



Nordic Council
of Ministers



Mobilizing climate finance flows

Nordic approaches and opportunities

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Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland, and Åland.

Nordic co-operation has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

Nordic co-operation seeks to safeguard Nordic and regional interests and principles in the global community. Shared Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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Foreword

The Paris Agreement was the culmination of many years of climate negotiations. The Agreement entered into force in less than a year, thus demonstrating strong political commitment. The long term goals of the Paris Agreement have significant implications for finance. Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development is a major undertaking that requires efforts from both public and private institutions and actors. It also requires a paradigm shift in thinking – the global clean energy transition is here to stay and investing in clean energy makes good economic sense. At the same time, there is an increasing need to cope with and adapt to the impacts of climate change.

The importance of climate finance is clear in the post-Paris world. Public finance and policy interventions are used to mobilize private finance not just towards the USD 100 billion per year by 2020 mobilization goal, but also to contribute to the broader Paris goals. This in turn requires a holistic and integrated approach with increased focus on the enabling environment, capacity of communities and involvement of the private sector. With different country circumstances and climate impacts there can be no one-size-fits-all solution to mobilizing climate finance. Rather than everyone learning by doing on their own – there is much to be said for engaging and sharing knowledge among actors and stakeholders. This contributes towards building capacity in the international finance community and helps to ensure the involvement of a broad range of actions and actors in further climate finance efforts.

Gaia Consulting, NewClimate Institute and Stockholm Environment Institute have carried out this study for NOAK, a working group under the Nordic Council of Ministers. The aim of NOAK is to contribute to an ambitious and effective implementation of the UNFCCC and its Paris Agreement, with a Nordic perspective. To this end, the group prepares studies and reports, conducts meetings and organizes conferences supporting Nordic and international negotiators in the UN climate negotiations.

February 2017, Oslo

Peer Stiansen,
Chair of the Nordic Working Group for Global Climate Negotiations

Executive summary

The Paris Agreement entered into force in November 2016, at the end of another record breaking year with global mean temperatures reaching around 1° C above preindustrial levels. If the Agreement's goal to limit average global temperature increase to "well below 2° C" is to be met, all financial flows need to shift dramatically and rapidly from current investment patterns to 2° C compatible pathways (Article 2.1.c). This has major implications for finance institutions and actors globally, nationally and locally - both public and private.

This study analyses the roles that Nordic actors might play to help mobilize required flows of finance internationally, based on their experiences and mandates. It looks at potential constraints on scaling up both Nordic finance and its wider catalytic effect. It identifies options for removing key barriers and the particular value Nordic actors could jointly add. The focus thus extends beyond public climate and development finance, to also explore how private finance is being – or might be – activated.

The analysis and insights presented herein are based on a literature review, interrogation of data from the OECD Development Assistance Committee's Creditor Reporting System, over 40 in depth interviews with public, private and civil society knowledge holders in climate finance, and a workshop with over 70 representatives of climate finance actors with an interest in this field. To overcome some of the basic data deficiencies with respect to NDCs, this report uses case studies to explore more concretely what potential finance needs may be in different sector and country contexts.

Key findings

There are two main ways the Paris Agreement gives direction to the finance sector. The first is the Agreement's inclusion of targets for limiting global mean temperature rise to "well below 2° C target" which has major implications for the finance sector globally, *directing a radical and rapid shift in the way mainstream finance is directed through the global economy*. The second relates to commitments to provide support to developing countries specifically, where the Agreement reaffirms the *leading role of developed countries to mobilize climate finance from a variety of sources*, highlighting in particular "the significant role of public funds" for the mobilization of private support. Although the actual scale of finance is not concretised, the Agreement stresses the importance of scaling up the volume of climate finance, and also highlights the need for a mitigation/adaptation balance which implies that *financial support for adaptation and resilience building in particular needs to scale up dramatically*. In addition, *transparency and predictability in the provision of support*, not only finance but also *technical support and capacity building*, are stressed as key elements underpinning the Agreement.

The (Intended) Nationally Determined Contributions ((I)NDCs) submitted by countries were a critical enabler for the Paris success, and form one of the cornerstones of the Paris Agreement. However, in their current form the *(I)NDCs present broad political commitments and include only limited and sketchy information on actual climate compatible investment priorities and support needs* (chapter 2). Other climate related strategies and programmes (e.g. national development strategies, NAMAs, NAPAs or NAPs, climate resilient green growth strategies, and national Agenda 2030 & SDG strategies) can provide important elements and a first step towards defining the required priority investment programmes, as well as enabling environment reforms. From a mobilization perspective, it is crucial to recognize that barriers to climate action and investment are diverse, and are country and sector specific. Removing barriers in most cases requires a suite of interventions, involving different finance instruments as well as policy certainty (Appendix 2).

The Nordic countries have several opportunities to be a driver of accelerated action for mobilizing climate finance for developing countries. This study (chapters 3–4) identifies a number of Nordic actors, both public and private, as well as a variety of instruments and approaches that can help deliver on the wider objectives of the Paris Agreement and help accelerate the financial flows that the Agreement implies. The opportunities are to:

- Build directly on the experience of existing joint Nordic finance institutions (including the Nordic Investment Bank, the Nordic Development Fund and the Nordic Environment Finance Corporation) and national Development Finance Institutions (including Norfund, Swedfund, IFU and Finnfund) with mandates that are broadly conducive to the Paris Agreement but still reveal major opportunities for further mobilization.
- Build on national and joint Nordic strengths in traditional development cooperation, with Nordic countries contributing almost 10% of global climate-related ODA and being recognized for matching well the needs expressed by developing countries and appreciated for the “Nordic way of working and collaborating” with countries.
- Build on the experiences of a number of finance sector forerunners, including pension funds and banking sector actors, that have made major investments and/or commitments to climate compatible investments, also in developing countries.
- Build on a broad range of tested and internationally competitive Nordic climate technologies and solutions developed by the private sector and/or through public-private partnerships that can enable effective climate investments in a number of key sectors.
- Build on decades of collaboration between Nordic institutions and actors, including a number of high-level initiatives in the past 10 years with a particular focus on joint Nordic Climate Solutions.

The barriers for mobilizing finance for climate action in developing countries are not always specific to climate-related investments, as many apply to development finance

and mainstream finance more broadly. Also, few are the critical distinctions between barriers to financing mitigation, adaptation or cross-cutting projects. Hence, successfully addressing the barriers to climate-related investments will likely also mobilize additional finance for broader sustainable development activities.

The study identifies *four key areas for Nordic action*, where joint “Nordic solutions” could help address such barriers and mobilize required finance, including i) investment facilitation through *de-risking*, ii) *enhancing the bankability* of climate projects, iii) *improving the conduciveness of policies* for climate compatible investments, and iv) *outlining clearer, prioritized investment plans for developing countries* in line with long term climate policy goals.

The study (chapter 4) highlights a number *Nordic examples, including lessons learned and best practices* to address central barriers. The case of the Danish Climate Investment Fund highlights that despite strict and highly regulated risk–return based mandates, it is possible to engage institutional investors in climate compatible investments without infringing their returns, through a combination of de-risking measures to improve the bankability of projects. Nordic financial institutions have been a key promoter of “Green Bonds”, in response to a demand from Nordic institutional investors for a product to channel large volumes of funds for “green”, climate compatible projects. Likewise, Nordic finance institutions and DFIs are increasingly turning their efforts to enhance the bankability of climate compatible investments. In practice, this relates to ensuring good project preparation, management and implementation experience, but also presenting the business case to attract private sector actors.

Overall, Nordic climate-related ODA, in comparison to other countries, has shown a somewhat stronger focus on activities conducive to build capacity and strengthen enabling environments in partner countries. The efforts undertaken by Sida to provide guarantees directly to local finance institutions is a concrete example of measures taken to improve market readiness, noting that access to local finance is a key factor for the success of development interventions. Crucially important is overall policy coherence and the removal of conflicting policy signals and incentives that hamper climate compatible investments, the most obvious case being fossil-fuel subsidies (annually amounting to over USD 500 billion globally, i.e. five times the USD 100 billion goal), the reform of which has been actively supported by the Nordics.

From an investor’s perspective, a key barrier is not having clear signals about longer term policy targets and where investments need to flow to achieve these targets. Beyond policy development and coordination, there is also a lack of understanding on what alignment with the “well below 2° C target” actually means in different sectors – where to invest and where not to invest to avoid carbon lock-in. In the context of making all finance flows aligned with the “well below 2° C target”, this challenge is equally relevant for developed and developing countries, and should be addressed as an integral part of the international process of NDC refinement and ratcheting up. While the private sector has been encouraged to set “science-based targets” to help create this alignment, there is a general lack of guidance and concrete tools on 2° C compatibility of investments, which Nordic countries could help address.

Roadmap and recommendations for immediate next steps

The study outlines a *roadmap* that can serve as guidance *for joint Nordic action during the next five to ten years* (chapter 5), built on the recognition that all finance flows need to quickly be made climate compatible. While it includes components of “climate related ODA” as well as contributions from and roles for the “private and finance sector”, the focus of the proposed roadmap lies on the crucial bridging and dialogue between key actors in order to achieve the mobilization of climate finance take place at required scale and pace.

A set of *immediate next steps to operationalize the roadmap in 2017–2018* as well as a number of *key stakeholders* that have major responsibility in the implementation of the proposed steps are identified. These include agencies and ministries that traditionally have a key role in development cooperation and climate finance (including Sida, Norad, Danida, Ministry for Foreign Affairs Finland, Ministry for Foreign Affairs Iceland) as well as the existing Nordic finance institutions and Nordic DFIs. Successful implementation of the proposed next steps will also require early involvement and input from institutional investors (including pension funds, banking and insurance sectors), private sector representatives, export credit agencies, local governments, civil society as well as Nordic actors working on financial sector regulation, environmental integrity and disclosure issues.

Specifically, the Nordic countries should:

- Accelerate their joint efforts to help developing countries turn their (I)NDCs into well-grounded investment programmes for climate compatible development.
- Look for opportunities to strengthen joint Nordic finance institutions (NIB, NEFCO and NDF), through increased collaboration and/or more formal integration.
- Consider the option of establishing a Nordic Climate Investment Fund(s) with a particular view to accelerate climate finance mobilization by institutional investors and promote overall investment alignment with “well below 2-degree investment criteria”.
- Remain a forerunner in the further development of green bonds, looking for ways to expand the market while safeguarding their environmental integrity;
- Assess the early lessons learned and the applicability of climate related finance sector regulation in Nordic countries, as introduced in France and noted in the recommendations provided by the Financial Stability Board (FSB).
- Make use of their “joint voice”, ensuring that sufficient effort and finance is targeted at adaptation and the most vulnerable, and that private finance enabling approaches and business models are made available for resilience building.
- Continue to emphasise climate mainstreaming efforts, so that mainstreaming concretely and effectively serves climate finance mobilization and action, the development sector actively takes account of climate change risks and opportunities, and mainstreaming contributes to international efforts on climate finance tracking and transparency.

1. Introduction

The Paris Agreement and the accompanying COP decision, adopted by Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015 and which entered into force in November 2016, has major implications for finance institutions globally, both public and private. If the Agreement's goal to limit average global temperature increase to well below 2° C and to make serious efforts to limit this to 1.5° C is to be met, the very nature of global financial flows needs to shift dramatically and rapidly from current investment patterns. It also reiterates the earlier commitment by developed countries to a minimum rate of mobilization of "climate finance", USD 100 billion per year by 2020, to support developing countries in their efforts to tackle climate change. This is essential to make development pathways low carbon, as well as to prepare for, cope with and adapt to the impacts of climate change.

The Paris Agreement has therefore given two clear, yardsticks by which one can measure the performance of the public and private finance sectors:

- The ability to deliver on the USD 100 billion from a variety of sources with public finance supporting the mobilization of private finance.
- The delivery on the temperature limits embedded in the Agreement where both public and private finance actors will have to play a substantial role.

All financial flows need to shift away from sectors that accelerate climate change towards activities that are consistent with a climate resilient, zero-emission development pathway, and must do so within very few years if global warming is to be contained to well below 2 degrees.

According to the latest tracking data available, the current volumes of finance are nowhere near the levels needed to support the implementation of developing countries' Nationally Determined Contributions (NDCs), and much further away from the levels needed to limit global warming to 1.5–2° C (Buchner *et al.* 2015). Similarly, current estimates of the costs of adaptation are much higher than the amounts of funding available (even assuming an equal allocation between mitigation and adaptation for the USD 100 billion per year in climate finance) (UNEP, 2016).

In this context, the purpose of this report is to discuss the roles that different Nordic finance actors might play in mobilizing finance, particularly for developing countries to tackle the priorities articulated in their NDCs, national climate change plans and national development plans, and to deliver on the wider international commitments made in Paris. The Nordic countries are small and obviously cannot deliver on the international goals alone, yet they are also widely respected for delivering on their commitments to support development (including the 0.7% GDP target for ODA) and for the ways they engage with addressing finance needs in developing countries. Nordic

finance institutions have also played a pioneering role in implementing carbon pricing mechanisms and more recently in kick-starting some important innovations, such as the emergence of “green bonds”, and have demonstrated an appetite for aiding the transition needed in the global economy and to drive the sustainable development agenda.

This report therefore considers the strategic roles that Nordic actors might play to mobilize much larger flows of finance internationally, based on their experiences and mandates. It looks at potential constraints on scaling up both Nordic finance and its wider catalytic effect. It identifies options for removing key barriers and the particular value Nordic actors could jointly add. The focus thus extends beyond public climate and development finance, to also explore how private finance is being – or might be – activated.

In Section 2, the report briefly describes the scale and character of investments that need finance, referring to the investments implied by the Paris Agreement and the NDCs prepared by developing countries, which highlight some of their (mainly short term) priorities. Section 3 details current climate-related finance flows from Nordic countries to developing countries, and presents these in the context of estimates of global climate finance. Analysis is also provided on how current flows are aligned with the identified finance needs. Section 4 highlights the efforts Nordic players have made to date on mobilizing private climate finance. Finally, the report concludes in Section 5 with reflection on how the efforts and impacts of Nordic finance might be scaled up in the broader international context, suggesting ways that barriers to this might be lowered and further finance activated by public and private institutions.

The analysis and insights presented herein are based on a literature review, interrogation of data from the OECD Development Assistance Committee’s Creditor Reporting System (CRS) (OECD CRS, 2016), over 40 in depth interviews with knowledge holders in climate finance¹, and a workshop with over 70 representatives of public and private finance actors with an interest in this field.² To overcome some of the basic data deficiencies with respect to NDCs, this report uses case studies to explore more concretely what potential finance needs may be in different sector and country contexts. The case studies serve to highlight key barriers to action and how these may be addressed through climate finance, in particular through Nordic support (Appendix 2). This study also draws on a review of the existing mandates that Nordic finance institutions (including development finance institutions (DFIs) from Nordic countries as well as the Nordic Investment Bank, the Nordic Development Fund and the Nordic Environment Finance Corporation (all fully owned or co-owned by the Nordic countries) have, which guide what they can finance, how and where. This review also provides insights into how these institutions might be able to scale up their climate-relevant activities in ways that further support the implementation of the Paris Agreement.

¹ A list of the persons consulted is presented in Appendix 1.

² See Appendix 4 for the details of the workshop programme and workshop participants.

2. Climate finance needs

This section looks at climate finance needs from a global as well as developing country perspective. As a starting point key elements from the Paris Agreement are highlighted which are relevant for climate finance as well as the finance sector more broadly. This is followed by an overview of finance needs as articulated in the (Intended) Nationally Determined Contributions (INDCs)³ submitted by countries as part of the Paris process. The (I)NDC analysis is complemented by a summary of findings on four cases studies to better understand country and sector specific finance and support needs.

2.1 Implications of the Paris Agreement

The Paris Agreement has implications for the scale of finance needed and the types of activities that need funding – both to tackle greenhouse gas emissions and to adapt and build resilience to climate impacts – and also for the way finance commitments will be delivered to specifically support developing countries.

The Agreement reaffirms the leading role developed countries are expected to play in mobilizing climate finance, from a variety of sources, to help developing countries tackle climate change, highlighting in particular “the significant role of public funds” for the mobilization of support (Article 9.3). The earlier commitment by developed countries on the joint mobilization of USD 100 billion per annum by 2020 for mitigation and adaptation was extended through to 2025, but specific numbers are not included in the legally binding part of the Agreement, with a decision on the level of finance postponed, but with a requirement that it “should represent a progression beyond previous efforts” Accordingly, before 2025, a new collective goal is to be defined with the USD 100 billion constituting the minimum.

However, the Agreement’s inclusion of the ambition to limit mean temperature increases to “well below 2° C” (referencing also a 1.5° C limit) already means that the scale of finance needed will in fact be much higher. Several developing countries have iterated their concern regarding availability of climate finance to achieve the more ambitious goal.

Article 2.1.c of the Paris Agreement explicitly states that finance flows have to be made consistent with the global climate goal. This presents a significant challenges for both domestic as well as international investments and finance. One approach to ensuring that investments are compatible with the goal of well below 2° C is to develop and apply criteria for individual projects. Financial support providers could then apply

³ Upon ratification, formal accession or approval to join the Paris Agreement, individual INDCs turn into Nationally Determined Contributions (NDCs).

these criteria in their investment decisions. The ability to align investment decisions with the global climate goal is ever more relevant in the context of increased ambition and the need to avoid carbon lock-in. Investment decisions taken today, in particular involving long life infrastructure, present a significant risk to lock in high carbon pathways. Such risk is increasingly identified by the investment community as it translates into long term financial risks as high carbon assets may become obsolete in the face of increasingly ambitious climate action.

Several initiatives have been working on providing investment guidance on 2° C compatibility. One approach⁴ to develop 2° C investing criteria took the range of 2° C scenarios as a basis to identify the relevance of different technologies and sectors for decarbonisation. The results show that the energy sector along with energy efficiency in buildings, industry and transport are of most relevance for the achievement of the 2° C limit. In terms of future investment needs, the most important sectors and technologies are energy (renewables) and transport (infrastructure and efficiency), followed by energy transmission infrastructure and building energy efficiency (Höhne *et al.* 2015). Whilst some technologies in these key sectors can be clearly marked as compatible (e.g. renewable energy) or incompatible (e.g. coal power plants) with a 2° C scenario, most investment decisions need to be considered in their particular contexts and will depend on individual pathways as well as activities in other sectors.

Beyond the need to shift investment towards low and zero carbon alternatives, limiting global warming to 2° C will also require a decrease in investment in technologies involving unabated GHG emissions. Such investments frequently involve infrastructure with a long-expected lifetime and as such present high lock-in risks. To a significant degree, today's investment decisions determine the nature of our infrastructure well into the future and will therefore have to be assessed on their lifetime climate impact.

Public financial institutions can play a central role to drive the realignment of investment flows with the 2° C limit given their public mandates. They can also play a critical role in closing the infrastructure investment gap which is significant even to reach business-as-usual development objectives.⁵ Around USD 6 trillion per year will be needed for infrastructure to achieve global growth expectations compared to current annual investment of around USD 1.7 trillion. Most of this will need to occur in emerging and developing economies but also developed countries suffer from chronic underinvestment resulting in outdated and decayed infrastructure.⁶

⁴In the context of the German G7 presidency in 2015, NewClimate Institute alongside the 2° Investing Initiative and Germanwatch undertook research on behalf of the German Ministry of Environment and the Federal Environment Agency into the feasibility of developing investment criteria for projects to enable financial institutions to align their investments with the 2° C goal. This work complements several other initiatives, which aim to provide insights and tools to allow for the assessment of climate related investment risks to help investors decarbonise their investment portfolios (for example, activities by the 2° C Investing Initiative on 2° C compatible portfolios or CLIMPAX by Climate-KIC which seeks to develop tools to support climate conscious decision making for investment funds) (<http://www.climate-kic.org/projects/the-first-climate-impact-rating-for-investment-funds/>)

⁵Bhattacharya, A., Oppenheim, J., Stern, N. 2015. Driving sustainable development through better infrastructure: key elements of a transformation program.

⁶Rydge *et al.* 2015. Ensuring new infrastructure is climate-smart. Working Paper. The New Climate Economy.

Apart from tackling greenhouse gas emissions, financial support for adaptation and resilience building needs to be scaled up significantly given the unavoidable impacts that will be felt most acutely in many developing countries and many including LDCs and SIDS typically have a low financial capacity to respond. Since 1980, global disaster related losses account for a total of USD 3.8 trillion, of which 74% can be attributed to weather extremes.⁷ Adverse impacts are projected to grow – including major shifts in local and regional climate conditions, changes to water availability, sea level rise, heat waves, drought and inundation with severe consequences for human life. Significant investment will be needed to increase the resilience of vulnerable communities, mainly in sectors such as agriculture, water and coastal protection.

