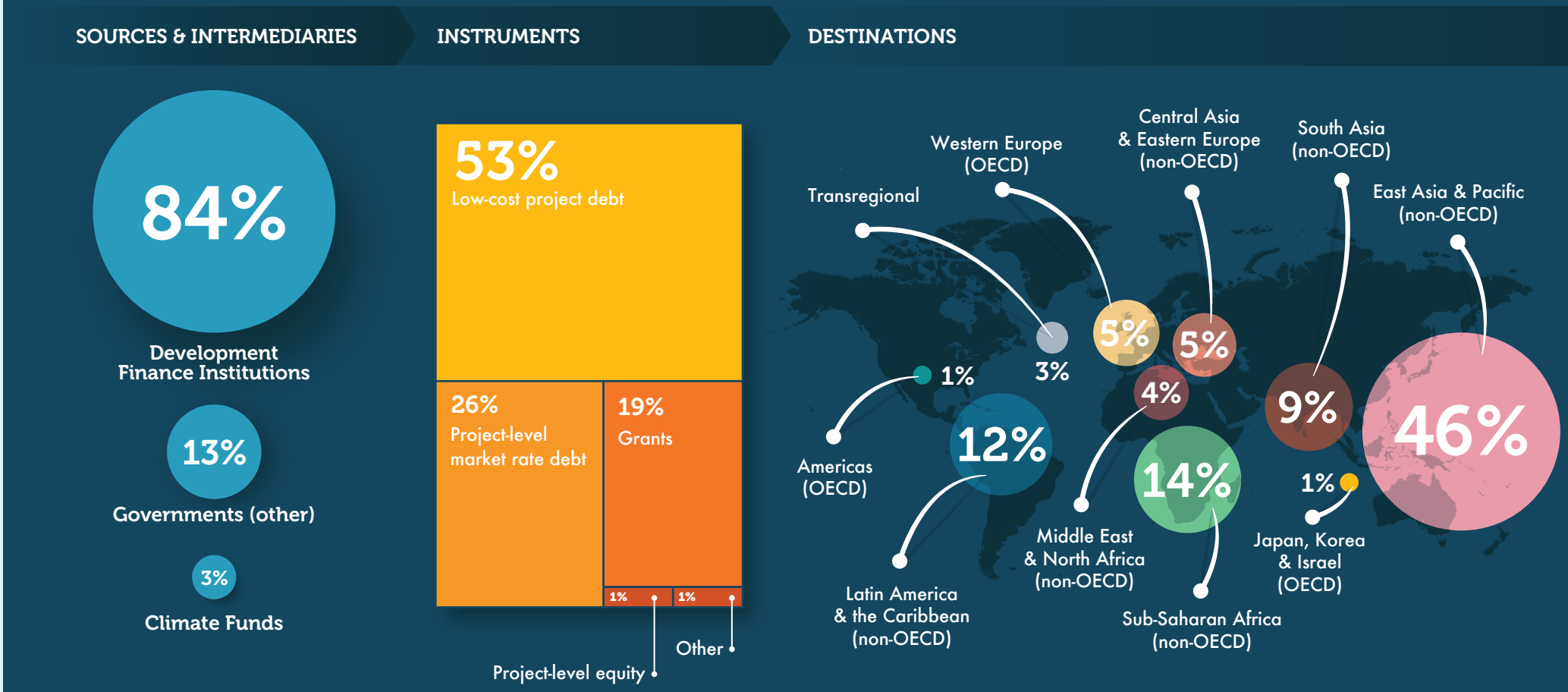
International public finance for adaptation has grown and is increasingly mainstreamed into development