To date, most climate finance flows, and in particular private sector investments, appear to have been directed at mitigation related activities, with only an estimated 17% of public climate finance addressing adaptation and resilience building in 2014.⁸ However, this number may be affected by difference in accounting approaches and data gaps especially on domestic budgets and private investment. The Agreement emphasises the need to balance support provision between mitigation and adaptation. It also emphasises that to support adaptation, public and grant based resources are particularly needed.

Nearly as important as the scale of financial support is the predictability and transparency of financial support provided. Under the transparency framework (Article 13 of the Paris Agreement) developed countries shall provide information on the support provided to developing countries. This shall be communicated biennially as qualitative and quantitative information. Importantly projected levels of public support shall also be included wherever possible, although not explicitly part of the transparency framework. Information on future availability of funding is particularly important to provide certainty and to enable planning activities of developing countries.

The details of the reporting procedures are yet to be elaborated by future COPs. The Subsidiary Body of the Convention (SBSTA) has been mandated to develop modalities on accounting of financial resources provided and mobilized by public interventions. Ongoing efforts by financial institutions on the tracking of climate finance will provide the basis; however, they may be affected by different perspectives of Parties regarding, for example, questions of additionality of climate finance versus ODA and the role of public versus private support.

In addition to financial support, developing countries highlight technical and capacity support as critical for moving into the next phase of (I)NDC implementation. According to a survey undertaken by UNDP involving 72 countries,⁹ the main technical and capacity support needs have been identified as:

⁷World Bank, 2013. Building Resilience. Integrating Climate and Disaster Risk into Development. World Bank Group Experience.

⁸Buchner *et al.* 2015. Global Landscape of Climate Finance 2015. Climate Policy Initiative.

⁹UNDP 2016. Developing country support needs for the implementation of nationally determined contributions (NDCs).

- Mobilizing resources for (I)NDC implementation (77%).
- Developing (I)NDC implementation plans (63%).
- Developing/ improving information base and monitoring systems (62%).
- Building institutional structures and coordination mechanisms (61%).
- Estimating (I)NDC implementation costs (59%).

In particular, the latter reflects the sketchy information presented in the (I)NDCs on specific financial support needs (see Section 2.2). Significant effort will be needed by countries to develop detailed sector level implementation plans and understand associated investment and finance needs in light of available domestic resources.

2.2 Priorities and finance needs expressed in the (I)NDCs

(I)NDCs are one of the cornerstones of the Paris Agreement. They are intended to articulate the actions each Party plans to implement post-2020 as part of its commitment to the international climate change regime. The (I)NDCs are in the first instance documents for communicating political commitments, setting out national or sectoral climate goals, and as such provide no detailed implementation plans, which can be used as a basis for business planning and investment decisions. Arguably this also goes beyond their purpose. However, (I)NDCs do provide an important indication of the long term strategic focus and priorities that the countries have. To understand actual investment needs and priorities, however, it is also vital to look beyond (I)NDCs and at specific sector plans and other activities taking place at the national or sectoral level, as well as business driven investments, which are taking place in parallel both locally and cross-border.

2.2.1 Finance needs in submitted INDCs

Most (I)NDCs include both mitigation activities and adaptation priorities and refer to other climate planning processes within their countries, including low carbon development plans, Nationally Appropriate Mitigation Actions (NAMAs), National Adaptation Plans (NAPs) and National Adaptation Programs of Action (NAPAs). Other important sources of information include Technical Needs Assessments (TNAs), National Communications and Biennial Update Reports. While the reference to other climate related planning processes implies an anchoring of the (I)NDC in the national policy context, the actual degree of alignment between different policies and strategies is difficult to assess.

For this study, submitted INDCs were reviewed to extract both quantitative and qualitative information about the specific finance needs voiced by developing

countries.¹⁰ Additional data was available through an assessment of the IGES¹¹ and WRI CAIT¹² databases.

As it turns out, implementation costs and/or financial support needs are specifically mentioned by 75 countries. Roughly 40% of those countries mention sector-specific implementation costs or finance needs for one or more sector(s), but with few of them relating these needs to a set of defined actions. Also, only few countries refer to financial instruments, or to ambitions for the private sector to play a role in addressing the finance needs. Yet, several countries do highlight the broader importance of promoting such a role for the private sector, for example through encouragement of public-private partnerships. Only few countries (13%) further specify private sector activities or the amount of private sector investment to be leveraged.

The numerical information provided on finance needs is equally limited, in terms of both quantity and quality. Using numbers from (I)NDCs as proxies for individual or aggregated support needs is therefore impractical and not covered in this section. Rather than serving as a basis for calculating costs per country or sector, this section provides a general overview of the type of financial information included in (I)NDCs, key issues in their analysis, as well as a broader direction of travel for the mobilization of international support for successful (I)NDC implementation.

To address the many specified and unspecified needs that developing countries have for finance to tackle climate change, the provision of finance alone is not sufficient. There may be a range of other barriers that will need to be addressed in order to create the right enabling environment for different public and private businesses, including finance actors to engage. Therefore, it is only when understanding the full picture in a specific country-sector context that the corresponding finance needs can be determined with some degree of certainty, and appropriate plans for support can be designed by the international community.

In this context, a number of (I)NDCs include two scenarios: an *unconditional* national contribution that represents a country's ambition irrespective of international support, and a conditional contribution that includes a more ambitious target or an additional set of actions provided that certain conditions (mostly in terms of financial/technical support) are met. In total, approx. 80% of all submitted (I)NDCs are conditional or have conditional components, most of them stemming from developing countries (NewClimate Institute, 2016). Not all (I)NDCs that have a conditional component have automatically been included in this analysis, only where implementation costs and/or financial support needs were articulated in the context of the condition.

¹⁰ The review targeted the following information, where available: Overall finance needs; Mitigation and adaptation specific finance needs; Sector specific finance needs; Reference to other processes including NAMAs, NAPAs, national development strategies, TNAs, and others; Reference to private sector role; Information on the reference year; Sectors covered in the INDC.

¹¹ Institute for Global Environmental Strategies (IGES) 2016. IGES INDC & NDC Database. <http://pub.iges.or.jp/pub/iges-indc-ndc-database> (accessed 5 July 2016).

¹² CAIT 2016. Paris Contributions Map. <http://cait.wri.org/indc/> (accessed 5 July 2016).

2.2.2 Key issues in the analysis of finance needs in INDCs

Four key issues are highlighted from the analysis of the (I)NDCs that are deemed to have an impact on the robustness and usefulness of information and figures, in particular with regard to determining specific financial support needs of countries.

Limited availability and comprehensiveness of information

While almost all developing countries mention that they will require support for the implementation of their (I)NDC, only a limited number present quantitative information. Where data is presented, it often lacks necessary detail to understand specific support needs in the different sectors and sub-sectors. In many cases, the information consists of single numbers and it is unclear what these numbers relate to exactly. Some countries speak of total investments, some of implementation costs, some of funding needs, often not specifying which proportion of total costs and needs is expected to come from the international community compared to the share that they plan to mobilize domestically.

Limited or uncertain quality of information

Where quantitative information is provided, the quality and robustness of the data is largely unclear. Quoted numbers appear to be high-level estimates without any information on underlying assumptions, background and data sources or calculation methodologies. Often, numbers are derived from other processes, e.g. costed low carbon development strategies; yet it is difficult to ascertain whether the numbers were derived from a detailed cost analysis or based on broader extrapolations. In general, the methodological challenges associated with the economic assessment of mitigation and adaptation seem to be widely underestimated. A robust estimation of finance needs requires deep understanding and analysis of the specific policy and market context, in particular on barriers to the implementation of climate compatible alternative technologies or processes, and the elaboration of corresponding and sound investment plans.

Limited comparability of data

Given the lack of guidance on the type of data to be included and the way in which it is presented in the (I)NDCs, also the comparability of information is limited. Not only do countries refer to various types of needs (total investment costs, funding needs, domestic/ international support needs), they also use different parameters to present these needs. Some display data as annual figures, others as totals over different periods of time, ranging from 5 years to 30 years or up until 2050. In some cases, these parameters are not explicitly stated, making a comparison even more difficult. Moreover, some data is national in scope, while other data is sectoral or related to specific activities. Where data is disaggregated within countries, the different parameters used hinder data aggregation across countries. Hence, presenting total finance needs – either national, by sector or mitigation/ adaptation specific – is not possible based on the information available in the (I)NDCs.

Limited understanding of finance needs

Across most developing countries there is a general knowledge and information gap on actual implementation costs and finance needs in particular at the more granular sectoral and sub-sectoral levels. Such understanding would require a detailed, bottom-up analysis of the needs and the development of corresponding investment plans, potentially in reflection of longer term climate goals. Key aspects that would need to be considered are the following:

- Current (domestic and international) finance flows related to climate change.
- Current barriers to the implementation of low-carbon technologies and policies.
- Investment needs into technology and infrastructure associated with the implementation of planned policies and measures in the short, medium, and long term.
- Finance needs in order to facilitate investments and mobilize private sector sources.
- Role of the private sector in different sectors and subsectors.
- Role of national (and sectoral) budgets vs international (public) support.

2.3 Review of finance needs and mobilization through case studies

Given the limited insight that the INDCs provide, it is instructive to look in closer detail at a number of case studies to illuminate the scale and character of finance needs in a specific country and sector context.

The case studies allow exploration of the role that international finance, including possible finance from the Nordic region, might play to address barriers to climate action and to support developing countries achieve their mitigation and adaptation objectives. Hence these cases provide insights, including examples of good practices, that can be scaled up to get a broader understanding of investment needs and solutions at the global level, and the role of international and Nordic climate finance therein.

The results from four case studies (Table 1) are summarized here, with more extensive case study descriptions provided in Appendix 2 (including selection criteria and case study approach applied).

Table 1: List of case studies

Country	Country type ¹³	Region	Climate focus (mitigation/ adaptation)	Case study focus
Bangladesh	LDC	Asia	Adaptation	Urban development
Ethiopia	LDC	Sub-Saharan Africa	Adaptation & Mitigation	Renewable energy in the context of water scarcity
Georgia	Developing country	Eastern Europe	Mitigation	Energy efficiency in buildings
Peru	Developing country	Latin America	Mitigation	REDD/ Results based payment

2.3.1 Case 1: Urban resilience in Bangladesh

Due to its geophysical location, its exposure to extreme conditions caused by climatic stimuli, and high population growth, Bangladesh is one of the world's most vulnerable countries to climate change and natural disasters, with over 6% of the population affected by disasters each year (GFDRR & The World Bank, 2015). Bangladesh's cities are characterized by an ever-widening infrastructure deficit, and more and more people are bound to living in sub-standard conditions. Dhaka – Bangladesh's capital – has been identified as the city most vulnerable to climate change among Asian cities.

Adaptation and resilience building is at the center of the government's climate policy concerns and central in the country's INDC. In its adaptation planning, the government identified a range of investment and technical capacity related priority activities in relation to building urban resilience. Investment related activities include: (i) Construction of cyclone-resistant housing, schools, hospitals and shelters; (ii) Construction of flood and cyclone shelters; (iii) Urban drainage systems; and (iv) Early-warning systems and communication infrastructure including information and assistance centres. Such investments need to be accompanied by a wide range of institutional and capacity building activities to enhance long term planning and knowledge dissemination.

Bangladesh lacks adequate and sustainable flows of resources to meet the demands of its climate vulnerable communities. Although a large number of support programmes have been active in Bangladesh, significant gaps and barriers to building long term urban resilience remain. These relate primarily to limited public resources and capacities as well as to limited capacities across all levels of society, in particular the urban poor. Most Nordic development agencies are currently active in the country in supporting adaptation and resilience building activities through bilateral and multilateral channels. The central challenge here is to coordinate and streamline activities of the different donors and organisations in a way to increase their effectiveness and impact.

¹³ Least developed countries as defined by the UN for 2013: <http://data.worldbank.org/region/LDC>

2.3.2 Case 2: Renewable energy and water scarcity in Ethiopia

Ethiopia is a fast growing LDC in East Africa with a strong ambition to achieve middle income status by 2025, while simultaneously striving for zero carbon growth (GoE, 2015b). Key for this development is the rapid and significant expansion of sustainable energy supply. To date, water plays a vital role as a primary source for energy generation in Ethiopia, where 95.6% of electricity is generated by hydropower (IEA, 2014).

Ethiopia's INDC sets out the plan to reduce the country's emissions by 64% from business-as-usual by 2030, contingent on the provision of international support. The INDC is intrinsically linked to the country's ambitious renewable energy strategy that envisages a massive expansion of its hydropower sources as well as an increase in the share of geothermal, wind and solar in the national energy matrix. The adaptation section of Ethiopia's INDC highlights the importance to: a) diversify the energy mix, and b) develop a strong and climate resilient hydropower sector, in order to respond to the challenges related to renewable energy in a context of increasing water scarcity (GoE, 2015a).

The private sector plays a crucial role for resilient energy sector development in Ethiopia. Additional private investment is primarily needed to meet the non-hydro renewable energy targets and to spur relevant innovation for hydroelectric adaptation. Currently, a number of key barriers inhibits the private sector from developing its full potential. These barriers include an insufficient and slowly evolving policy framework for renewables and a lack of detailed roadmaps and strategies on the institutional side, as well as prevailing high risk perceptions, a lack of capital and a lack of local experts and entrepreneurs on the financial and economic side. Given that Nordic development aid donors have a long track record in supporting Ethiopia in the implementation of its green growth strategy, they could either take ongoing development support activities as an entry point to enhance existing initiatives, or provide targeted aid in an attempt to help Ethiopia overcome individual barriers, by contributing e.g. to low-cost loan schemes, micro-finance solutions, specific grant schemes or further engaging in the issuance of risk guarantees and green bonds.

2.3.3 Case 3: Energy efficiency in the building sector in Georgia

Georgia's building sector accounted for approximately 17% of total national GHG emissions in 2013, mostly through gas for spatial heating in residential buildings (WRI, 2016; MENR, 2016). Consequently, energy efficiency needs to form a considerable part of Georgia's plans for pre- and post-2020 climate change mitigation action. This is articulated in the country's INDC which aims for a 15% reduction of GHG emissions by 2030 compared to business-as-usual. The poor energy efficiency performance of the existing building stock is a considerable economic, social and environmental issue in Georgia, which uses approximately 50% more energy per unit of floor space than EU countries with a similar climate (Kochladze, 2012). Energy consumption in Georgia would be far higher still, if it weren't for considerable fuel poverty. Despite encouraging developments at the policy and planning level, domestic policy efforts have been, up to now, unable to affect a significant improvement on the status-quo in the building sector.

There is potential for a major role for the private sector in the mobilization of capital, given the large volumes of finance required for action across the sector, and considering the generally attractive returns associated with potential measures. A wide range of private stakeholders could find commercial interest in the provision of such capital, assuming a conducive political and economic enabling environment, such as energy distribution companies, energy service companies (ESCOs) suppliers of energy efficient materials, and commercial lending services. However, models that mobilize private sector finance for building retrofit have proved difficult to implement in countries worldwide, with the situation in Georgia particularly challenging, due largely to several existing private investment barriers. Key among these is the lack of an adequate legal framework for energy efficiency investments and implementation. In addition, high interest rates and limited delivery of low-cost credit lines from public and private banks have posed challenges.

Nordic countries have a strong track record in promoting energy efficiency and reducing the role of fossil fuels in the building sector. Among Nordic investors, especially NIB as well as NEFCO have experience in focused financing initiatives for energy efficiency improvements in the buildings sector. Their expertise may represent a starting point for enhanced Nordic financing of energy efficiency measures in Georgia's buildings.

2.3.4 Case 4: Forestry and REDD+ in Peru

Peru's INDC aims to reduce emissions by 20% below the business-as-usual scenario by 2030 and an additional reduction of 10% by 2030 could be achieved, conditional on the provision of international finance. Over half of the country's greenhouse gas emissions are associated with the land use, land-use change and forestry (LULUCF) sector, and the deforestation of the Amazon forest for agricultural purposes is by far the main cause. It is foreseen that 70% of the total mitigation efforts proposed in the INDC can be achieved in the forestry sector, with special focus on REDD+ activities (Government of Peru, 2015b).

The private sector is expected to play a significant role with an estimated 80% of investments anticipated to come from private sources (Government of Peru, 2015a). Although many of the identified mitigation measures in the sector are deemed cost effective over their lifetime, progress towards implementation, as well as mobilization of private sector/finance has been slow. The main barrier identified is related to higher upfront costs, as the main actors are small-hold farmers with limited access to financial services and limited investment capital. The removal of this barrier through, for example, targeted loan and grant schemes, aligned with measures to improve the policy and regulatory environment, has the potential to achieve a shift in the sector and lead to long term, sustainable change.

Nordic development aid donors have a long track record in supporting the forestry sector in Peru, including under the "Norway International Climate and Forest Initiative". Considering past cooperation experience, future Nordic development support could focus, amongst others, on three aspects: a) continuing capacity building and technical support to improve the enabling environment; b) extension and scaling-up of results

based payment schemes; and c) support to set up microfinance schemes in remote areas targeting small-hold farmers. This could contribute to an integrated management of Amazonian landscapes, control deforestation drivers and help facilitate informed policy decisions in the forest sector.

Norway's engagement in REDD+

REDD+ is a UN initiative that was established in the Bali Action Plan in 2007. It aims to offer a more attractive and viable development option for forests across the developing world and is supported by a number of development aid donor countries, including Norway (as the single biggest donor), the UK, Germany, the United States and Australia. During COP21 in 2015, Norway, Germany and the UK jointly pledged USD 5 billion to fund up to 20 new REDD+ programmes by 2016. This "new finance" is framed as payment-for-performance agreements, which include payments for implementing readiness activities and achieving emissions reductions. Within the USD 5 billion commitment, Norway pledged up to USD 240 million to Peru, with USD 40 million being intended for readiness activities (including reforms and institution building), whilst USD 200 million will be available after 2017, as payments for verified emissions reductions.¹⁴

2.4 Synthesis of identified finance needs

The understanding of specific finance and support needs and how these can be met is very limited in all country cases. Countries' INDCs present very limited and sketchy information on actual support needs to implement the activities or achieve the targets set out in the country commitments. Where investment needs have been calculated (e.g. resilience activities in Bangladesh in the national adaptation strategy), it is still unclear whether underlying data sources are reliable, what the role of international support is expected to be in comparison to domestic budgets and what proportion of investment is expected to come from the private sector. It is therefore important that countries' INDCs are supported by comprehensive and robust national investment plans.

Barriers to climate action and investment are diverse, country and sector specific. The four selected cases present a diverse spectrum of country profiles and challenges to advance climate action both in the field of mitigation and adaptation. Whilst within sectors and for either mitigation or adaptation it is likely that similar opportunities and barriers can be observed across different countries, the nature and degree of importance of each barrier depends on country-specific factors such as existing institutional frameworks, market maturity and general technical capacity. In many cases barriers relate, in the first place, to institutional and technical capacities of developing countries to access and implement financial support rather than to a lack of financial resources as such. In this context, barriers exist in terms implementing instruments to effectively channel finance to where it is most needed. Barriers directly related to a lack of financial resources can be observed in particular where investment

¹⁴ For more information consult: <http://redd.unfccc.int/>

activities are expected to be carried out at the individual household level, more so when involving rural communities or the urban poor.

To remove barriers a suite of interventions is necessary involving different instruments and policy change. Responding to the diversity of barriers, it is important to design and implement intervention strategies that operate at and across different levels. Financial instruments which directly address observed finance related barriers need to be embedded in a stable and supporting policy environment and accompanied by a wider range of readiness activities including technical and capacity building measures. In many cases policy and regulatory measures are most effective to drive change and prepare the ground for investments into mitigation and adaptation related projects and infrastructure.

Investment opportunities for the private sector are sector specific. In some sectors the business case and associated risk-return profile is much clearer and more attractive than in others. Where large scale investments in infrastructure and planning are needed, for example to increase long-term urban resilience, public investments will need to play a significant role. In these cases, private investments may be activated only indirectly through, for example, the provision of finance via (green) bonds. In other cases, the private sector is more likely to be directly involved, for example through targeted investments into the transfer and development of locally adapted, climate resilient technology on the ground. The ability to attract private sector engagement is strongly influenced by the specific market conditions in each country and sector context. These can be improved through a variety of interventions including finance instruments (e.g. de-risking), policy and regulatory reforms and capacity building. A more stable and credible policy environment is particularly conducive to private investment.

Nordic actors have a strong track record across a variety of different countries and sectors. Generally, a large number of international organisations and NGOs are active in the above case study countries. Nordic actors have shown to be particularly engaged in the energy and forestry sectors, for example in Peru and in Ethiopia. They have a strong track record in providing technical and policy support as well as advancing innovative finance instruments such as results based payments schemes in the energy and forestry sectors and green city level bonds for related infrastructure development. Table 2 presents a summary of the key aspects of the sector case studies focusing in particular on the identified barriers and potential solutions to address these.

Table 2: Summary of barriers and potential interventions in the case study countries

Sector	Key barriers	Summary	Financial instrument				Non-financial instruments	
			Equity	Loan scheme	Guarantees	Grants	Policy incentive	Other
Renewable energy/ Ethiopia	Lack of policy framework/ strategy; Limited institutional capacity and coordination; Access to finance due to higher investment costs and perceived risks; Grid stability due to intermittent sources; Lack of proven track record of technologies; Lack of knowledge and technical capacity in the market; Low levels of infrastructure development	Financial and technical support at government level can accelerate policy planning and implementation of renewable energy regulations. Targeted financial instruments such as low cost loan schemes and grants can ensure private sector engagement in renewable energy diversification. Green bonds and equity may support public investment into respective infrastructure development.	✓	✓	✓	✓	Feed in tariff; auction schemes; tax schemes/ breaks to incentivize investments; removal of import tax	Capacity and institution building to accelerate strategic policy planning; development of tools, knowledge and data to feed into sectoral roadmaps; information and awareness campaigns to improve access to information
Urban resilience/ Bangladesh	Lack of political commitment/ pro poor policy focus; Limited public resources; High investment costs of infrastructure; Limited business case for private sector; Lack of experts/ technology/ knowledge at the national and local level; Low awareness and limited access to resources of urban communities	Financial instruments in the form of loans to enable investments in resilient infrastructure as well as grants to support responsiveness of urban poor communities are most likely to be effective. Finance for such schemes could be raised from private sources (e.g. bonds). Guarantees may be relevant to increase access to finance of public subnational entities.		✓	✓	✓		Capacity and institution building measures to enable policy and strategic planning; Research and knowledge building on climate impacts; Information and awareness campaigns targeted at vulnerable communities and associated organisations
Building energy efficiency/ Georgia	Lack of legal framework and standards for EE; Lack of coordination of homeowners to enable collective investments; high interest rates and low incentive for banks to deliver loan schemes; limited data, information and awareness on EE benefits and options	Existing low cost loan schemes could be scaled up/ made more effective. Guarantees may improve access to finance in particular for larger investment projects. Grants could provide additional incentives for smaller investment projects and for demonstration projects.		✓	✓	✓	Penalty schemes for compliance with standards; tax schemes/ breaks to incentivize investments; removal of import tax	Capacity and institution building; information and awareness campaigns
Forestry/ Peru	Limited (inter)sectoral coordination; precarious land tenure system; Limited access to finance of small hold farmers; Limited institutional capacity for implementation and monitoring; Data and information gaps	Finance support may be directed to the government level to support the creation of an enabling environment; smallholders/ farmers can be incentivized through microfinance lending schemes. Grants may be used for results based payment schemes/ ecosystem service grants to incentives farmers.		✓		✓		Policy reform (land ownership); Capacity and institution building to enable implementation and monitoring; Awareness campaigns

3. Nordic countries within the global climate finance landscape

Following an introduction of the global finance landscape, this section summarises data on the finance already being provided by Nordic institutions in support of climate change activities and investments in developing countries. It draws on data provided within the OECD Creditor Reporting System (OECD-CRS), where OECD countries, including the Nordic countries, report their climate-related ODA by use of the Rio Markers (for mitigation and adaptation). The data presented reveals the different sources of finance, the channels and financial instruments used, and recipients (by sector and country). The amounts presented in this section are commitments, rather than disbursements.

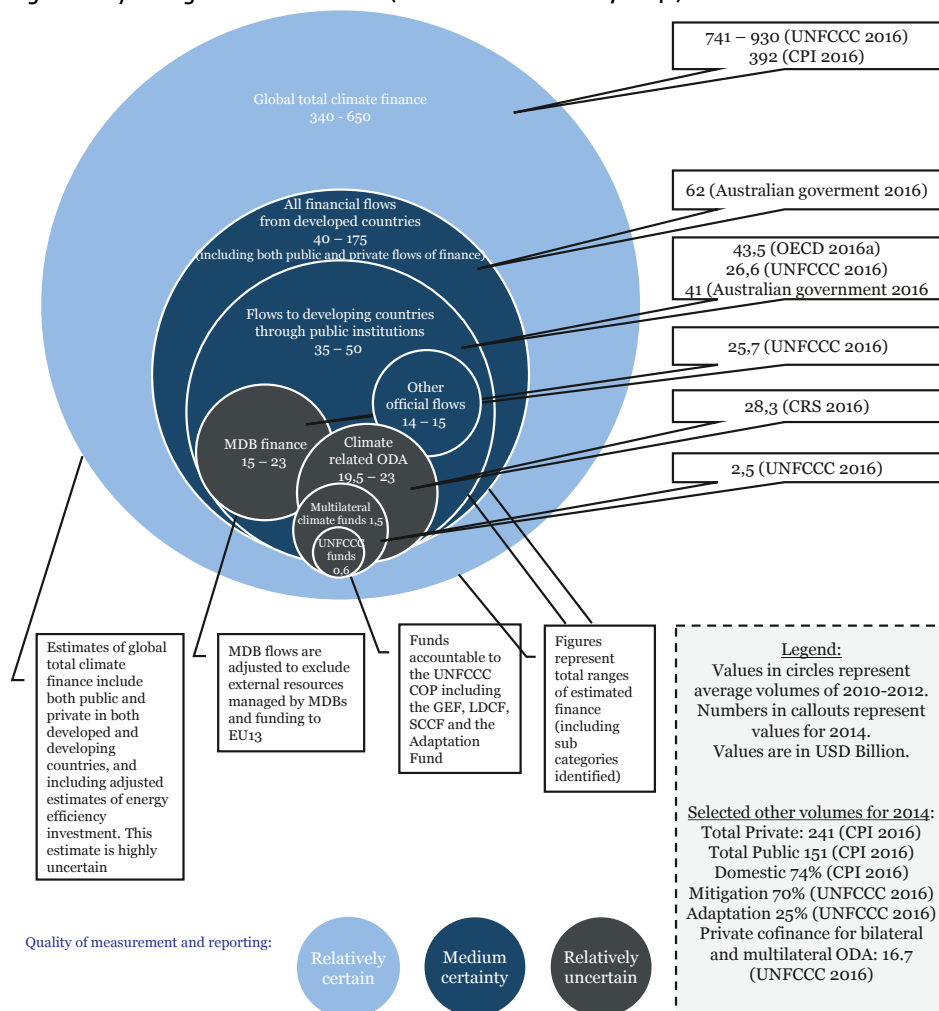
There are a number of limitations to this data, not least that it relies on the accuracy of data reported by the donor countries themselves in the CRS system. However, it highlights key patterns in the availability and use of international public finance for climate change.

Overview of the global climate finance landscape

According to the UNFCCC (2014), total global climate finance, including contributions from both developed and developing countries, ranged from USD 340 to 650 billion per annum during 2010–2012. Buchner *et al.* (2015) estimates a total sum of USD 391 billion for 2014, up by 18% from 2013. The total volume includes both public and private finance in both developed and developing countries. The largest uncertainty relates to the amount of private climate finance, the tracking of which is currently “in its infancy” (OECD, 2015).

Noting still broad ranges and differing assumptions in various estimates, Figure 1 based on UNFCCC (2014), summarizes figures from a number of global estimates (covering various layers of climate-related finance). It also presents figures from a number of recent reports submitted in the run-up to Marrakesh COP22, including estimates by the Standing Committee on Finance (SCF) (UNFCCC, 2016), the Roadmap to USD 100 Billion (Australian government, 2016) as well as figures from CPI (2016) and OECD (Benn *et al.* 2016; OECD CRS, 2016). While these figures provide important insights into the currently tracked climate finance flows, and the overall level of attainment of the USD 100 billion goal, they highlight the existing finance gaps and urgent need to upscale finance for the required low-carbon transformation globally (see Section 4.1) as well as the need to address all finance flows beyond the “usual suspects of climate finance” (see Figure 1).

Figure 1: Layers of global climate finance (modified from UNFCCC, 2014a)



Buchner *et al.* (2015) estimates that 38% of all climate finance is public (USD 148 billion in 2014, up by 8% since 2013) and 62% private (USD 243 billion in 2014).¹⁵ Public actors include e.g. government ministries, bilateral aid agencies, export credit agencies as well as multilateral, bilateral and national development finance institutions (DFIs). According to Buchner *et al.* (2015), approximately one third of public climate finance flows through DFIs. Examples of public actors' offering includes low-cost and commercial rate loans, viability gap funding, equity investments, policy development and technical support (Callaghan, 2015).

Financial flows from developed to developing countries are estimated at considerably lower level than the total, i.e. at USD 40 to 175 billion per year during 2010–2012, of which USD 35 to 50 billion flows from the public sector and USD 5 to 125 billion from the private sector (UNFCCC, 2014a). The public-sector financing consists of

¹⁵ This includes all climate finance in developed and developing countries (largest circle in Figure 1).

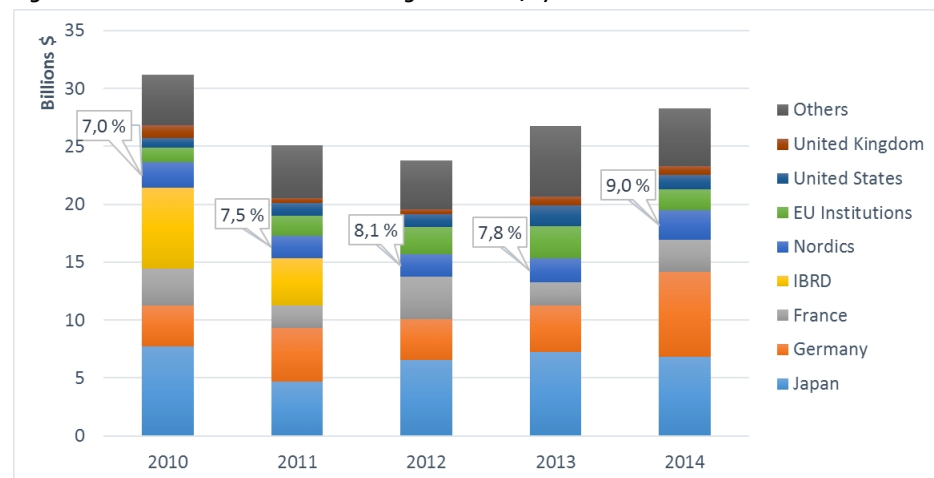
climate-related ODA, Multilateral Development Bank (MDB) finance, other official bilateral flows¹⁶ as well as climate funds.

3.1 Key characteristics of Nordic climate finance

3.1.1 Nordic countries contribute 10% of climate-related ODA

During 2010–2014, climate-related ODA commitments from OECD Development Assistance Committee (DAC) member countries ranged from USD 23.8 billion (2012) to USD 31.2 billion (2010). After a decline from 2010 to 2012, total finance has been on the rise since 2012 with Nordics steadily increasing their share. In 2014, the Nordic countries committed 9% of all climate-related ODA globally. During the whole period of 2010–2014 Nordics was the fifth largest financier after Japan, Germany, France and the IBRD (Figure 2).

Figure 2: Global climate-related ODA during 2010 – 2014 by actor

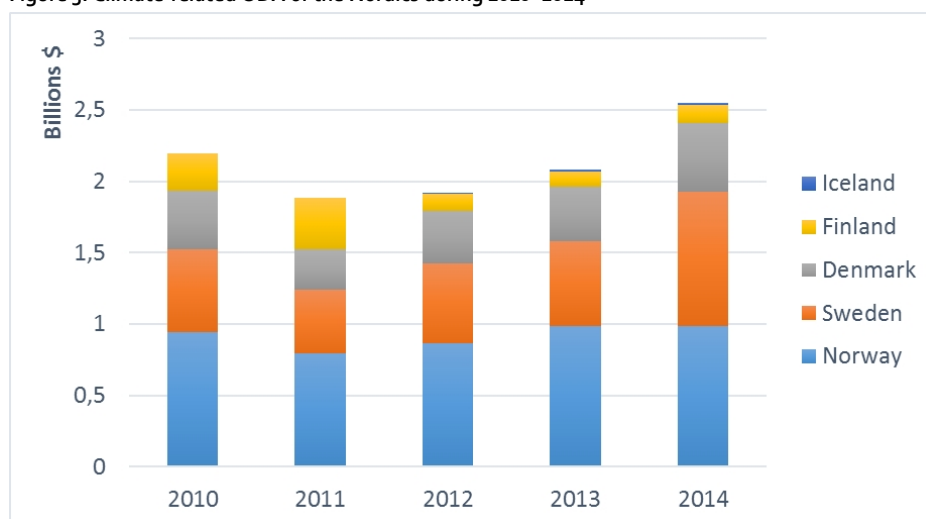


Nordics have disbursed a higher share of committed contributions compared to other countries. During 2010–2014 Nordic disbursements amounted to 89% of commitments whereas the percentage was 53% for other countries. This may well be one factor explaining the Nordic countries’ good reputation in terms of their contribution to climate finance.

Within the Nordics, Norway is the largest contributor with a yearly volume of slightly under USD 1 billion followed closely by Sweden. Denmark was the third largest with annual contributions of little under half a billion dollars (Figure 3).

¹⁶ “Consist of: i) grants or loans from the government sector not specifically directed to development or welfare purposes and ii) loans from the government sector which are for development and welfare, but which are not sufficiently concessional to qualify as ODA. These flows are channeled through bilateral channels (e.g. IDFC members, OPIC)” (OECD, 2008).

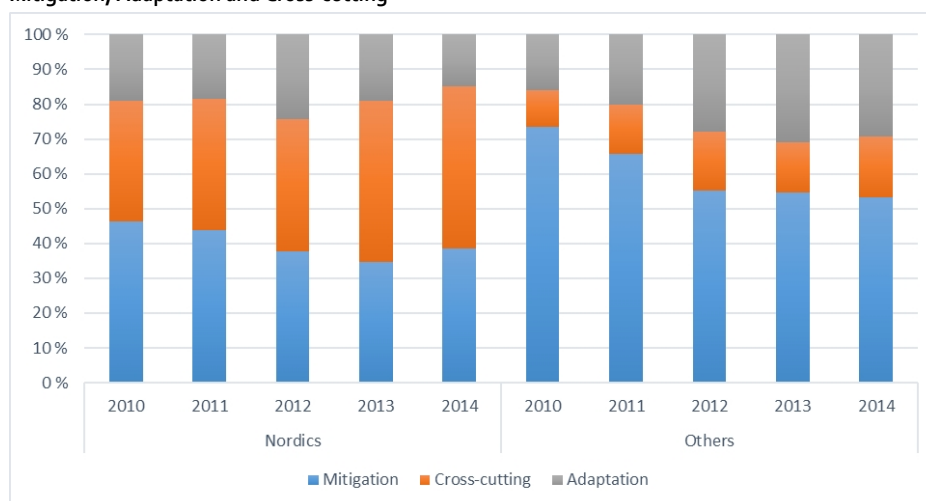
Figure 3: Climate-related ODA of the Nordics during 2010–2014



3.1.2 Nordic countries focus on cross-cutting activities

Globally, mitigation has been targeted more than adaptation, with shares of 50–75% of climate finance for mitigation and 11–24% for adaptation (Callaghan, 2015), (OECD, 2015). In contrast, Nordic countries' climate-related portfolio supports mainly activities with both adaptation and mitigation benefits (see Figure 4).¹⁷ In addition, Nordics' support to activities with only mitigation benefits is less prominent compared to other donor countries.

Figure 4: Climate-related ODA in the Nordics and other countries during 2010–2014 by shares of Mitigation, Adaptation and Cross-cutting

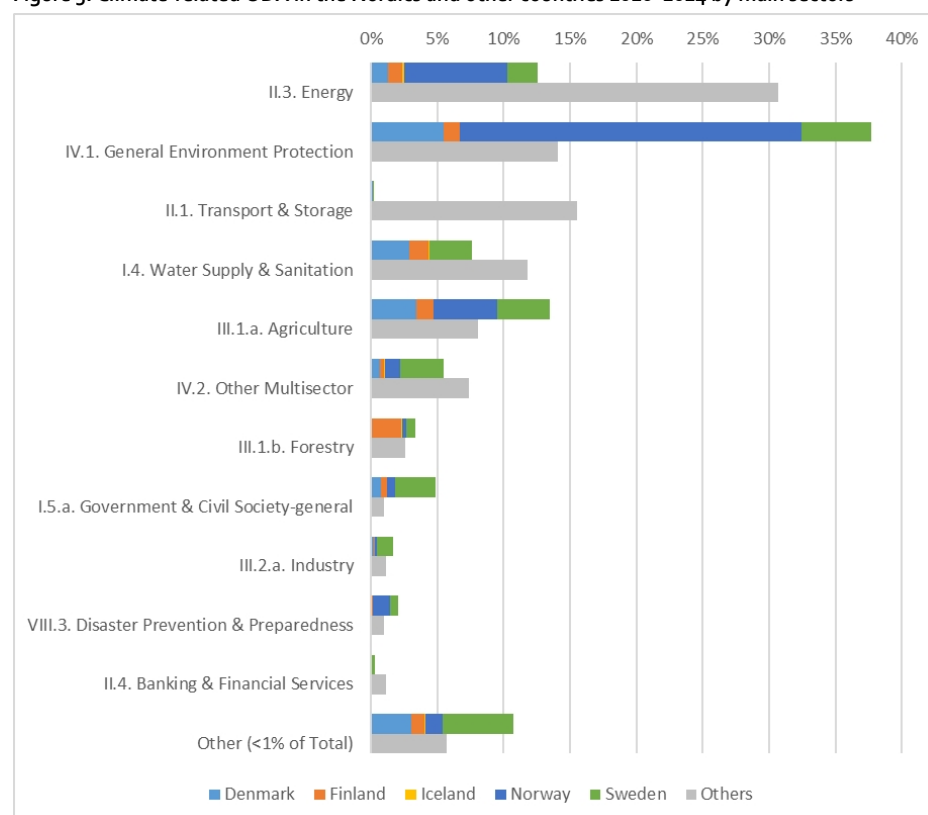


¹⁷ E.g. the high-level of cross-cutting climate projects among Nordics may be an indication of advanced mainstreaming efforts and active harnessing of adaptation and mitigation synergies, but might also hide the lack of specifically adaptation dedicated initiatives.

3.1.3 Capacity building and developing the enabling environment are important to Nordic countries

When analyzing the data from a sectoral point-of-view, Nordic support has quite often targeted certain sectors (e.g. general environmental protection, government and civil society -general) that can be considered generally conducive to build capacity and strengthen enabling environments. It is, however, important to recognize uncertainties in the data, and various interpretations in using the DAC sector codes among country representatives. Nordics also support agriculture and forestry. Transport projects are nearly inexistent in Nordic climate-related ODA whereas they represent a 15% share of finance of other countries. Figure 5 portrays the shares of different sectors in Nordic climate-related ODA as well as the share of each Nordic country within the sector total and compares these to sectoral shares of other countries' climate-related ODA.

Figure 5: Climate-related ODA in the Nordics and other countries 2010–2014 by main sectors

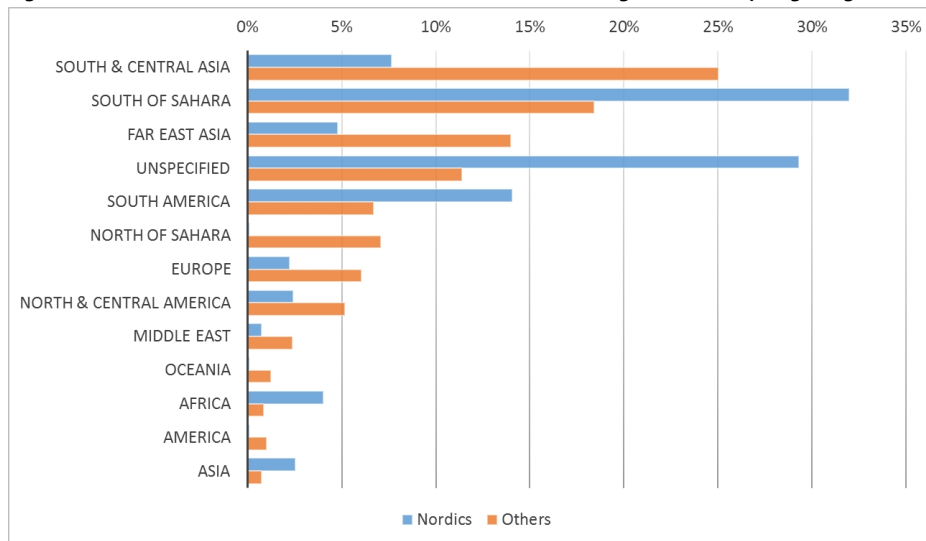


No significant changes have occurred in the sectoral distribution of Nordic climate finance during 2010–2014. The trend seems to be upward in agricultural projects and downward in general environmental protection and water supply and sanitation (see Appendix 3 for details).