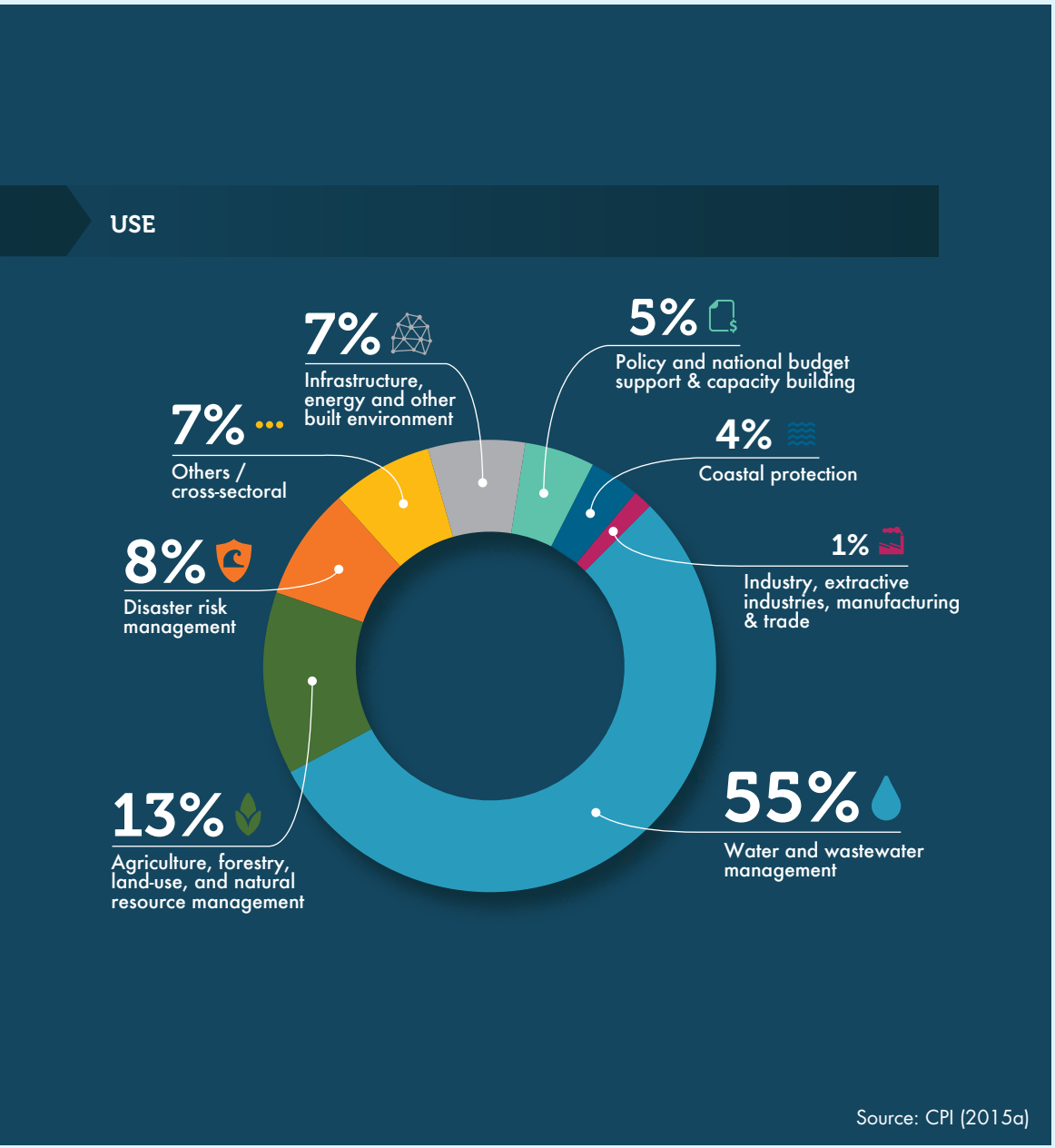
Comprehensive data on adaptation finance is currently only available for international public finance. According to the Global Landscape of Climate Finance project (CPI, 2015a), the amount of public finance committed to activities with explicit adaptation objectives reached US$25 billion in 2014, of which 90 per cent was invested in developing countries. This is roughly the same total and percentage as reported in AGR 2014 for 2013. The total amount comprises Official Development Assistance (ODA) and non-ODA finance by governments; Climate Funds; and Development Finance Institutions (DFIs), and reflects increased mainstreaming of adaptation in development.