3.1.4 Sub-Saharan Africa and South America are the main recipients of Nordic climate-related ODA

Based on the CRS data, Nordic finance is clearly targeted to Sub-Saharan Africa and South America whereas Asia is dominant in other countries' finance (Figure 6). Regional distribution of Nordic climate-related ODA has remained quite constant throughout 2010–2014 (see Appendix 3 for details). A third of the total Nordic portfolio is targeting Sub-Saharan Africa, and between 10–15% is targeting countries in South America. An increasing share of finance is flowing to multilateral/-regional/-country organizations (Unspecified in Figure 6).

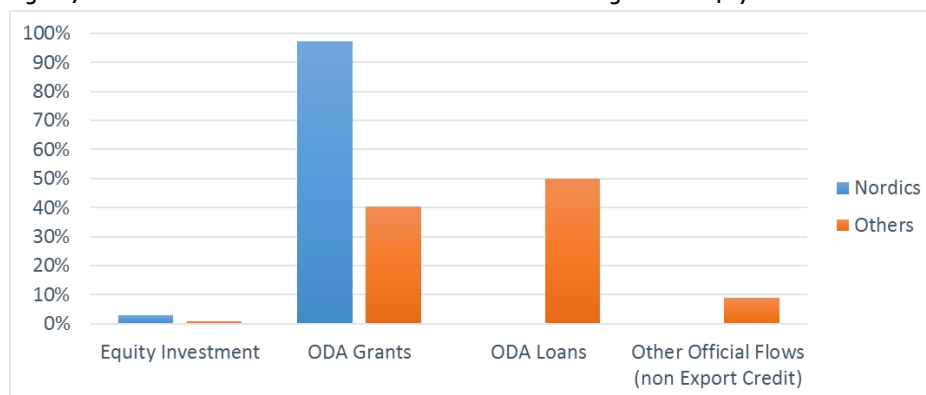
Figure 6: Climate-related ODA in Nordics and other countries during 2010–2014 by target region



3.1.5 Nordic climate-related ODA is mainly grants and funding flows through a large number of channels

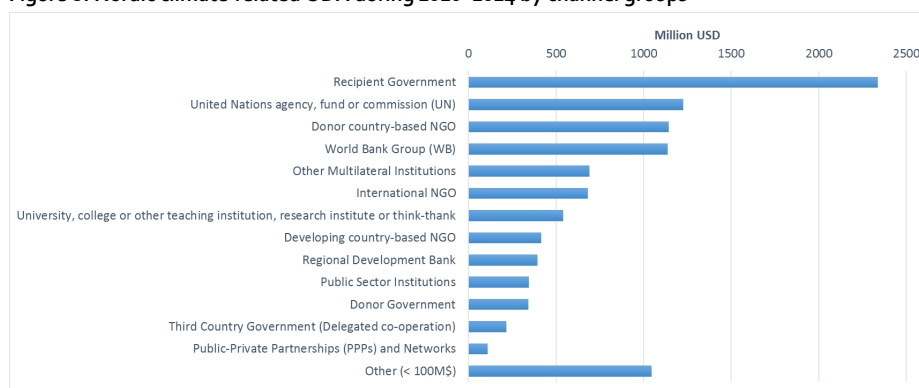
The Nordic countries used almost exclusively grants in climate-related ODA during 2010–2014, whereas for other countries half of the financing was done with loans and 40% with grants (Figure 7). The minor overall share provided of equity is mainly geared to Nordic DFIs.

Figure 7: Climate-related ODA in Nordic and other countries during 2010–2014 by instrument



The largest contributions of Nordic climate-related ODA have been channeled through: BNDES (USD 0.8 billion), IBRD (USD 0.4 billion) and UNDP (USD 0.3 billion). Finance flows are channeled through a very large number of actors: over 60% of Nordic climate-related ODA flows through channels that account for less than 1% of the total flows. In other words, funding is split and distributed to a very large number of actors. As the funding is split to a large number of channels, in Figure 8 channels are grouped¹⁸ to illustrate how Nordic climate-related ODA is distributed.

Figure 8: Nordic climate-related ODA during 2010–2014 by channel groups

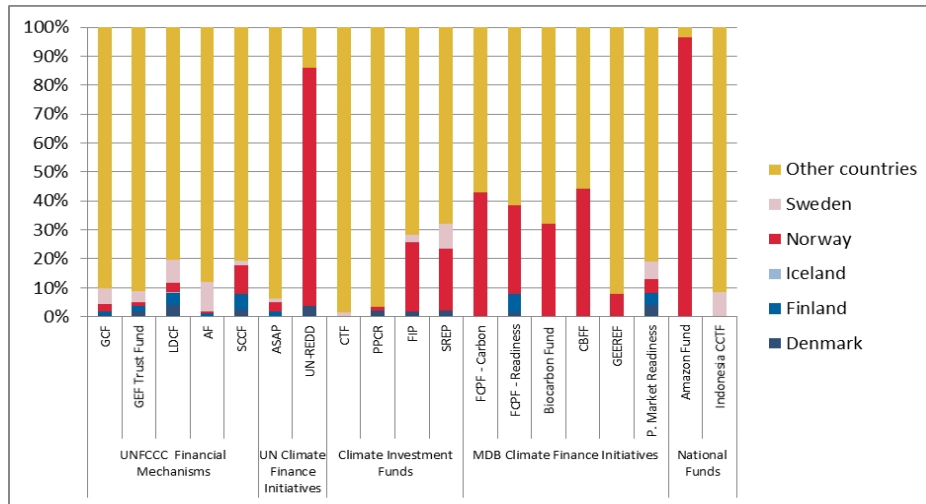


¹⁸ Grouped according to <http://www.oecd.org/dac/stats/dacandcrscodelists.htm>

Box 1. Nordic countries and climate funds

Beyond bilateral support, Nordic countries have been important actors in the global multilateral climate finance architecture. Their contributions span different financial mechanisms, including contributions to funds within the UNFCCC framework (e.g. GEF, Green Climate Fund), climate finance initiatives led by multilateral development banks (e.g. FCPF, CIFs), and some nationally established funds (See Figure 2). The share of pledges in the early established Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) is close to 20%; whereas the role in the CIFs is closer to 30%; and a more significant share is present in REDD+ funds (i.e. UN-REDD, Amazon Fund). Whereas the climate funds have their own decision making processes, these generally high levels of contribution provide Nordic countries an influential role. For example, Sweden, Denmark and Norway are members of all the Climate Investment Funds Trust Fund Sub-Committees, which decide funding allocations.

Figure 9: Nordic countries' pledges to multilateral climate funds (Climate FundsUpdate, 2016) ¹⁹



3.2 How are Nordics addressing gaps and needs?

Nordic countries are addressing needs expressed by developing countries in their NDCs, and sectors of critical importance in light of mitigation and adaptation priorities.²⁰ These include energy solutions, agriculture as well as water supply and sanitation. Other sectors supported include DRR, industry, building, basic health and social infrastructure and services. But there are some sectors highly prioritised by developing countries, and not supported by Nordic climate related ODA, such as transport and storage; and waste management (Table 3).

¹⁹ Classification of multilateral climate funds from Nakhouda, Watson, & Schalteck, 2015.

²⁰ With regards to data constraints and varying terminology, it should be noted that **** indicates sectors where Nordics contribute (in some sectors considerably) but corresponding sectors/themes (terminology) are not used in the sources used for comparison. For example, "General environment support" includes contributions to general environmental protection, general government & civil society and general budget support. E.g. in the case of Norway, its REDD+ component has been accounted for under "General Environment Support" rather than Forestry. Education includes as sectors post-secondary education, basic education and education (level unspecified).

Table 3: How are Nordics matching gaps and needs – a comparison of climate finance sectors, finance needs (based on three sources) and climate-related ODA by Nordics. See footnote 20 on data constraints

	% of emission reduction in 2° C scenarios (Höhne <i>et al.</i> 2015)	Role to achieve global goal below 2° C (Höhne <i>et al.</i> 2015)	Adaptation Gap report	Number of INDCs mentioning (Callaghan 2015)	DKK	FIN	Percentage ICL	NOK	SEK	Nordic
****General Environment Support					35	19	7	61	32	44
*III.1.a. Agriculture		Medium-High	Mentioned	35	19	14	0	11	14	13
*II.3. Energy	29–65%	High		47	7	12	42	18	8	13
*I.4. Water Supply & Sanitation			Mentioned		16	16	12	0	11	8
**III.1.b. Forestry (land-use)		Medium-High	Mentioned	40		25	7	1	3	3
**VIII.3. Disaster Prevention & Preparedness (Climate resilience)			Mentioned		0	1	2	3	2	2
**III.2.a. Industry	11–24%	Low		34	1			0	4	2
****Education					3	0	1	2	3	2
****VIII.1. Emergency Response					0		3	0	4	1
****II.5. Business & Other Services					4	1			1	1
****III.1.c. Fishing							17	1		1
*I.2.b. Basic Health			Mentioned		0		1			0
****I.5.b. Conflict, Peace & Security					1					0
**I.6. Other Social Infrastructure & Services			Mentioned			1	3	0	1	0
***II.1. Transport & Storage	8–22%	High		24	1					0
**Buildings (RE, EE, appliances, DH)	2–9%	Medium-High	Mentioned							
***Waste management	Mentioned	Medium-High		39						
****II.4. Banking & Financial Services						1				0
****III.2.b. Mineral Resources & Mining						1		0		0

	% of emission reduction in 2° C scenarios (Höhne <i>et al.</i> 2015)	Role to achieve global goal below 2° C (Höhne <i>et al.</i> 2015)	Adaptation Gap report	Number of INDCs mentioning (Callaghan 2015)	Percentage					
					DKK	FIN	ICL	NOK	SEK	Nordic
****VIII.2. Reconstruction Relief & Rehabilitation						1				0
****III.3.a. Trade Policies & Regulations									1	0
****Other					11	6	5	3	11	7

Note: * Indicates overlap.

** Shows sectors in which Nordic involvement is small or non-existent and where needs exist.

*** Highlights key sectors where Nordic climate-related ODA is absent.

**** Indicates sectors where Nordics do contribute but corresponding sectors/themes are not used in the sources used for comparison. The sectors have been sorted according to their share of total Nordic climate-related ODA.

4. Nordic countries mobilizing private finance for climate action

One of the key questions of this study is how Nordic actors can best contribute to mobilizing climate finance for developing countries. Following a short introduction on the global status of mobilization, this section focuses on the mobilization of private climate finance and the role of Nordic countries therein (see Appendix 5 for terminology on climate finance mobilization).

4.1 Global perspectives on mobilization of private climate-related finance

4.1.1 *From billions to trillions – how to accelerate and broaden private mobilization*

To meet the climate targets, the IEA estimates that global climate finance needs to rise from the current USD 390 to 790 billion by 2020 and to USD 2.3 trillion by 2035 (Callaghan, 2015). The role of the private sector in reaching these goals is evident. Most of private sector climate finance is being invested in Asia and Europe and for example in 2014, private climate finance rose by USD 50 billion, mostly driven by investments in renewables in China (Buchner *et al.* 2015).

OECD (2016a) reports that official development finance mobilized in total USD 36.4 billion in 2012–2014, of which 19% was climate-related. Both Africa and Asia each accounted for nearly 30% of the mobilized amounts, followed by America (21%) and Europe (15%). One key finding from available data, supported also by experiences from the Clean Development Mechanism (CDM),²¹ is that 90% of private climate finance originates from the same country in which it is spent (which is true for 75% of all climate finance) (Buchner *et al.* 2015). (OECD, 2016a).²²

According to Buchner *et al.* (2015), private actors are mostly i) project developers (38%), ii) corporate actors and manufacturers (24%), iii) commercial financial institutions

²¹ According to UNFCCC, 1 USD of public money invested in the CDM results in, has on average leveraged 10 USD in private sector investment, however, noting high sector and regional variations (UNFCCC, 2014b).

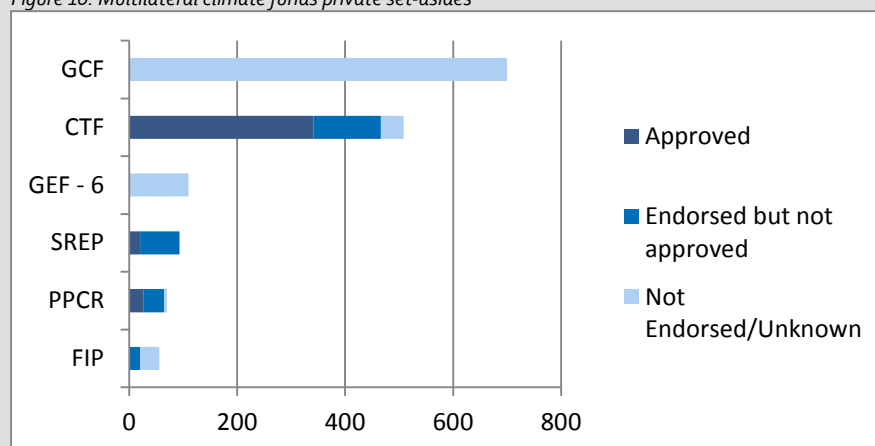
²² Data limitations and inaccuracies exist especially in tracking private climate finance (Callaghan, 2015). The decision by OECD DAC members to expand the scope of statistical monitoring through a new framework, provisionally entitled as Total Official Support for Sustainable Development (TOSSD) can support also the tracking of private climate finance. Hence, more systematic monitoring “could include private finance that is invested along with and mobilized by official development finance interventions in developing countries” (OECD 2016a).

(19%) and iv) households (18%). According to OECD (2015), energy (30%), industry (22%) and banking (19%) are the sectors where most private finance has been mobilized.

Box 2. Mobilizing private investment – experiences of multilateral climate funds

In their effort to scale up climate finance several multilateral climate funds' mandates include a goal related to mobilize private investment or "unleash" the potential of the private investment sector (Whitley, *et al.*, 2014). Public and private actors act upon different goals (e.g. maximizing well-being, maximizing profit) and therefore they do respond differently to different instruments. Recognizing this, some of the funds have established specific windows for engaging with private sector actors, called "set-asides" or "private sector facility", aimed to stimulate private sector participation. These include the GEF (GEF 4, 5 and 6), the GEEREF, and all the funds under the Climate Investment Funds - the CTF, SREP, PPCR and FIP. The GCF has also established a specific Private Sector Facility (See Figure). These dedicated lines for the private sector included the use of different instruments, in particular in the case of the CTF, including equity and guarantees. In the case of the CIFs set-asides, private sector party proposals have been submitted through a multilateral development bank in the countries where each of the funds operate.

Figure 10: Multilateral climate funds private set-asides



Particular success has been achieved in the energy sector. Among the multilateral climate funds the CTF's Dedicated Private Sector Program (DPSP) and the GEF have been the best at generating engagement and allocating its public funding to mobilize further private investment (Whitley, Chiofalo, & Barnard, 2014; Trabacchi, Brown, Boyd, Wang, & Falzon, 2016). Higher levels of private sector investment have happened in high-income countries including BRICS and OECD (e.g. Mexico) members (Whitley, Chiofalo, & Barnard, 2014). The CIFs funding to the private sector has helped to the viability, knowledge and risk gaps for their investment; through different sets of instruments including contingent recovery grants, first loss guarantees/subordinated debt; guarantees and dedicated lines of credit to financial intermediaries (Trabacchi, Brown, Boyd, Wang, & Falzon, 2016). The GEF also has experience with non-grant instruments when engaging with the private sector, including risk mitigation products, equity and debt instruments.

From a quantitative perspective, there is information on the allocation of public funding to private actors, in particular of those flows aiming to unlock further private investment. However, information of such co-financing is reported regularly only by few actors. As of December 2015, the CIFs report a leverage ratio of 1:7 for all co-finance, from which 28% is co-funded by the private sector (Climate Investment Funds, 2016). This means that for every dollar of approved CIF funding, USD 1.96 was co-

funded by private actors. The sixth replenishment of the GEF is expecting to leverage up to USD 10 in co-financing for every dollar available for climate finance (GEF, 2014).

There has been little involvement of private investment beyond energy, even when multilateral funds focused in forestry and adaptation have specific private set asides. In the case of the PPCR and FIP, countries' policy frameworks were identified as challenging for mobilizing private investment (Trabacchi, Brown, Boyd, Wang, & Falzon, 2016). Some of these barriers include unstable regulatory and tax policies for low carbon and climate-resilient cities; and gaps in regulatory frameworks for agriculture and forestry (Trabacchi, Brown, Boyd, Wang & Falzon, 2016).

4.1.2 Instruments and enabling environments

Cicero & CPI (2015) highlight the importance of understanding the investment barriers in specific countries and sectors and adjusting the finance instrument accordingly. Concessional loans are useful where climate-friendly technologies are too expensive and non-concessional loans where access to finance is a challenge. Regulatory thresholds can be overcome with technical assistance, capacity building and subsidy schemes. Where emphasis is on results, result-based financing is an option and public-private funds may be utilized to secure a certain level of private capital (Cicero & CPI, 2015). In most cases, a combination or "ecosystem" of instruments and policies is required for successful and effective mobilization.

When assessing the influence of different instruments in mobilizing private capital, it is important not to focus exclusively on the direct mobilization effects, since other instruments are still crucial for building an enabling environment for investments. OECD (2016a) distinguishes such catalytic effects from mobilization or leverage effects (see Appendix 5). Focusing solely on direct mobilization may lead to overestimating the role of project-level climate finance and, in worst case, neglecting the importance of finance directed to capacity building, budgetary support (e.g. feed-in tariff scheme for renewables) and overall work to strengthen enabling environment (OECD, 2015). While to date only few studies have assessed the mobilizing effects of public policies and support for policy development, and these mainly direct and project-based mobilization, preliminary findings from WRI²³ highlight the importance of overall policy frameworks and stability as key enablers of climate compatible investments.

Similar findings arise from the case studies conducted within this project (Section 2 and Appendix 2) and are also regularly highlighted elsewhere. According to GCF (2015) a key challenge for mobilization is the missing link between climate projects and "initiatives that strengthen underlying policy, regulatory, or enabling environment". The role of national authorities (e.g. national authorities designated and/or accredited for climate action) and leadership is important to engage the private sector. Their role is especially significant in fostering readiness and capacity building activities that

²³ Green, A. & Westphal, M. (forthcoming, early 2017) Designing and Testing a Methodology to Understand Private Climate Finance Mobilization from Public Policy. Conducted under the umbrella of the OECD-coordinated Research Collaborative on Measuring and Tracking Private Climate Finance. <http://www.oecd.org/env/researchcollaborative/on-going-activities.htm>

support a stable policy environment, which enables the developing countries “to effectively engage with the private sector” (CPI, 2014). Other key challenges mentioned by GCF (2015) include dominance of renewable energy in mitigation, heavy concentration of energy projects to specific countries, limited risk tolerance, dominance of water and sanitation in adaptation as well as large investment gaps for urban transport infrastructure in Africa.

Developing countries, especially in LDCs and SIDS, tend to be characterised by fragmented policy regimes and immature financial markets, while many climate-related investments involve new and emerging technologies. This leaves potential investors and financiers facing considerable risks, and can make it difficult to attract the capital needed. Credit enhancement tools (e.g. guarantees, letters of credit, indemnity-based and parametric insurances) as well as contract instruments (derivatives and power purchase agreements) can help to address political risk or guarantee money-flows (such as a feed-in tariffs), by protecting against financial loss, enhancing creditworthiness and/or improving an activity’s financial profile. It should be kept in mind that these instruments should be carefully assessed on a project level to avoid subsidizing normal commercial risk, creating “moral hazard” or crowding out the private sector (CPI, 2014, Climate Mundial, 2016). OECD (2016a) estimates that during 2012–2014, guarantees mobilized the largest share of private investments 59%, as well as syndicated loans to some extent.

According to Buchner *et al.* (2015) private investors rely dominantly on their own balance sheet financing in renewable energy projects. This might be due to difficulties or cost of securing debt, but might also reflect the limited availability of data for other sources of finance. Grants and low-cost loans were among the instruments used most in Nordic climate-related ODA whereas Multilateral DFIs mostly used market-rate loans.

4.2 How are Nordics mobilizing private climate finance?

This section outlines how Nordic countries have addressed mobilization, how private sector funding is being mobilized, who are the key actors and what characteristics can be identified per country, with the aim to identify opportunities to strengthen Nordic mobilization efforts.

4.2.1 Denmark

A first attempt to quantify private finance mobilization for Denmark (2010–2013) estimated total private mobilization at roughly USD 255 million (vs. USD 1,439 million total committed climate-related ODA during the same period). 92% of this mobilization resulted from bilateral efforts. Of all mobilized private climate finance, export credit insurance as an instrument, accounts for the largest share of mobilized funding followed by grants and equity (2010–2013 data). Overall, the Danish Export Credit Agency (EKF) and Investment Fund for Developing Countries (IFU) have had high mobilization impacts compared to other channels of Danish public climate funding.

Most Danish private finance mobilization has been achieved in mitigation projects. When examining reported leverage ratios, factors range from 1:0,7 (for grants) to 1:2,6 (for equity) and if export credit insurance is considered (leverage ratio of 1:20²⁴), the average of Danish leverage would amount to 1:5,3. In other words, for every dollar of public climate-relevant funding invested, this has mobilized USD 5.3 of private climate finance (Trinomics, 2015). Overall, while serving as some indication of quantitative mobilization effects, leverage ratios as such should be interpreted with caution, noting the diversity of approaches and assumptions still being used. Apart from the report prepared by Trinomics, Denmark is currently not systematically tracking private financial flows, but is considering aligning with international good practice (Danish Ministry of Energy, Utilities and Climate, 2016a).

The Danish Climate Investment Fund (KIF, managed by IFU), which has raised the Danish profile in climate-related funding, focuses on energy and transport sectors with a mention also of adaptation (disaster preparedness, coastal management, early-warning systems and the collection and distribution of climate-relevant information in general) in their focus areas (KIF, 2016). In terms of activating the private sector, the fund has been a pioneer, able to attract institutional investors with Danish pension funds (including PensionDanmark / PKA and Pædagogernes Pensionskasse / PBU) accounting for 60% of the total secured funding of KIF (Danish Ministry of Energy, Utilities and Climate, 2016b). The Fund's current portfolio amounts to just under USD 200 million with a predefined investment term from 2014 to 2026. Taking note of KIF aiming for total investments in the range of USD 1.3 billion during the term, with a high level of private sector mobilization, the private mobilization figures can be expected to increase considerably.

Engaging institutional investors has been facilitated by a number of factors, including IFU's track record in making sustainable and profitable investments in developing countries, integrating stability and de-risking elements in the investment (e.g. through predefined investment terms and profit sharing terms) and generally through continued dialogue with institutional investors. The commitment by institutional investors is also visible in the involvement of pension fund CEO's on the Board of the KIF, which simultaneously provides a space of mutual learning and sharing of lessons learned between the sphere of climate finance, institutional investors and mobilization of climate finance to developing countries.

²⁴ The Danish Export Credit Agency is required to hold only a 5% capital reserve for the guaranteed loan amount, which leads to high mobilization because the OECD DAC methodology allows calculating the full 100% of the amount of a guaranteed credit. For methodology see Trinomics, 2015.

The role of Export Credit Agencies is guided by the OECD and other international agreements, in which it is stated that the primary purpose is to support national exports and facilitate international trade – hence the climate finance is a priori a secondary activity for ECAs. EKF's role as a forerunner among ECAs in climate finance is partly explained by the fact that the industrial structure of the Danish export has a relatively high proportion of renewable energy and wind energy. While EKF does not have a separate mandate covering climate finance, the Explanatory memorandum for the Act on EKF Denmark's Export Credit Agency ²⁵ states that EKF's risk appetite may vary in the case of climate finance related export.

In addition to the instruments and channels mentioned above, the Energy Savings Insurance (ESI) instrument, supported by the Danish Energy Agency and rolled out by the Inter-American Development Bank, can be highlighted as a particularly innovative and successful initiative in mobilizing private finance. Already operational in Mexico and Colombia, and with funding also from AFD, GIZ and GCF, rollout is being prepared in multiple other countries (GCF, 2017). The ESI provides an insurance underwriting minimum savings for energy efficiency investments. The ESI model has been reviewed and endorsed by the Global Innovation Lab for Climate Finance with estimated capacity to mobilize USD 10–100 billion in investment with annual emissions reductions of 27–234 MtCO₂ by 2030 (State of Green, 2016) As noted above (section 4.1), in most cases successful mobilization requires a combination of instruments and measures, and the ESI approach allows simultaneously to address technical and financial risks and building confidence among SMEs, technology providers and local banks.

Overall, leverage of private finance and innovation are important objectives of the Danish Climate Envelope, which is the mechanism for channelling Danish dedicated climate funding to support mitigation and adaptation activities in developing countries. Hence, when contributing earmarked climate finance (allocated both bilaterally and multilaterally) for adaptation, transition to a low-carbon economy and engagement in global climate negotiations, the potential to engage expertise and finance from the private sector shall be integrally considered and harnessed (Danida, 2016a).

²⁵ "[it] is presupposed that the risk appetite of EKF Denmark's Export Credit Agency may vary depending on the specific area. Within special focus areas such as climate, energy and small and medium-sized enterprises, the Board of Directors may thus decide to take greater risks than would be the case in other areas." See <http://www.ekf.dk/en/about-ekf/ekfs-legal-basis/Documents/Explanatory-memorandum-for-the-bill.pdf>

Danida has at its disposal several instruments that aim to promote sustainable development in developing countries through engagement with the private sector. For example, Danida Business Finance targets infrastructure investments in transportation, energy, water supply and sanitation (Danida 2016b). One criteria assigned to the facility is that projects should address adverse effects on climate change and support transition to a low-carbon economy (Danida, 2016b).

4.2.2 Finland

Concerning the mobilization of private finance for climate action, the Finnish DFI – Finnfund is a key player, noting its commitment to direct over 50% of its investments in climate mitigation. Currently this covers investments directed in particular at renewable energy, energy efficiency and forestry projects in developing countries. Based on an overall level of financing commitment made in past years (varying between USD 35 million and 126 million) (Finnfund, 2016) and making use of a leverage ratios comparable to Norfund²⁶ (with also a focus on above 50% of all investments on clean energy), a rough estimate of private finance leverage by Finnfund mitigation relevant investments could be in the range of USD 385 million to 1,540 million (assuming leverage ratios from 1:2,5 to 1:10). These figures are generally in line with other preliminary estimates (Finnish Ministry of the Environment, 2015), but should be taken with caution if/when comparing with leverage ratios by other actors in Nordic countries and internationally, noting varying assumptions across actors and data constraints (see case Denmark above, and Appendix 5).

Within recent cuts and changes in Finnish ODA allocations, particular focus is placed on responsible private sector engagement and mobilizing private sector finance and expertise. This tendency is also present in the Paris pledge by Finland, stating that “Finland intends to provide over half a billion euros in new investment funding for developing countries over the next four years, a substantial part of which will contribute to climate finance” (Australian government, 2016). Even if the final formulation of the financing package remains open, the role of Finnfund is likely to be central in these changes and might increase the Finnish figures for mobilization of private for climate action considerably in the next few years. Also, the role of Finnpartnership,²⁷ which is managed by Finnfund, is likely to remain important, in particular in the initial phase internationalisation of Finnish companies, even if no climate specific estimates of private mobilization are available.

The Energy and Environment Partnership (EEP)²⁸ program, funded by Finland with co-financing from the UK, Austria, NDF and the EU, represents another Finnish initiated vehicle with a particular objective of mobilizing private sector finance for

²⁶ See section below and Evaluation of the Norwegian Investment Fund for Developing Countries, 2015. Taking note of differing financing structures for Finnfund (using also markets for funding its investments) than Norfund, the theoretical leverage ratios for Finnfund could be even higher.

²⁷ Finnpartnership provides advisory services for the business activities of Finnish companies in developing countries and financial support in the planning, development and training phases of a project.

²⁸ <http://www.eepglobal.org/en/>

renewable energy, energy efficiency, and clean technology investments. The programs (covering 30 + countries) with a total of EUR 100 million financing, provide grants for developing, piloting and scaling up inclusive business models and provide seed money for the preparatory phases of sustainable energy investments. EEP-type challenge funds have been recognized to have a potential to catalyse significant private sector financing.²⁹ Based on available data the EEP has leveraged private finance at about 50% co-financing share.

A newly launched programme BEAM is a five-year programme (2015–2019) with a total budget of EUR 50 million, equally financed by Tekes and the Ministry for Foreign Affairs. The programme is developed to help Finnish companies, NGOs, research organisations, universities and others in developing, piloting and demonstrating innovations that improve well-being in poorer countries, and at the same time giving rise to international business opportunities for Finnish companies. While the explicit focus of this programme is not on climate finance, it has potential to mobilize climate finance to some extent for both mitigation and adaptation in the next few years.

Overall, the Finnish financial sector has remained rather passive in comparison to other Nordic actors. E.g., institutional investors and banking sector actors have settled so far for measures linked to carbon footprint assessments and very initial de-risking measures (ref. carbon risk / stranded assets) in their portfolios, if any. The Finnish export credit agency, Finnvera has not taken any active role with regards to potential mobilization of climate finance. When financing exports, Finnvera considers environmental and social impacts as part of the overall risk assessment of the projects financed. However, Finnvera does not have a separate mandate or received any particular guidance from its owner for financing or guaranteeing climate relevant projects.

4.2.3 Norway

Norway has (in a similar manner as Denmark as part of the OECD initiative on Tracking Private Climate Finance) conducted work in trying to assess the mobilization of private climate finance in a more systematic manner. Based on Norad's tracking of climate finance USD 1,019 million of Norwegian public climate finance was disbursed to developing countries in 2014, of which bilateral flows accounted for USD 578 million and multilateral flows USD 441 million (Cicero, 2015). Of the total, the report examined USD 692 million (with data retrieved from Norad database), which was estimated to have mobilized some USD 202 million of private co-finance (corresponding to a leverage ratio 0.3). From other public sources a volume of USD 98 million was studied³⁰ with an estimated mobilization of USD 147 million (leverage ratio 1.5). Based on the analysis, the Norwegian DFI, i.e. Norfund is the primary Norwegian institution that has

²⁹ According to studies of climate finance instruments by DFID (UK), EEP is one of the most effective programs in its category and would benefit from additional financing. The Department for International Development (UK), Intervention Summary, Title: Scaling up of the Energy and Environment. Partnership with Southern and East Africa (EEP-S&EA).

³⁰ Including public actors such as SN Power and Agua Imara, whereas leaving out other public actors (such as Statoil, Statkraft, and the Norwegian Central Bank Investment Management/NBIM). The actors included have at least a 50% public ownership and operate under a mandate of subsidiarity.

mobilized private climate finance – a finding well aligned with experiences and assessments from other Nordic countries.

It is important to note that this assessment (covering grants, concessional loans, direct equity investments, and fund-level equity and credit enhancement (guarantees) focused on direct mobilization, and transparently highlights this aspect. As noted in section 4.1, the more indirect mobilization impacts of climate-related finance targeting technical support and policy support, i.e. measures strengthening financial institutions, markets and building more broadly the enabling environment for climate compatible investments, have, for understandable reason gained less attention. Without taking any credit from the mobilization capacities and impacts of Nordic DFIs, this issue is of crucial importance when drawing any broader conclusions about how climate relevant ODA most effectively can be used to mobilize (directly and/or indirectly) private finance for climate action.

The Norwegian mobilization figures provided above are considered low estimates, as mobilization is likely to take place also at higher levels. Furthermore, in case of multiple financiers, the Cicero report attributes mobilization according to the share of financed volume, which also lowers the leverage factors presented in the study.³¹ Private climate finance in Norway is mostly attracted through renewable energy related projects and main categories of finance include revenue support, credit enhancements, direct investments, insurance as well as technical and policy support. The is a finding aligned with experiences not only in other Nordic countries but also highlighted in assessments addressing multilateral climate funds, noting that there has been little involvement of private investment beyond energy (see Box 2).

The main Norwegian public climate financiers include the Ministry of Foreign Affairs and its agency Norad, Ministry of Climate and Environment (KLD), Norfund as well as Norwegian embassies. Besides the ones already mentioned, the main multilateral channels Norway uses are the International Finance Corporation, the Asian Development Bank (ADB), the African Development Bank (AfDB) and Global Environmental Fund (GEF) as well as the Green Climate Fund (GCF) (Cicero, 2015).³² Noting the continued strong commitment to REDD+ and intention to continue REDD+ finance at least at current levels until 2020 (with budget in 2015 amounting to NOK 2,8 billion) (Australian government, 2016), this remains an extremely interesting area to investigate possibilities to mobilize private finance, with considerable potential for mitigation and adaptation synergies.

An area of increasing interest also on the Norwegian scene is the potential role of institutional investors, such as the Kommunal Landspensjonskasse (KLP) having decided to divest from companies that obtain a high percentage of their revenues from coal and direct major investments in renewable energy, e.g. through co-investing with Norfund in solar energy in Africa. Of particular interest is also in which manner and to

³¹ For example the report represented a case where Norway invested EUR 12M in GEEREF fund together with EUR 100M from the European Commission and Germany. These investments mobilized EUR 110M of private investments. In this case the Norwegian EUR 12M was estimated to mobilize $(12M/(100M+12M))*110M = \text{EUR } 11,8M$ and not the entire EUR 110M.

³² Norway has made a commitment of NOK 400 million per year in 2016, 2017 and 2018 (Australian government, 2016).

which extent the globally biggest sovereign-wealth fund, Government Pension Fund Global (worth NOK 7.3 trillion, roughly USD 880 billion in September 2016), will engage in climate compatible investments (NOU, 2016).³³

Both Export Credit Norway's (EKN) and The Norwegian Export Credit Guarantee Agency (GIEK) activities are guided by the OECD's Arrangement on Officially Supported Export Credits. GIEK's guarantees are adapted to the needs of Norwegian export companies and foreign buyers, covering both political and commercial risk on loans issued by commercial banks or Export Credit Norway. Neither EKN nor GIEK have a separate mandate covering climate finance. Their mandate is governed by the annual letter of allocation (Tilodelningsbrev) published by the Government and Parliament. GIEK has since 2014 a separate focus on renewable energy and in 2015 GIEK reported the outstanding guarantee liability covering the renewable energy to be NOK 2,518 million (EUR 287 million) which is approx. 2.5% of total outstanding guaranties (GIEK, 2015).

Box 3. With Sweden in the lead, Nordic actors are forerunners in Green Bonds

The role of the Swedish financial sector has been crucial in developing large scale private finance for green investments. The "Green Bond" concept was developed by a Swedish bank, SEB, together with the World Bank in 2007–08 (SEB, 2016a) in response to a demand among Nordic institutional investors for a product into which they could invest large volumes of funds for "green" projects. Since 2008, SEB has been involved in or advised on the issue of a significant volume of green bonds. This has contributed directly to an expansion and maturation in the global green bond market which – although it is still relatively small (0.1%) compared to the global bond market, – has grown significantly, with an estimated USD 80 to 100 billion to be issued in 2016 (SEB, 2016b). While SEB continues to underwrite new green bond issues, in the longer term as the market grows globally the bank is positioned to continue playing an important knowledge brokering role (AfDB, 2014).

Swedish banks have also contributed to the introduction of multilateral development banks to new markets through green bonds. Nordea introduced the African Development Bank to the Swedish krona market through green bond transactions in 2014 (AfDB, 2014). SEB, Nordea and Handelsbanken are also in cooperation with NIB to support the green bond market (NIB, 2016).

According to SEB, within the Nordic countries, Swedish institutions have been the most active in issuing green bonds (SEB, 2016b) and Swedish investors are among the pioneers in green bonds. Large scale institutional investors such as various Swedish pension funds have included green bonds in their financial strategy. For example, the Second AP Fund (Andra AP-fonden, AP2) has set a specific allocation of 1% of its total strategic portfolio for green bonds (AP2, 2016). AP4 also participated in the issuance of 14 new green bonds as part of its focus area of climate change and sustainability, representing around 1% of the global primary market (AP4, 2016). Local investors, such as Kommuninvest, the local governments' credit provider, has also issued the largest Nordic green bond to date, focused on adaptation (Kommuninvest, 2016a), (Kommuninvest, 2016b).

³³ The fund owns more than 2% of all listed shares in Europe and over 1% globally. Its largest holdings are in companies such as Apple, Microsoft and Nestlé, covering in total some 9,000 companies in almost 80 countries. As a large and long term investor, financial risk due to climate changes is of great importance for the Fund. In line with its management mandate from the Ministry of Finance, which is endorsed by the Parliament (Stortinget), the Fund is however not a tool for Norwegian climate change action as such.

4.2.4 Sweden

The private sector has been identified as a partner for development within the Swedish aid policy framework (Government of Sweden, 2014). This focus is not new but it has evolved over time, changing the role of the private sector beyond the delivery of goods and services, into a provider of development benefits jointly with the public sector (Sida, 2016). In practice this means that the private sector is expected to take an active role in integrating development objectives within their core businesses (including those related to climate change), for example within their own supply chains in developing countries. One of the main strategies for achieving this is to expect the private sector actors to provide at least 50% of co-funding under the different instruments provided (e.g. grants, loans and guarantees).

Swedfund is an important actor in the Swedish climate finance landscape, with a mission to reduce poverty through sustainable businesses and developing the private sector in developing countries (its current focus is Sub-Saharan Africa).³⁴ It offers loans and equity at commercial terms. This engagement can include further technical support and alignment with aid effectiveness principles. The current investment priorities for Swedfund are manufacturing and services; development of financial institutions and funds for financial inclusion; and renewable energy and energy efficiency. While the RE and EE investments amount to some 15% of the total portfolio in past years, other parts of the portfolio may be climate relevant, too. As part of the introduction of a climate strategy for Swedfund in 2016, the tracking of the climate relevance of all investments can be expected to become more systematic, allowing also more reliable assessment of private finance mobilized specifically for climate action.

Capital contributions to Swedfund are defined annually and are part of the Swedish aid budget. Capital injections of SEK 400 million for 2017 and 2018 have been agreed, but are still yet to be approved by the Parliament. Since 2015, the Government of Sweden has included in Swedfund's owner instructions the need for their operations "to contribute to gender equality and climate change efforts, as well as to the 2030 Agenda for Sustainable Development". In addition, the Swedpartnership program managed by Swedfund offers financial support to small and medium enterprises through a small loans that can be transformed into a grants for transfer of know-how and investments in equipment (Tillväxtverket, 2016).

Swedfund also collaborates with others institutions, including other Nordic DFIs and other European DFIs and their initiatives. For example, Swedfund (together with Finnfund and Norfund and a number of other European DFIs) provides funding to the Interact Climate Change Facility (ICCF), focused on co-financing renewable energy and energy efficiency projects in poor countries. As the smallest DFI in Europe, Swedfund typically engages as a minority investor. This means that Swedfund never provides equity for more than 30% of the total share, and it never takes on 100% of the loan component.

³⁴ Swedfund is also contributing to improving transparency. Its financial reporting has been awarded and is the first DFI to publish country reports.

The Swedish International Development Cooperation Agency's (Sida) primary mission is to reduce poverty globally, and the countries and areas it prioritizes are determined by the Swedish government and change over time.³⁵ Within climate action, Sweden has consistently shown strong commitment to address the adaptation gap, closely linked to the development gap.³⁶ In the international finance landscape, a perceived strength of Sida is its focus on actively supporting institutional development. Sida provides for instance the possibility for its partners to manage the funds, in contrast to other institutions like the World Bank, whose financing models prevent the country partner to manage directly the funds. By doing this Sida creates learning and builds capacity, for instance, in financial management. Sida is also actively trying to helping broaden the norms around climate finance, by pursuing alignment between climate finance and development finance.