Figure 4 provides an overview of the sources and intermediaries of international public finance committed in 2014 to activities with explicit adaptation objectives; how these funds were distributed between instruments; where they flowed to; and to which uses. As illustrated in the figure, DFIs contributed 84 per cent, or US$21.1 billion to the

FIGURE 4

A global overview of climate adaptation finance flows in 2014





2014 total. Bilateral adaptation-related aid commitments by member countries of the Organization for Economic Co-operation and Development (OECD) provided 13 per cent, while the remaining 3 per cent came from adaptation-dedicated climate funds. Most of the funds (53 per cent) were in the form of low-cost project debt, followed by market-rate project debt (26 per cent) and grants (19 per cent).

The figure also shows that 46 per cent of the finance flowed to East Asia and the Pacific, 14 per cent to Sub-Saharan Africa, and 12 per cent to Latin America and the Caribbean. Water and wastewater management received more than half of the finance, whereas merely 13 per cent was directed to agriculture, forestry, land-use, and natural resource management, and 4 per cent to coastal protection. As such, there seems to be relatively limited alignment between the uses that international public finance supports, and the sectoral estimates of costs, as well as sectors prioritized in the adaptation components in the INDCs. Some sectors prioritized in the INDCs, such as health, ecosystems and tourism do not appear to benefit from the finance flows summarized in Figure 4.

Better data is needed to establish a credible picture of the size of national public adaptation finance

For national public finance, comprehensive data tracking mechanisms are not in place in developing countries, nor is there a common methodology for governments to use. Countries have recently begun to assess national budgets as sources of adaptation finance, and evidence based on analyses of budgeted expenditure highlights that financing for adaptation from domestic budgets ranges from 0 to 12 per cent (CPEIR, 2015).

Private sector financing for adaptation is likely to play a key role, but flows are difficult to track

Given the magnitude of the adaptation costs and the associated finance needs, there is increasing attention to the potential role of the private sector in adaptation finance. It is often emphasized that private actions and private finance can support climate adaptation and climate resilience, from the level of large enterprises and small local businesses, to the household level. However, little is currently known about the scale of these finance flows, as they are inherently challenging to track and tracking methodologies are still under development (CPI, 2015c).

Depending on the extent to which resilience is incorporated in the investment planning process, private sector investments can reduce or increase vulnerability to climate change. For example, expanding sewage networks can reduce vulnerability to floods, whereas insufficient drainage in newly urbanized areas may make those areas more prone to flooding. Therefore, the extent to which private sector financing contributes to increasing resilience to climate change has to be viewed from an integrated point of view – that is, by examining net impacts and taking into account potential unintended negative impacts, often referred to as maladaptation.

Despite these challenges, it seems clear that much of the financing for adaptation is likely to

be private, a trend that is expected to become more marked in the future, in light of the constraints on public funds and the magnitude of the anticipated costs.

At present, the adaptation-specific shares of foreign direct investment, private debt and remittances, and domestic private investment flows are not tracked. However, some trends are emerging:

- The total universe of climate-aligned bonds outstanding since January 2005 is US$597.7 billion globally (CBI, 2015). Of these, approximately US$12.6 billion have been used to invest in sectors that are directly relevant to adaptation, such as water, waste management, agriculture and forestry. While the growth of the green bond markets is encouraging, questions remain as to the degree to which green bonds raise new climate finance or just re-package existing financial products. In addition, definitional questions on what constitutes a green bond will need to be addressed if this instrument is to contribute meaningfully to climate finance.
- Remittances may be valuable from an adaptation perspective because they tend to increase in cases of catastrophic weather events and natural disasters in migrants' countries of origin (Bendandi and Pauw, *forthcoming*). Furthermore, remittances reach households directly, including those in remote and vulnerable areas, more so than public finance flows.
- Domestic investment levels are rising in micro- and small-sized enterprises in developing countries. Since these enterprises are especially active in agriculture, a sector that is particularly sensitive to climate change, developing country domestic private investment for adaptation may also increase (WB, 2012).

It is, however, broadly recognized that public finance and appropriate policies are needed to fully realize the potential role of private finance for adaptation.