Sida has made particular efforts to mobilize the participation of the private sector, mainly through the provision of grants, but also through guarantees. Small grants have been distributed to private actors for the development of products or services linked to poverty reduction (e.g. through so called Challenge Funds). Larger grants have also been allocated to the private sector for investments involving large companies and third non-profit partners (e.g. through Public Private Development Partnerships). Sida grants are also used to provide concessionality to commercial loans (provided by a financial institution), transforming them into development loans.³⁷ There is a particular interest in using these instruments to support climate and environment related investments (Söderbäck, 2016). Sida's use of guarantees is interesting and unique, in that Sweden provides guarantees to local institutions (i.e. within the local capital market). Sida has an explicit policy to support the strengthening of the local capital markets. By contrast, other development cooperation agencies working with guarantees tend to guarantee the international partner rather than the local institution.

While no comprehensive figures are not available for Sweden, or similar studies has yet been done (as is the case for Denmark and Norway) on climate finance mobilization, in 2014, Sida made an estimation of the private sector capital mobilization from both grants and guarantees, estimating 4.8 kronor mobilized for each krona provided by the public sector (in total, SEK 8,000 million in mobilized capital). In 2015, Sida's operations with the private sector represented 3.7% (SEK 2,987 million) of its overall portfolio, and reached 8.1% (SEK 6,479 million) if the use of guarantees is included. The funding has been focused on market development, as well as agriculture and forestry (ADB, 2014).

³⁵ Under the Swedish Policy for Global Development, three main thematic areas are to be emphasised in all development aid: (i) democracy and human rights, (ii) environment and climate, and (iii) gender equality and women's role in development.

³⁶ Sweden has made additional voluntary contributions to the Adaptation Fund and the Least Developed Countries Fund. Sweden has also committed to disperse on average nearly 500 mSEK per year (2015-2020) to the Green Climate Fund and reiterated that adaptation will remain important a key component in Swedish bilateral development cooperation. (Australian government, 2016).

³⁷ The agreement is done between Sida and financial institutions ready to provide a commercial loan to a company based or with operations in a target country. The grant component (provided by Sida) can be between 35–80% of the total cost of a project/investment, with the commercial loan component (issued by commercial banks or a multinational institution) covering between 20–65% of the total funding. This can be accompanied by a guarantee (issued by Sida) covering up to 50% of the loan.

The experience of Sida and Swedfund with the private sector includes specific investments in energy, agriculture and water sectors, all relevant to support climate change action in developing countries. There seems to be a particular interest on developing local financial markets, predominantly those serving small and medium enterprises in developing countries in Sub-Saharan Africa.

An increasing range of other Swedish institutions have experience with either funding private sector actors in developing countries or mobilizing private finance to support climate-related investments including in developing countries. These include commercial banks and institutional investors such as pension funds, with for example the AP funds standing out as international forerunners in addressing the climate challenge proactively in its investment decision making. Innovative models are also being used by Swedish municipalities (Kommuninvest) to raise finance for climate-related investment, with the replicability being studied by several developing and emerging countries (Nordic Council of Ministers, 2016a).

Beyond development finance, other institutions are also able to support and mobilize funding for climate action in developing countries. The mandate of Tillväxtverket, under the Ministry of Enterprise and Innovation, is to promote growth in Sweden by increasing the competitiveness of Swedish companies (Tillväxtverket, 2016). It provides grants to Swedish sellers and developing country buyers for the introduction of new environmentally friendly technologies in a specific set of countries (through Demo Environment).

Svensk Exportkredit (SEK), Sweden's export credit agency, supports investment of Swedish exporters globally, and operates in line with the same international agreements guiding other Nordic ECAs. This is done mainly by providing loans or credit to buyers of Swedish capital goods and services, to ensure payment to Swedish exporters. This credit can also be guaranteed by the Exportkreditnämnden (EKN), the Export Credit Guarantee Board. As a publicly owned institution, SEK is subject to government policies, including the fossil free Sweden Initiative, as well as global development and sustainability (Swedish Export Credit Corporation, 2016a). Due to the nature of its activities, SEK interacts with different financial institutions including commercial banks, and development finance institutions (e.g. Swedfund).

Green bonds (see Box 3) are used to finance green loans to Swedish exporters. SEK was the first European export credit agency to issue a green bond in 2013 (Swedish Export Credit Corporation, 2015). However, green lending represents only 5% of corporate lending (SEK 0.988B of a 19.3B portfolio), and even a small share of its end-customer finance (Swedish Export Credit Corporation, 2016a). From the total USD 500 million issued through green bonds, USD 341,8 million have already been invested in green projects in Chile (Wind farm³⁸), Zambia (hydro power connection to national grid³⁹) and India (transmission system for hydro power⁴⁰) (Swedish Export Credit Corporation, 2016b).

³⁸ <http://www.sek.se/en/about-us/awards/>

³⁹ <http://www.sek.se/en/about-us/client-cases/displacing-fossil-generated-power-in-zambia/>

⁴⁰ <http://www.sek.se/en/about-us/client-cases/energy-efficiency-in-india/>

4.2.5 *Iceland*

The private sector has not played a significant role to date, either in climate change nor in other focus areas (e.g. gender) of Iceland's development finance. While energy programmes are important and there are Icelandic companies working on geothermal energy in Africa, this has developed independently and there has not been specific cooperation between the public and private sectors. Political interest for the public sector to work more with the private sector has been increasing, but to date the private sector has been slightly passive. Development cooperation work has focused on sectors where there has not been such an obvious role for private sector actors and on the other hand, local ownership has been emphasised (vs. building a role for Icelandic companies), but this is likely to be changing, especially when geothermal project advance further. Another reason for lack of cooperation is also that the public sector has lacked capacity to fully follow the activities of the private sector, much less understand financing motives.

There is an expectation that the SDGs will encourage increased private sector engagement. Iceland is currently working on the SDGs nationally and it is foreseen that the private sector will play a big part here.

Differing from the other Nordic countries, Iceland does not have an export credit agency. However, in geothermal energy initiatives private sector involvement has proceeded regardless of this.

4.3 **Mandates of Nordic finance institutions and their conduciveness with the Paris Agreement**

The Nordic countries own a number of financial institutions, mechanisms and instruments that can contribute to mobilizing climate finance. This section reviews some of these institutions, with a particular focus on joint Nordic institutions (including Nordic Investment Bank – NIB, Nordic Environment Finance Corporation – NEFCO and Nordic Development Fund – NDF) and national DFIs (including IFU, Norfund, Finnfund and Swedfund). In addition, this review covers Nordic Export Credit Agencies (ECAs). This section complements the country specific analysis in section 4.3., and draws together the institution specific review with a comparative analysis of the respective DFIs and the Nordic institutions presented in Table 4.

4.3.1 *Nordic Finance Institutions (NEFCO, NIB, NDF)*

A priori, NEFCO, NDF and NIB are currently guided by mandates generally conducive for climate action. While the regional focus of NIB and NEFCO has been in the Nordic, Baltic and Eastern European states, the activities of these institutions increasingly address green growth and climate challenges also globally. Each of these institutions have their own history, characteristic and focus areas, but possess at the same time several complementarities with regards to the instruments, balance and expertise on

mitigation –adaptation, project pipeline coverage, risk appetite as well as regional coverage. A number of opportunities to further enhance the degree of conduciveness with the Paris Agreement have been identified, for example by making better use of the respective strengths of these institutions, and harnessing, in various manners, the synergies of these institutions.

NEFCO was established in 1990 with the purpose of generating *positive environmental results* by providing financing to projects with a Nordic interest, with an emphasis in Eastern Europe and that reduce emissions harmful to the environment. NEFCO provides loans and capital contributions for green growth investments regionally to small- and medium-sized projects. NEFCO also manages a considerable number of trust funds, including carbon funds with a global reach. NEFCO's activities focus on four areas: the continued reduction of pollutants affecting the Baltic Sea, the Arctic and Barents regions as well as prevention of climate change and promotion of green growth, globally. NEFCO has a long track record in climate financing and the carbon markets, through its climate fund management activities, including mobilization of financing and the creation of private & public partnerships within the climate space. NEFCO is an observer to the GCF and in a dialog with the GCF to obtain accreditation.

NDF focuses exclusively on climate change and development in LICs and LMICs, with grant-based co-financing having been the core instrument in past years. The recently updated strategy underlines NDF's role in channelling finance to innovative climate change interventions that reduce poverty in developing countries. Strategically NDF's focus is on being catalytic, supporting innovation and private sector development, project development and piloting of interventions with high risk. NDF increasingly uses different instruments such as loans and equity in the context of climate-focused projects. In line with the NDF strategy (2015), NDF will further expand opportunities for a wider use of different instruments including blended finance through different types of grants, loans and equity.

NIB finances projects that improve competitiveness and the environment of its member countries. In terms of the environment, NIB lends to projects that lead to improved resource efficiency and the development of a competitive low carbon economy, with a lion's share of NIB's financing targeting its membership i.e. the Nordic and Baltic regions. The protection of the environment and its ecosystem services, and the development of clean technology are at the core of NIB finance. Operating on the basis of sound banking principles (without elements of development aid), NIB provides loans and guarantees to support private and public sector investments with favourable climate impacts. Transfer of lessons learned, best practices and technologies globally is, however, a growing area of interest for NIB.

Table 4 summarizes the key findings from the mandate review making use of the Paris Agreement analysis in Section 2. While none of the institutions have conducted an explicit "2 C degree scenario review" (see Höhne *et al.* 2015) of their portfolios, all institutions are fully aware of the key sectors that need to be addressed as well as of the applicable technology solutions that are aligned with transformative decarbonisation. The extensive record of NEFCO on climate finance as well as the pioneering work by IFU

in engaging institutional investors in climate finance are notable. While Norfund has been a forerunner in major RE investments in a number of developing countries, it is questionable how investments in cleaner gas technologies could be aligned with the “well below 2 C degree pathway”. The NDF high score on criteria “well below 2C target” is based on the importance given in project screening criteria for identifying approaches and technologies that are aligned with low-carbon development and the importance given for up-scaling and replicability. NDF success in promoting innovative climate interventions has also been acknowledged by numerous climate action awards submitted to NDF.⁴¹ However, explicit processes to align investment decisions with the international climate goals are not yet fully in place at any of the Nordic institutions reviewed.

Targeting explicitly both mitigation and adaptation, and noting the existing balance (with also a high share of adaptation & mitigation projects) in the portfolio gives NDF a high score on “mitigation and adaptation balance”. Other institutions are increasingly aware of their portfolios being relevant also from the adaptation perspective, but they do not explicitly screen and monitor the adaptation impacts. Hence, major adaptation opportunities and benefits may go unnoticed and/or unreported.

With regards to transparency, all institutions score well. Despite increasing pressure being set on ODA budgets in all countries, Nordic countries have remained rather consistent with their commitments (Australian government, 2016). As noted in the INDC review (see Section 2) developing countries highlight technical and capacity support as critical for moving into the next phase of NDC implementation, beyond financial support. While the institutions reviewed here recognize this need, it is not within the core objectives for most of these institutions.

⁴¹ See e.g. <http://momentum.unfccc.int/> and <http://www.iccgov.org/en/observatories/best-climate-practices/>

Table 4: Mandate overview of Nordic DFIs and Nordic finance institutions from climate and Paris Agreement conduciveness perspective

Mandate overview through the climate lens					Conduciveness with the Paris Agreement		
Name	Mandate	Climate relevance /focus	Tracking of climate finance	Alignment "well below 2C target"	Mitigation & adaptation balance	Transparency & Predictability	Support beyond finance
Finnfund	To promote economic and social development in developing countries by financing responsible and profitable private projects.	Finnfund continues allocating more than half of its investments in projects that mitigate climate change and emphasises its catalytic role in this sector.	Rio Markers in use for mitigation projects and monitoring of mitigation impacts part of standard portfolio M&E processes.	Medium	Medium/Low	High	Low/Medium
Swedfund	To eliminate poverty by creating sustainable business in some of the world's toughest and most promising growth markets.	Swedfund's activities "shall promote the development of greater gender equality and contribute to development that is sustainable for the environment and climate". A climate strategy for Swedfund is expected in 2017.	No comprehensive climate tracking according to Rio Markers or MDB approach. The forthcoming climate strategy should outline how to better track climate related activities.	Medium	Medium/Low	High	Low/medium
Norfund	To promote economically, environmentally and socially sustainable development by channeling capital in the form of equity and other risk capital and/or loans or guarantees to the private sector in developing countries.	Strong emphasis on renewable energy with specific requirement to invest at least 50% of annual capital injections into renewable energy projects. No separate climate target for the overall portfolio.	No separate climate tracking of investments according to Rio Markers or MDB approach. However, monitoring of mitigation impacts part of standard portfolio M&E processes.	Medium -	Medium/Low	High	Medium/low
IFU	To promote business development in developing countries in cooperation with Danish trade and industry. IFU's investments should be sustainable and contribute to environmental and socially responsible development.	No explicit climate target/focus for the overall IFU portfolio. However, the Danish Climate Investment Fund (KIF) is focusing only on climate projects.	No explicit climate screening of projects according to Rio Markers or MDB approach (all KIF projects climate relevant and tracked for mitigation impacts).	Medium/High	Medium/Low	High/Medium	Low/Medium
NEFCO	To finance green growth investments and support the implementation of environmentally relevant and financially feasible projects in line with Nordic environmental priorities and solutions.	Climate change is one of NEFCO's focus areas, with a long track record in climate finance, climate fund management, mobilization and private & public partnerships within the climate space.	No explicit climate screening of projects according to Rio Markers or MDB approach. Tracking of GHG impacts in mitigation projects as part of environmental monitoring.	Medium	Medium/Low	High	Low/Medium

Name	Mandate	Mandate overview through the climate lens		Conduciveness with the Paris Agreement			
		Climate relevance /focus	Tracking of climate finance	Alignment "well below 2C target"	Mitigation & adaptation balance	Transparency & Predictability	Support beyond finance
NIB	To finance projects that improve competitiveness and the environment of the Nordic and Baltic countries.	Climate-relevant, mainly RE and EE projects form approximately 50% of NIB's portfolio. NIB lends to projects for improved resource efficiency, competitive low carbon economy, clean technology, protection of the environment and ecosystems.	No explicit screening of projects according to Rio Markers or MDB approach. NIB is tracking GHG impacts from its mitigation projects and collaborating with EIB, ADF, EC, KfW etc. to outline guidance on adaptation.	Medium	Medium/Low	High	Low/medium
NDF	To channel finance to innovative climate change interventions that reduce poverty in developing countries.	Explicit focus on facilitating investments in both adaptation and mitigation initiatives.	Systematic screening of projects according to Rio Markers, and collaboration with MDBs, GCF and other financial institutions in defining and tracking climate interventions.	High/Medium	High	High/Medium	Medium

Note: An initial scale of low – medium - high, has been used for scoring conduciveness with further clarifications provided in the report text.

4.3.2 *Nordic Development Finance Institutions (DFIs)*

As noted in section 4.2, the state-owned development finance institutions (Swedfund, Finnfund, Norfund, and IFU) have recognized their potential role in advancing climate compatible development, in particular on climate mitigation. The extent to which this role has been captured in their current mandates, actually mainstreamed into all operations, investment decision making as well as in mobilization and partnerships considerations varies. The review also recognizes areas for improvements, taking note of the central role DFIs overall have in the mobilization of responsible private finance.

Overall the mandates allow the DFIs to invest in ODA eligible countries.⁴² All Nordic DFIs work primarily through equity and quasi equity⁴³ instruments, reflecting their mandates linked to active ownership and a commitment to contribute to positive development impacts, and with some variation through loan instruments (at Swedfund and Finnfund attaining above 40%) (EDFI, 2016), while only to a very limited extent with guarantees. No major changes in the respective mandates of Nordic DFIs are currently foreseen, with the exception of on-going discussions of potentially untying IFU finance from “Danish interest” in all investments.

Several of the Nordic DFIs are considering more systematic climate tracking of their investments. The Nordic DFIs increasingly recognize that many of their investments, i.e. beyond the explicit area of energy investments, also have the potential to contribute to adaptation, by strengthening climate resilience in partner countries in various manners, e.g. by helping to diversify and strengthen livelihoods, improve access to water, energy, information and/or finance.

Combined with already on-going work by DFIs about their leverage processes and ratios, improved climate screening and climate finance tracking by Nordic DFIs would allow more systematic learning of what specifically works in mobilizing finance and what are the climate specific aspects in the enabling frameworks that need to be in place for engaging more actively the private sector in climate compatible investments in developing countries.

4.3.3 *Export Credit Agencies*

While the primary purpose of Export Credit Agencies (ECAs)⁴⁴ is to support national exports and facilitate international trade, the opportunity to more actively contribute to climate finance is slowly gaining attention. The Nordic ECAs (EKF in Denmark, Finnvera in Finland, GIEK and Export Kredit in Norway, EKN and SEK in Sweden) are, to varying degrees, addressing the question, whether and how private finance for climate action

⁴² With further specifications and priority regions and countries provided in mandate statements and/or regular guidance provided by the owners in their respective manners.

⁴³ A category of debt taken on by a company that has some traits of equity, e.g. through flexible repayment options or being unsecured (e.g. mezzanine debt and subordinated debt).

⁴⁴ Export credit agencies (ECAs) provide financial instruments (export credits) that support exports and trade by mitigating the financial, political and project risks of transactions and projects.

could be leveraged through more strategic and active use of ECAs' de-risking instruments (addressing e.g. political, technological, credit, convertibility and/or market risks). As part of this discussion, the possibility of applying for GCF accreditation as Implementing Entities has also been considered by a number of Nordic ECAs, although it is noted that the prospect of the GCF accrediting ECAs has been controversial and as of October 2016 the GCF postponed any decision on whether to allow ECAs to be accredited.

The activities of the ECAs are guided by the OECD and other international agreements. However, there is increasing understanding and room for manoeuvre for the role of ECAs in climate finance, developed under separate OECD agreements called "Sector Understandings" for ECAs. One of these understandings covers export credits in the areas of renewable energy, climate change mitigation and adaptation, and water projects.⁴⁵ A revised Climate Change Sector Understanding (CCSU) was agreed by the Participants to the Arrangement on Officially Supported Export Credits in 2014. The revised CCSU "Climate Change Adaptation" allows extended repayment terms up to 15 years for "Climate Change Adaptation" projects, in addition to the scope of projects already agreed in the initial 2012 CCSU.

Due to differences between Nordic countries among other in their industrial structures, major variation in the scope, size and climate relevance of Nordic ECA contributions are evident (e.g. the case of the Danish wind energy industry). Hence, it is not surprising that the Danish EKF is one of the forerunner ECAs in investigating opportunities in climate finance.⁴⁶ However, currently the volume of climate finance is not systematically tracked by the ECAs.

Looking at data on basic trends in the volume of export credits from official sources provided by OECD member countries during the period 2005–2014, the total volumes for Denmark, Sweden, Norway and Finland range from USD 16 billion to 28 billion (OECD, 2016c).⁴⁷ When reviewing information on the volume of the energy sector covering all OECD member states, it can be noted that for the period 2005–2014 export credits for non-renewable energy outweigh export credits for renewable energy by far. While data for 2014 indicate already an equal share (4–5% of all export credits) being directed to non-renewable and renewable energy solutions it is clear that ECAs have so far not been the drivers for a "well below 2 degree" low-carbon transformation.

⁴⁵ E.g. the Sector understanding for Renewable Energy, Climate Change Mitigation and Adaptation, and Water Projects (CCSU). The CCSU allows preferential financial terms (longer repayment terms) to climate change mitigation and water projects.

⁴⁶ See also EKF's Handbook: Export Credit and Climate Finance
<http://www.ekf.dk/Docs/Handbook%20EKF%20climate%20financing.pdf>

⁴⁷ With 2014 figures being USD 2.1 billion (Denmark), USD 2.4 billion (Norway), USD 3.0 billion (Sweden) and USD 3.3 billion (Finland). (OECD, 2016c).

5. The Nordic role in scaling up climate finance

5.1 Breaking the barriers for climate finance mobilization

The barriers for mobilizing finance for climate action in developing countries are not always specific to climate change activities, and many apply more broadly to development finance. Also, few are the critical distinctions between barriers to financing mitigation, adaptation or cross-cutting projects. Hence, successfully addressing the barriers to climate-related investments will likely also mobilize more finance for broader sustainable development activities.

General barriers related to investing in developing countries are well known, including poor legal, economic and regulatory frameworks along with immature financial markets and currency exchange risks. The following analysis highlights how these barriers translate into risks, how they could be broken and what solutions are needed. Subsequently the section focuses on the specific value Nordic actors could jointly bring to the table and, hence what role they might play in pursuing the goals and commitments of the Paris Agreement.

Here we present four potential “Nordic solutions” that could help address such barriers and catalyse more private finance, with a view to:

- Use the experience of Nordic countries with de-risking instruments;
- Work with countries to enhance the “bankability” of climate projects;
- Improve countries’ policy environment so that it encourages climate compatible investment and discourages climate incompatible investment; and
- Help developing countries to outline clearer, prioritized investment plans.

The solutions are of relevance for most types of climate interventions (whether mitigation or adaptation) in various sectors and or regions, and in most cases the solutions consist of a combination or an “ecosystem of solutions”. Solutions obviously need to be tailored to accommodate country and sector-specific circumstances, as also highlighted by the case studies (see Ch. 2.3 and Appendix 2).

5.1.1 *Facilitating investment through de-risking*

Regardless of the type of investor or size of investment, risk is the primary factor that influences private sector activities coupled with the expected return. It is therefore no surprise that from the literature reviewed, interviews conducted and the expert discussions held over the course of this project (including Nordic side-events on climate finance at Marrakesh COP22 as well as the Nordic climate finance workshop in Helsinki, Appendix 5), de-risking rises as a key activity to mobilize private climate finance.

In practice, this often refers to the need for specific instruments that focus on risk mitigation when investing in developing countries, such as using guarantees and export credits to deal with country risk-related barriers. Other instruments facilitating de-risking include debt instruments with long maturities that help relieve pressure to match cash flows with long liabilities on balance sheets.⁴⁸ These types of instruments can also help overcome barriers related to repayment terms, which are often linked with infrastructure investments.

The Multilateral Investment Guarantee Agency (MIGA) facilitated by the World Bank provides political risk insurance and credit enhancement to investors and lenders to deal with potential losses caused by noncommercial risks. While generally Nordic investors appreciate the benefits of the instrument, several investors highlight the option of considering a Nordic-level version that could be faster, less bureaucratic and costly – serving Nordic investor needs better.

Aside from specific de-risking instruments, diversification is a familiar strategy to investors for de-risking. However, given the mandates for some financial actors and the strict requirements arising from e.g. Basel III or The Solvency II Directive, many private sector actors are limited in the degree of diversification that they can exercise. For example, for some institutional investors, infrastructure investments are not viable, because, as alluded to in the previous paragraph, maturities make it impossible to comply with the capital and liquidity requirements stemming from existing regulation. If conducted responsibly, securitization would enable private sector investors to more actively take on climate-related projects as part of their portfolios. The study reveals also, that despite strict and highly regulated mandates among Nordic institutional investors, through a combination of measures addressing de-risking and bankability, forerunners are finding ways to engage strongly in climate compatible investments (see country descriptions 4.2 and box on Danish pension funds) without infringing their returns.⁴⁹

⁴⁸ In particular investor with long term liabilities should have an interest in investments that give a cash flow that matches the liability position.

⁴⁹ See also Lund & Torvanger, 2015. Report from the Nordic Conference on Green Investments and Nordic Pension Funds. Nordic Council of Ministers, December 2015.

The Danish Climate Investment Fund (KIF) has succeeded in engaging institutional investors in climate finance. This has been facilitated by a number of factors:

- IFU's track record from over 10 years on delivering sustainable and profitable (10 +% ROE) investments in developing countries.
- Integrating stability building and de-risking elements in the investment.
- Continued dialogue with institutional investors.

In addition to securitization, aggregation to enable transactions and/or the pooling of resources would help not only to better enable climate-related project funding, but to address the barrier raised during this study of project scale. In particular, institutional investors (which have been recognized as a key stakeholder for meeting the Paris Agreement finance commitments) see many project-level funding targets as too small for their portfolios. With aggregation and pooling, these projects would become attractive to investors.

5.1.2 *Developing the "bankability" of climate projects*

Alongside the need for de-risking, stakeholders consulted during this study have underlined countless times that the challenge is not so much about a lack of finance *per se*, but a lack of "bankable" projects to invest in. This calls for more efforts to build a project pipeline, which is attractive to investors. In practice, this has a lot to do with ensuring good project preparation, management and implementation experience, but also presenting the business case so that private sector actors can get on board.

There are still many investors that lack capacity to fully understand how projects in developing and emerging countries are carried out and managed, and it has been recognized that some risks are indeed *perceived* rather than material risks impacting the risk-return ratio. Several Nordic actors, including the development finance institutions have significant experience in development projects through ODA financing and other interventions. Making these hands-on experiences and lesson learned from emerging and developing countries more available to the private sector could also help filter perceived risks from actual material ones, lowering the barriers for investors.

In 2011 Norfund established a Project Development Facility, which has facilitated identifying and constructing bankable investments for Norfund pipeline with a priori high risk and developmental (including climate) impact potential. A recent Norfund evaluation notes that increased investments in project development and improved coordination with Norwegian MFA, Norad and the Embassies have contributed to successful projects and up-scaling opportunities (Norad, 2015).

The investor community – whether talking about institutional investors, asset managers or banks – is still coming to grips with what climate risks actually mean. Many have started to calculate the carbon footprint of their portfolios and/or divest from

fossil fuels, and some more experienced low-carbon investors have set shadow prices for carbon in attempts to translate climate risks into financial risks. Overall, climate awareness and the understanding of climate risk is fortunately improving and many investor initiatives are helping to build required capacity.⁵⁰

In its recently updated strategy (NDF, 2015), NDF highlights its focus on project preparatory funding to ensure development of projects with high climate and development impacts as well as upscaling potential.

Progress in the articulation of “bankability” or the business case is even more needed for attracting finance to adaptation projects. Adaptation investments typically aim for saving on future costs of climate change, and this is not in line with the typical investor’s revenue creation objectives. It is therefore more difficult for investors to understand the business case compared with e.g. mitigation investments, where investments in new emission reducing technologies can be seen and demonstrated to have considerable return on investment potential.

5.1.3 *Improving the conduciveness of policies for climate compatible investments*

The importance of targeted capacity building and enabling environments in developing countries cannot be over-stressed, noting that currently the majority of climate finance is raised and spent within countries rather than through financial transactions between countries (see e.g. CPI, 2016). Moreover, previous analysis has shown that low income countries in particular struggle to attract private finance outside of natural resource extraction sectors, so that sectors which may have critical investment gaps from a development and/or climate adaptation perspective tend not to see productive international private investment (Atteridge, 2011). Hence, when considering ways to improve the conduciveness of enabling environments, a comprehensive approach has to be taken and the issue of potential policy incoherence be addressed.

Crucially important for ensuring the climate conduciveness of enabling environments is the removal of conflicting policy signals and incentives that hamper climate compatible investments. The most obvious case being fossil-fuel subsidies (annually amounting to over USD 500 billion, i.e. five times the USD 100 billion goal), the reform of which could simultaneously incentivize investments in renewable and energy efficiency investments as well as free up financial resources in other priority

⁵⁰ To mention a few, asset climate data is becoming more and more available through the CDP, which disseminates climate performance data to key investor data providers such as Bloomberg. The Asset Owners Disclosure Project is pushing investors to improve their climate risk disclosure and ranks the world’s largest asset owners according to their management of climate risks and opportunities. Finally, Article 48 of the French Energy Transition Law is requiring listed companies to disclose financial risks related to the impacts of climate change, financial institutions to report on the results of regular stress-testing and institutional investors to address risks induced by climate change and contributions to advancing the 2° goal (as examples).

needs in countries.⁵¹ There is increasing experiences of how to tailor country specific fossil-fuel subsidy reforms, with lessons learned being shared, among others, from Ethiopia, Morocco, Peru, the Philippines and India (Nordic Council of Ministers, 2016b). The Nordic countries have been actively represented in the Friends of Fossil Fuel Subsidy Reform group, aiming to build consensus on the need to increase transparency on fossil fuel subsidies, pushing for greater ambition around reforming these subsidies and providing targeted support to the most vulnerable groups.

While the preferences for climate policy instruments and types of incentives may vary between different stakeholders and sectors, the importance of stability and predictability in the enabling environments is unanimously flagged as key.⁵² Hence, it is not a surprise that proactive private sector actors are increasingly seeking and asking for such policy measures from the public sector (among other related to a price on carbon), because stability and predictability contribute to how risk is defined and priced. This requires not only active involvement and engagement with developing countries in market readiness activities, but clear communication to private sector investors on how policies and possible reforms are advancing in order to improve understanding of investment risks.

Sida has an explicit policy to support strengthening of the local capital market. It exercises this policy through providing guarantees directly to these local finance institutions (see section 4.2.4).

It needs to be mentioned that policy reforms should ideally also contribute to strengthening domestic private sectors in developing countries. Where policies are not supportive, or even limit or hinder the activities of local institutions, local markets will not develop and private sector actors cannot be part of the solution. During this study, it has been highlighted, that access to local finance is a key factor for the success of development interventions. Yet local finance institutions often suffer from severe lack of capacity and poor frameworks (legal, economic and regulatory) do not support their development. Poor credit ratings in developing countries also limit local finance institutions' access to international capital markets. This prevents these countries from developing functioning financial and banking sectors to effectively support domestic private sector actors.

As we have noted in the analysis of Nordic climate-related finance, in comparison to other countries, Nordic climate finance has shown a somewhat stronger focus on activities (e.g. general environmental protection, government and civil society -general) that can be considered conducive to build capacity and strengthen enabling

⁵¹ According to estimates by IEA and OECD the gradual phase-out of fossil fuel consumption subsidies could deliver a 10% reduction in global greenhouse gas emissions by 2030 (Australian government, 2016).

⁵² See also, Understanding Mobilization through Qualitative Approaches: Estimating Causal Linkages between Public Policy and Private Climate Finance (forthcoming early 2017), conducted under the umbrella of the OECD-coordinated Research Collaborative on Measuring and Tracking Private Climate Finance (OECD, 2016d).

environments in partner countries.⁵³ Sections 5.2–5.3 highlight potential areas for enhanced Nordic contributions taking also note of identified Nordic strengths in this area.

5.1.4 Outlining clearer, prioritized investment plans

While the NDC analysis (Section 2) identified room for improvement in terms of ambition as well as transparency of finance and support needs it is clear that the NDCs do not serve the purpose of an investment prospectus. They represent the national commitments made by countries, and shall serve as the basis for the ratcheting up process agreed upon, in line with the Paris Agreement. As such they can provide overarching guidance on government priorities in the short and long term.

Taking note of existing climate relevant policies and strategies (whether through NAMAs, NAPAs, NAPs, Climate resilient green growth strategies, national Agenda 2030 & SDG strategies etc.) there is an urgent need to streamline the national climate policy documents and processes in order to avoid overlaps and bring clarity to the priority investment needs. Despite many NDCs being rather vague about the required climate compatible investments, existing NAMAs and/or NAPAs and NAPs in many cases provide important elements of the missing information. Through targeted efforts they could help outline and identify the required investment programmes and enabling environment reforms.

From an investor's perspective, a key barrier is not having clear signals about longer term policy targets and where investments need to flow to enable achieving these targets. Beyond policy development and coordination, there is a lack of understanding on what alignment with the “well below two-degree” target actually means in different sectors – where to invest and where NOT to invest (to avoid lock-in). It is important to note that this challenge is equally relevant for developed and developing countries, and should be addressed as an integral part of the international process of NDC refinement and ratcheting up. The private sector has been encouraged to set “science-based targets” to help create this alignment. However, currently with seven different approaches existing for such target setting,⁵⁴ it is no surprise that actors are feeling lost. Beyond company target setting, there is a general lack of guidance on 2° C compatibility of investments which can support investors in their decision-making processes. Here the development of tools and criteria may be helpful.

Finally, while a certain degree of flexibility is necessary, better dissemination of data and knowhow is imperative to get both public and private actors' thinking more aligned. The public sector has an important role to play here, to improve knowledge and build capacity.

⁵³ While the OECD CSR data does not allow detailed and conclusive analysis of what has been the exact share of Nordic climate finance specifically dedicated for improving the enabling environment from financing perspective (whether for climate-related investments, agricultural investments, education, health etc.), it provides some indication of the willingness and expertise of Nordic countries to dedicate funding for building capacity and strengthening the enabling environments in developing countries.

⁵⁴ See <http://sciencebasedtargets.org/methods/> for more details on currently existing methods.

5.2 Nordic value-add and roadmap for priority action

5.2.1 Sources and types of Nordic value-added

This study has identified and underlined several characteristics of how Nordic approaches, institutions, stakeholders and expertise can add value⁵⁵ to accelerate climate action at the required scale and pace. These characteristics:

- Build directly on existing Nordic institutions (such as NIB, NEFCO,⁵⁶ NDF) with extensive experience in sustainable and green investments, through a variety of instruments and partnerships (see Sections 4.2–4.3).
- Build on experience of Nordic DFIs (including Norfund, Swedfund, IFU and Finnfund), in mobilizing private finance for climate action in developing countries, and with already close collaboration and partners in developing countries.
- Build on formal Nordic collaboration (such as the work done under the umbrella of the Nordic Council of Ministers) covering a number of high-level joint initiatives with strong focus on climate solutions.⁵⁷
- Build on particular national and Nordic strengths in traditional development cooperation, including increasingly comprehensive climate mainstreaming in bilateral and multilateral ODA action (see Section 3), covering country specific and/or joint Nordic experience in REDD+, gender issues, water management, forestry, agriculture, climate change and cities, and renewable energy and energy efficiency solutions.
- Build on tested and internationally competitive climate technologies developed by Nordic private sector, and/or through public private partnerships (PPPs) that can address climate finance needs in key sectors (see Section 3.3 and also Nordic Council of Ministers, 2016d).

Some of these characteristics build centrally on the “Nordic way of working and collaborating” and how the Nordic actors, separately or jointly, are generally perceived by their partners in developing and emerging countries. This study, in particular the

⁵⁵ See for example Nordic value-added criteria used in elaboration of joint Nordic Solutions to Global Challenges – the most recent PMs’ initiative (Nordic Council of Ministers, 2016c). It comprises five flagship projects in three categories: Nordic Green, Nordic Food and Welfare and Nordic Gender Effect, each based on different Nordic core competencies. Nordic Green, was launched at COP22 in Marrakech, and consists of two projects: Nordic Sustainable Cities and Nordic Climate and Energy Solutions, covering also fossil-fuel subsidy reform. <http://nordicway.org/2016/11/nordic-solutions-global-challenges-new-pms-initiative-programme-2030-agenda/#.WEUisrJg6Uk>

⁵⁶ It is also worth noting here the Nordic Project Fund – Nopef (administered by NEFCO) and financed by the Nordic Council of Ministers, which works to promote internationalisation of Nordic small and medium sized enterprises (SME) within green growth, support Nordic cooperation and contribute to the common interests of the Nordic countries. For further info see <http://www.nopecf.com/>

⁵⁷ Such as the Prime Ministers’ Globalisation Initiative (Top-level Research Initiative on Climate, Energy and Environment), Prime Ministers Program Nordic Region Leading in Green Growth, Prime Ministers Program on Sustainable Nordic Welfare, as well as current key themes within Nordic cooperation including among other New Nordic Climate Solutions and Nordic Bioeconomy.

consultations with various international stakeholders (including interviews, feedback in Marrakesh COP22 as well as the Nordic climate workshop organized in Helsinki 30.11.2016 – see Appendix 1 for the list of people consulted and Appendix 4 for the workshop program and participants) supports the notion that beyond technical and sector expertise, Nordics are:

- “Generally respected for their track record in developing countries...”
- “Living up to their commitments...”
- “Sensitive and understanding of critical balances (including building capacity, requiring action & results, relying on local commitment and ownership) for sustained and inclusive (climate) development interventions”.

The recognition that Nordic countries generally enjoy among their partners in various parts of the world can also provide an opportunity to influence international policy and decision making when speaking with a joint Nordic voice at international fora, be it under the UNFCCC, GCF etc. or G20 and the private finance community.

5.2.2 Roadmap for Nordic action on mobilization of climate finance

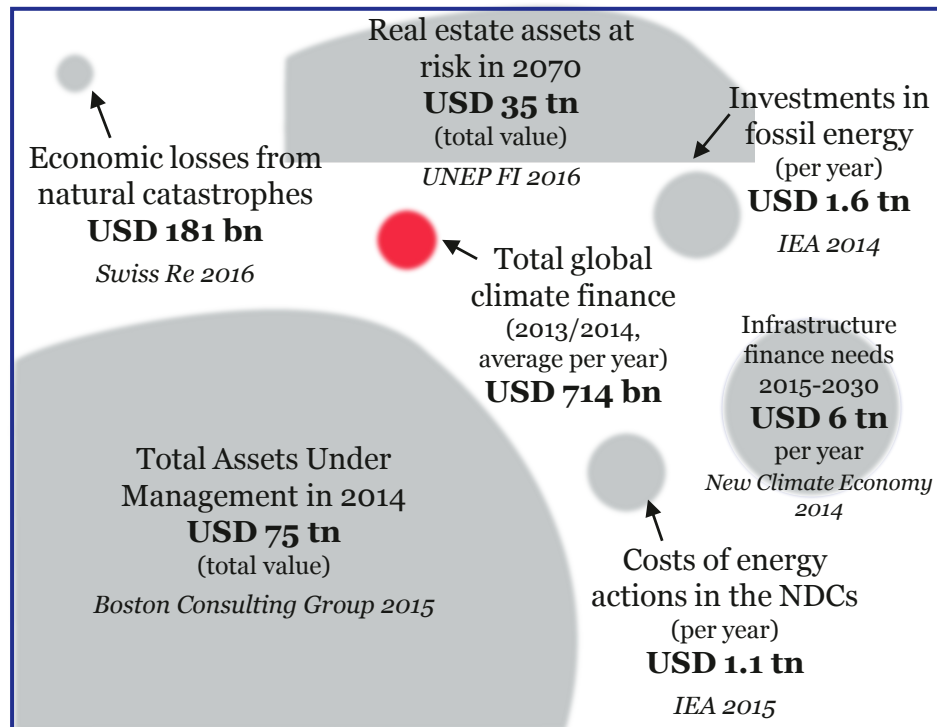
This roadmap has been compiled taking note of the analysis of what the Paris Agreement states on required climate finance (see Section 2.1) and with the aim to recognize Nordic opportunities to jointly address the entire ecosystem of climate finance (see Figure 11, below). Through targeted and well-prepared collaboration, various Nordic actors can bring to the table a number of factors and contribute with more effective and comprehensive (New Nordic Climate⁵⁸) solutions to:

- Access capital for climate action.
- Connect finance with climate-related sectors and activities of highest priority and in line with partner country needs.
- Connect finance with different kinds of recipients and implement identified priority action effectively in different countries, on different levels, in different sectors.
- Scale up “green/resilience finance” *fast* (and scaling down “brown finance” *fast*).
- Build the enabling frameworks that can sustain and accelerate the required greening of the finance sector as well as the up-scaling of climate action.

The framework for the roadmap for Nordic action is provided by the contextual landscape outlined in the recent report by the Standing Committee on Finance (UNFCCC 2016), which also served as the framework for discussions during the Nordic stakeholder workshop in November 2016 in Helsinki (Figure 11).

⁵⁸ Joint Nordic action on climate change is promoted by the Nordic Council of Ministers under the umbrella of New Nordic Climate Solutions <http://www.norden.org/en/theme/new-nordic-climate-solutions>

Figure 11: The Nordic roadmap identifies comprehensive but targeted action for Nordic stakeholders covering the global climate finance context (modified from UN-FCCC, 2016)



The roadmap for Nordic action consists of two main pathways. Within each pathway, a number of more detailed measures are defined.

Firstly, within the space of development cooperation, stronger alignment of "climate-related ODA" with the "well-below 2-degree target" presents several opportunities to strengthen the Nordic contribution and added value to mobilize climate finance (see Figure 11 and the sphere of global climate finance).