Public funding and government intervention are critical to mobilize additional private sector adaptation finance

Government intervention can play a key role in removing barriers to private sector investment. For example, in the infrastructure sector, where climate resilient investments have high upfront capital costs, low returns and long investment timelines, public funds would be expected the play a major role in addressing market failures and removing barriers to private sector investment. Some government interventions will be of a regulatory nature, restricting certain types of investments and/or promoting those that increase resilience. For example, the European Union's Water Framework Directive introduces legally binding requirements on private sector actors with regard to adaptation-relevant investments.

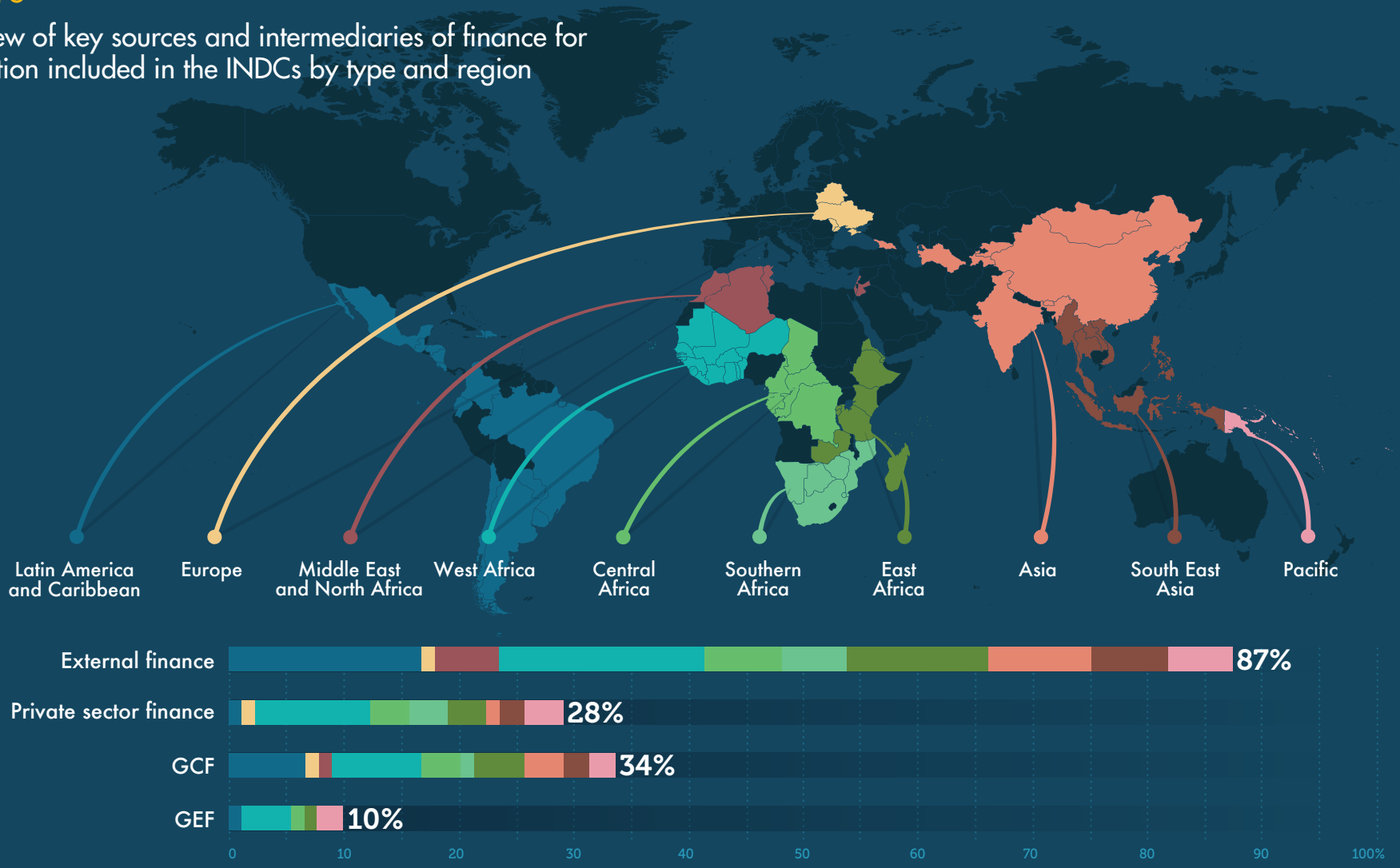
Complementing regulatory approaches, governments can provide information that reduces both perceived and actual investment risks. Of particular relevance is the provision of data on local climate change projections, or the availability of tools to evaluate risks. Similarly, development finance institutions increasingly rely on market and feasibility studies to engage private sector actors in the projects that these institutions develop.

Development banks in particular have the capacity to leverage large amounts of private sector financing. They do so by offering access to finance at adequate terms and conditions, as well as risk management measures that respond to the concerns of potential investors. For example, some development finance institutions are beginning to work with the supply chains of small- and medium-sized enterprises, to reduce credit default risks (CPI, 2015b). It is worth noting that, in recent years, development banks have increased the participation of private sector entities in their adaptation portfolios (CPI, 2015a).

In sum, public funding and government intervention is indispensable for mobilizing additional private finance for adaptation. This is all the more necessary in sectors where markets do not exist – notably in relation to ecosystem services – and where, from the point of view of adaptation, markets fail to reflect the true costs to society of certain goods and services. These issues are particularly challenging in least-developed countries, which are those most at risk from climate change.

FIGURE 5

Overview of key sources and intermediaries of finance for adaptation included in the INDCs by type and region



Source: UNFCCC(2015a)

Adaptation finance in the INDCs reflects a broad range of sources, while highlighting the need for international finance

Common across the adaptation components in the INDCs is that adaptation and climate resilience is a high priority that is inextricably linked to development. As a reflection of this, the majority of countries include unconditional commitments linked to national finance. The importance of national finance is consistently highlighted in the INDCs, with most developing countries pledging domestic support for adaptation via a range of different mechanisms, including national budgets, insurance, and low-interest loans, as well as the pursuit of a variety of investment strategies, such as the creation of national funds to mobilize additional finance and engage the private sector.

Nevertheless, most countries with an adaptation component in their INDC also include conditional commitments for adaptation finance. Conditional commitments are tied to international financing, mainly through multilateral and bilateral aid budgets, private sector finance, and access to the Green Climate Fund (GCF) or the Global Environment Facility (GEF). Figure 5 summarizes, by region, the key financing sources referenced in the INDCs. It shows that external financing for adaptation is requested in 87 per cent of INDCs from all ten regions, that 34 per cent plan to turn to the GCF for adaptation finance, and that 28 per cent reference the need for more private sector investment in adaptation.

A major adaptation finance gap is likely: enhanced emission reductions can reduce its size, and scaling up both public and private sources of finance is required to bridge it

There is likely to be a major adaptation fincance gap, particularly after 2020, unless new and additional finance for adaptation becomes available. This conclusion from AGR 2014 is confirmed by the preliminary findings of the forthcoming 2016 Adaptation Finance Gap Report, and is supported by the information on adaptation costs and needs provided by countries in the adaptation components of their INDC.

An assessment of national- and sector-level studies shows that adaptation costs in 2030 are likely to be in the range of US$140-300 billion per annum, whereas international public finance for adaptation in 2014 was around US$25 billion. Although the two figures are for different points in time and, therefore, not directly comparable, they illustrate that the total finance for adaptation in 2030 would have to be much greater (very roughly by an order of magnitude) than the current level of international public adaptation finance, if there is to be no adaptation finance gap in 2030. In 2050, total costs could be in the range of US$280-500 billion, and the potential finance gap consequently much larger.

Since adaptation costs are emissions dependent, they could be up to twice as high by 2050 under a 4°C scenario, compared to a 2°C scenario, and possibly diverge as early as the 2020s. It follows that enhanced and immediate mitigation action is central to reduce climate impacts and adaptation costs to manageable levels.

Scaling up all sources of finance will be required to bridge the adaptation finance gap in 2020, 2030 and beyond. Current estimates of adaptation finance flows are partial, as data limitations and methodological challenges prevent the inclusion of private sector and domestic public finance for adaptation in developing countries. Their inclusion would enable a more robust estimate of the amount of finance flowing to adaptation, but would not change the conclusions regarding near- and longer-term adaptation finance gaps.

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