- Continuing efforts to *build enabling environments* in developing countries, recognizing the particular role of NDCs and the need to build capacity, coordination (noting multiple existing and parallel policy processes) and ownership for concrete "*NDC investment planning*" and implementation.
 - Nordic countries are often referred to as a trusted partner among developing countries, with ability to build capacity and enabling frameworks that are grounded in partner countries. The Nordic countries also have experience in elaborating comprehensive and inclusive policy frameworks conducive to

build stability and predictability, often noted as key criteria for mobilizing private sector investments.⁵⁹

- Multiple actors are already involved in various NDC partnership initiatives, but Nordic efforts could focus on certain long-term (ODA) partner countries and/or certain sectors with particular Nordic expertise (see Section 3.3). In addition, within the NDC landscape the Nordic countries are well positioned to help build “the financing system we need for climate action AND from the global Agenda 2030 perspective”, and support the required financial sector and fiscal reforms not only in improving “conduciveness” of policies but also breaking apart unproductive policies such as the fossil-fuel subsidy schemes in an equitable and peaceful manner.
- *Highlighting the need for targeting finance flows at adaptation and the most vulnerable countries.*
 - Beyond bilateral support, Nordic countries have been important actors in the global multilateral climate finance architecture including contributions to dedicated climate change funds (see Box 1). Overall Nordic countries have been actively involved in adaptation funding through multilateral agencies with a strong adaptation mandate and addressed adaptation through cross-cutting initiatives.
 - Based on the USD 100 billion roadmap, which was released by developed countries in the run-up to Marrakesh COP22, in 2020 (even with the projected doubling of adaptation finance) only one-fifth of scheduled climate finance would target adaptation. Nordic countries could help ensure increasing finance is targeted for adaptation and most vulnerable countries but also help build the capacity and processes of these funds to engage private sector finance and expertise for resilience building.
- *More systematic and action oriented (beyond “ticking the boxes”) mainstreaming of climate into ODA within the context of SDGs.*
 - While international guidance is widely available on climate mainstreaming, several Nordic stakeholders consulted during this study noted the need to systematize climate-mainstreaming processes, and welcome enhanced Nordic collaboration as a way to share lessons and best practices with peers. Improved screening and MRV processes, should support more effective use of climate finance and secure continued learning of climate action within the broader set of SDGs.
 - Improved mainstreaming efforts could specifically contribute to demystifying resilience building, contributing to systematic learning of what makes adaptation work. While Nordic countries have been forerunners in developing national adaptation strategies (in Nordic countries), deepening this expertise

⁵⁹ The Nordic countries are often referred to as pioneers in environmental policy and ranked as high performers when it comes to green innovation and technology (ref. A Nordic Perspective on Green growth: Nordic solutions as catalysts for global change, (NEFCO, 2016))

and bridging with developing country adaptation needs and capacities, Nordics could become a major provider of climate resilient support and solutions. These measures would also contribute to developing required approaches and instruments for engaging the private sector in adaptation (see second part of roadmap, below).

- *Nordic ODA as a forerunner in responsible mobilization of the private sector.*
 - There is increasing understanding that the role of public finance in achieving the climate targets, as well as broader SDGs, will require better and more effective use of these finances. Reference is made, among other, to win-win options and “the triple leverage potential” of public finance (UNEP, 2016).
 - A number of innovative instruments, mobilizing major input from other actors, have been piloted and successfully launched in past years by Nordic countries. Through more active and constructive dialogue between the Nordic ODA community and the private sector, the Nordics could be a leader in harnessing the “double or triple leverage potential of public (climate) finance.
- *Nordic countries contributing to increased transparency and predictability in climate finance.*
 - Based on the credibility Nordic countries generally enjoy within the climate negotiations and the broader ODA framework, there is potential for Nordic value-added through a joint contribution to tracking of climate finance. Nordic countries have contributed to the OECD led Research Collaborative on Tracking Private Climate Finance (OECD, 2016d) as well as to work by CPI on the Climate Finance Landscape.
 - While these fora provide valuable pathways for Nordics to continue to contribute to overall transparency and trust building under and beyond the UNFCCC,⁶⁰ the Nordics could exercise additional leadership for example by producing an annual Nordic climate finance mapping and lessons learned report and/or best practice sharing event & process, with a focus on the application and success of various instruments and partnerships.⁶¹

Secondly, engaging the finance community and private sector will make Nordics a driver of the required transformation and “making all finance flows” conducive with the well below 2°C target (see Figure 11 and the sphere of other financial assets and flows).

⁶⁰ Noting that the transparency framework of the Paris Agreement covers only a subset of climate finance (finance provided and mobilized by developed countries for developing countries, climate finance provided and mobilized by “other” countries for developing countries, as well as climate finance received by developing countries) (Ellis & Moariff, (OECD) 2016).

⁶¹ The Nordic Prime Ministers’ initiative (covering various Nordic Climate and Energy Solutions) as well as the Nordic SDG programme, in response to the 2030 Agenda, both launched in 2017 provide ample opportunities to harness synergies also for sharing of best practices and lessons learned covering climate compatible solutions as well as SDG solutions more broadly.

- Nordics could jointly develop, *test, share lessons learned and systematically upscale initiatives that mobilize the financial sector* more broadly, including institutional investors in climate compatible investments in developing countries.
 - The Nordic countries are already involved in a number of partnerships (such as The Global Innovation Lab for Climate Finance) and have successfully piloted a number of pioneering initiatives that have engaged private sector and institutional investors. For example, the Danish Climate Investment Fund, KIF (managed by the Danish Investment Fund for Developing Countries, IFU) highlights the possibilities to address key barriers for institutional investors, in particular pensions funds, through constructive dialogue and targeted de-risking and solid pipeline provision. Subsequently a Danish Agribusiness Fund (DAF) was launched in 2016 and an SGD fund will be launched in 2017 (covering also water and sanitation related investments, in addition to climate and energy).
 - The lessons learned are being observed internationally, and by other Nordic countries when considering opportunities to replicate such initiatives. The option of advancing on joint Nordic level (possibly making use of existing Nordic finance institution and through enhanced collaboration between Nordic DFIs) with similar initiatives (such as a Nordic Climate Investment Fund or Nordic SDG Fund) has been raised by several Nordic stakeholders.
- *Nordic approaches and instruments for de-risking and project pipeline building.*
 - The Nordic countries have (quite exceptionally) at their disposal Nordic regional financing institutions (NIB,⁶² NDF and NEFCO (including Nopef)) that to varying degree take part in project pipeline development and/or provide de-risking support to Nordic climate investments. The consultations with Nordic stakeholders conducted during this study indicate an overall readiness for joint project pipeline development and de-risking initiatives.⁶³ This raises the question of potentially more formal Nordic collaboration e.g. through the establishment of a Nordic Green Investment Bank (see below).
 - With regards to the mobilization of the private sector, Nordic expertise in SMEs (noting among other extensive experience by NEFCO as well as by some Nordic DFIs) could also be an area of increased Nordic value-added in climate action. The importance of SMEs will remain critical in the required transformation (from climate and SDG perspectives) and is further accelerated by various aspects of technology disruption, including distributed technology solutions, smart IT, microfinance, etc.

⁶² With NIB, in addition to Nordic countries, owned by Estonia, Latvia and Lithuania.

⁶³ The concept developed as part of the Norwegian Hydro & Solar Initiative, raises one potential approach for joint Nordic consideration, as it proposes instruments and approaches specifically addressing two of the key barriers highlighted also by this study, in particular i) de-risking through a (Clean Energy) Guarantee Facility, as well as, ii) developing a bankable project pipeline through a Facilitation Fund (through grants issue to fund and develop enabling environments or co-fund technical, legal and commercial studies). Projects partners behind the concept include: Norfund, GIEK, Scatec Solar, DNV GL, Export Credit Norway & SN Power with Norad as observer (Climate Mundial Limited, October 2016)

- *Nordics as forerunners for mobilizing private sector for adaptation* – identifying, developing and piloting innovative partnerships that build the business case for responsible private sector engagement in adaptation.
 - Given the experience of Nordics in e.g. assessing the market for climate resilience,⁶⁴ pioneering work on mitigation and adaptation synergies (Hämekoski & Sinkko, 2016) as well as noting the overall readiness among Nordic DFIs to address adaptation in a more systematic manner, the Nordics are well positioned to engage more actively with the private sector in resilience building.
 - This requires close collaboration and sharing of lessons learned with the ODA community, NGOs and local communities. In addition, more systematic tracking and learning of adaptation relevant investments by Nordic finance institutions and Nordic DFIs is needed. Current investments by Nordic actors in SMEs and in strengthening local finance sectors in various countries, would fully support these measures, noting that a major part of adaptation, measures consist of smaller scale, locally driven projects.⁶⁵
- *Continued Nordic leadership on green bonds to strengthen their environmental integrity.*
 - Noting that green bonds are included in financial strategies of several Nordic institutional investors⁶⁶ Nordic actors are well positioned to contribute to the strengthening of the environmental integrity of green bonds to minimize risks of eventual greenwashing. Nordic actors should contribute to continued standard development (building e.g. on the Green Bond Principles as well as pioneering work by Cicero on “shades of green” (e.g. Cicero, 2016)).
 - In addition, Nordics are well positioned to drive active dialogue between private market actors and public policy makers on how to broaden the pipeline for green bonds in emerging and developing country markets, while safeguarding the climate and SDG impacts, and their additionality. Extensive experience by various Nordic actors in carbon markets, including a 15-year track record in carbon finance by NEFCO, can serve to ensure that lessons learned from the CDM regime are optimally made use of in developing further the green bond market.

⁶⁴ E.g. in Latin America, Africa and Asia through NDF's collaboration with IDB (NDF, 2015).

⁶⁵ Also, synergies could be harnessed with several on-going Nordic initiatives such as the ones on sustainable cities, noting that cities will increasingly be the hubs of climate action through various sorts of PPPs– both on mitigation and adaptation.

⁶⁶ With e.g. NIB Environmental (Green) Bond established in 2011, with Nordic banks having contributed to the introduction of MDBs to new markets through green bonds and e.g. Nordea having introduced the AfDB to the Swedish krona market through green bond transactions in 2014.

- Considering opportunities *for a stronger Nordic finance institution (e.g. Nordic Green Investment Bank) with a comprehensive green growth and climate mandate.*
 - In the Nordic context, the opportunities to avoid fragmentation and strengthen the capacities and the collaboration of NIB, NEFCO and NDF have been discussed on several occasions. While the existence of Nordic financing institutions is a definite value-added for the Nordic region and its global outreach, the early international experiences with Green Investment Banks as well as corresponding experiences within the World Bank Group could serve Nordics to assess additional advantages/disadvantages of deeper and/or more formal Nordic collaboration/merger between existing Nordic finance institutions. Various alternatives to seek accreditation within the GCF could also be considered in this context.
- Nordic countries recognizing opportunities to *engage the finance sector as driver and enabler* of climate resilient low carbon investments *through proactive policy development and regulation.*
 - Nordic countries host some of the international finance sector forerunners in climate action, covering institutional investors in particular in Denmark and Sweden, a number of banking sector actors as well as insurance sector actors in all Nordic countries. These actors serve to spearhead the dialogue and build awareness within the financial sector in Nordic countries as well as internationally. They set the stage for Nordic countries to investigate proactive ways to accelerate the transformation of the finance sector into a driver and enabler of climate resilient low carbon investments.⁶⁷
 - Stakeholder consultations conducted during this study indicate Nordic interest to learn from the experiences of the French Energy Transition Law,⁶⁸ noting among potential dialogue benefits linked to the preparation of such a law, and in particular its forward-looking approach and holistic aim to support the transition to a low-carbon economy. Taking also note of the recommendations from the Financial Stability Board (FSB) Task Force on Climate-related Financial Disclosures (TCFD),⁶⁹ a Nordic study on the potential benefits and applicability of similar legislation in Nordic countries could help ensure that true and/or perceived barriers to engage the financial sector (including ECAs) on a well below 2-degree pathway of investment decision making are systematically removed.

⁶⁷ The importance of continued and deepening dialogue was also highlighted by participants at the New Nordic Finance – the next generation of climate finance – seminar in Helsinki 30.11.2016.

⁶⁸ Article 173 of the French Energy Transition Law came into force from the beginning of 2016. It strengthens mandatory carbon disclosure requirements for listed companies and introduced carbon reporting for institutional investors, defined as asset owners and investment managers.

⁶⁹ Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), December 14, 2016 (TCFD, 2016). The TCFD report outlines a set of recommendations for voluntary, climate-related disclosures to be made as part of mainstream financial filings. The recommendations should help organizations identify and disclose information needed by investors, lenders, and insurance underwriters to appropriately assess and price climate-related risks and opportunities.

- Harnessing existing *Nordic solutions for system wide energy transitions, through provision of comprehensive renewable energy and energy efficiency solutions* based on private sector partnerships as well as PPPs.
 - Within the energy sector, the available Nordic solutions complement each other, allowing any joint Nordic efforts to provide a comprehensive set of climate-smart RE and EE solutions (covering wind, solar, hydro, biomass, geothermal, CHP as well as energy efficiency in various sectors) successfully tested and internationally widely used. While the Nordic countries can offer solutions at major grid level, also multiple solutions for smaller scale and distributed (minigrids) are available. The experience gained through the Nordic energy market (Nord Pool, covering nine countries) is of increasing interest for developing countries aiming for regional energy collaboration and accessing benefits of market integration.
 - Past and on-going collaboration on energy and climate solutions (including the new Nordic Prime Ministers' initiative launched early 2017 covering *Nordic Climate and Energy Solutions*) provide a priori good foundations for accelerating joint Nordic action in the energy sector.

5.3 Immediate next steps

The two aspects of the roadmap presented in section 5.2 are complementary and mutually reinforcing – some parts being preconditions or ingredients for other aspects in capitalizing on Nordic strengths. This section outlines recommendation for concrete joint Nordic action and suggests a number of key stakeholders for leading and/or having a major role in taking the immediate next steps in 2017–2018.

It is essential that relevant stakeholders are engaged early to design and implement any next steps. This will help ensure that e.g. any instruments and approaches for de-risking and improving the bankability of climate investments will truly mobilize private sector finance and expertise. It will also help ensure that e.g. any (I)NDC support effectively contributes to enabling environment improvements and the financing of priority climate compatible action in emerging and developing countries, without duplicating efforts by other international actors.

With a strategic position to coordinate and catalyse joint Nordic action, and with several major activities on-going and/or planned in the sphere of climate action, the Nordic Council of Ministers is well placed to support follow up and overall operationalization of the road-map, including any of the immediate next steps suggested below:

- *The Nordics should accelerate their joint efforts to help developing countries turn their (I)NDCs into well-grounded investment programmes for climate compatible development.*
 - The efforts should focus on helping developing countries define and communicate their support needs, develop a stable enabling environment for climate and SDG investments, and helping introduce policies and instruments for upscaling private finance aligned with the well below 2-degree target. This entails continued Nordic support for fossil-fuel subsidy reform and carbon pricing.
 - Consider establishing a “Nordic (I)NDC task force”, to strengthen Nordic action-oriented dialogue between public and private, harnessing the expertise from Nordic finance institutions, DFIs and responsible finance sector actors.⁷⁰

Key stakeholders: Nordic ministries and agencies in charge of development cooperation (including Sida, Norad, Danida, Ministry for Foreign Affairs Finland, Ministry for Foreign Affairs Iceland) and climate finance, supported by Nordic finance institutions and Nordic DFIs.

- *The Nordic countries should look for opportunities to strengthen joint Nordic finance institutions in the transformation required by the Paris Agreement and the SDGs more broadly.*
 - Setting a joint Ombudsman to review the advantages/disadvantages and feasibility of such measures, including the option of establishing a joint Nordic Green Investment Bank and/or Nordic (-Baltic) Finance Group, should be considered.
 - The review should also analyze opportunities for joint Nordic Facilities for providing de-risking services for Nordic investments as well as for building pipelines of bankable climate investments, with a view to engage responsible Nordic companies and their expertise and technologies in NDC driven investment programmes in developing countries.

Key stakeholders: Nordic finance institutions (NIB, NDF and NEFCO (including Nopef), Nordic governments in charge of the Nordic finance institutions (including Estonia, Latvia and Lithuania for NIB), supported by relevant ministries and agencies in charge of green, climate compatible growth and development cooperation.

⁷⁰ The formal structure and participants of such a task force should remain flexible and avoid duplication with on-going Nordic national/Nordic efforts and international NDC partnerships and platforms (such a task force could be hosted e.g. under the NCM and its New Nordic Climate Solutions theme and/or Nordic Prime Minister’s Initiative with strong climate focus, launched in early 2017). Optionally the New Nordic Finance (Nordic Statement on Innovative Climate Finance) “initiative” launched at Paris COP21, could be revitalized and operationalized in order to host such a “task force”.

- *Nordic countries should consider the option of establishing a Nordic Climate Investment Fund(s).*
 - In addition to the option of establishing national climate funds (making use among other of experiences with the Danish Climate Investment Fund) the option of establishing a joint Nordic Climate Investment Fund, or a joint Nordic SDG Fund should be assessed.
 - The assessment should also outline what the “well below 2-degree investment criteria” mean in practice for investment options and decision making.

Key stakeholders: Nordic DFIs (IFU, Finnfund, Norfund, Swedfund), their owners, supported by relevant ministries and agencies in charge of green climate compatible growth and development cooperation as well as Nordic finance institutions.

- *Nordic countries should remain a forerunner in green bonds, looking for ways to expand the market while securing the environmental integrity.*
 - Nordic green bond actors should be driving the dialogue between private market actors and public policy makers on environmental integrity, and how to broaden the pipeline for green bonds in emerging and developing countries.

Key stakeholders: Nordic finance institutions and Nordic DFIs in collaboration with institutional investors, private sector and local governments, and supported by Nordic actors working on environmental integrity and disclosure.

- *Nordic countries should assess the advantages / disadvantages, early lessons learned and the applicability of regulation as introduced in France covering the finance sector.*
 - The review should take note of on-going (primarily) voluntary initiatives in improving climate disclosure of the finance sector and in particular the recommendations provided by the Financial Stability Board (FSB) to remove barriers and drive the required shift in investments to a low/no-carbon future.

Key stakeholders: Nordic national authorities in charge of financial sector regulation as well as key finance sector representatives in Nordic countries.

- *Nordic countries should make use of their “joint voice”, ensuring that sufficient effort and finance is targeted at adaptation and the most vulnerable.*
 - Despite the commitment by developed countries (in the Roadmap to USD 100 Billion) to double public adaptation finance by 2020, and the USD 81 million pledged in Marrakesh to the Adaptation Fund, rapid increase in adaptation finance is required to address the adaptation gap, ensure access by the most

vulnerable and continue to find synergies between development finance and adaptation/resilience outcomes. Developing and promoting business models for mobilizing private finance for adaptation could be a specific area of Nordic value-add.

Key stakeholders: Nordic ministries and agencies in charge of development cooperation and climate finance, in close collaboration with Nordic finance institutions, Nordic DFIs as well as private sector forerunners in climate risk management and resilience building.

- *Nordic countries should overall step-up their climate mainstreaming efforts to make mainstreaming serve concrete and effective climate action.*
 - Climate mainstreaming should be taken to the goal, by all Nordic actors noted in this report, with a particular focus to better understand and harness synergies (covering mitigation and adaptation as well climate action and SDGs more broadly) and partnerships between public and private and civil society actors.
 - As part of overall mainstreaming efforts, Nordics should actively contribute to tracking and transparency efforts in climate finance, which are critical elements in making the Paris Agreement and its ratchet up process work.

Key stakeholders: Nordic ministries and agencies in charge of development cooperation and climate finance, Nordic finance institutions, Nordic DFIs, Nordic Export Credit Agencies in collaboration with the private sector and civil society.

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Sammanfattning

Klimatavtalet från Paris trädde i kraft i november 2016 mot slutet av ett rekordvarmt år med medeltemperaturer på cirka 1 °C över den pre-industriella nivån. Avtalets målsättning är att hålla den globala temperaturökningen väl under 2 grader, samt att sträva efter att begränsa den till 1,5 grader. I praktiken betyder det att det behövs drastiska ändringar i alla finansiella flöden, så de blir förenliga med låga växthusgasutsläpp och systematiskt understöder anpassningen till klimatförändringens effekter (Artikel 2.1.c). Detta har omfattande konsekvenser för institutioner och aktörer inom finanssektorn globalt, nationellt och lokalt – både inom den offentliga och den privata sektorn.

Rapporten analyserar vilken roll nordiska aktörer potentiellt kan ha i mobiliserandet av nödvändiga finansiella flöden internationellt. Analysen baserar sig på de olika aktörernas erfarenheter och mandat. Analysen undersöker potentiella begränsningar när det gäller uppskalning av nordisk finansiering och dess vidare katalytiska effekter. Analysen begrundar olika alternativ för att avlägsna centrala hinder och analyserar det potentiella mervärde som nordiska aktörer tillsammans kan bidra med. Rapportens spännvidd sträcker sig utöver den offentliga klimat- och utvecklingsfinansieringen och inkluderar synpunkter på hur privat finansiering kan aktiveras.

Analysen är baserad på litteraturstudie, datainsamling från OECD:s kommitté för utvecklingsbistånd och deras rapporteringssystem (Creditor Reporting System), mer än 40 djuplodande intervjuer med sakkunniga inom klimatfinansiering från offentlig sektor, privat sektor och civilsamhälle, samt en workshop med över 70 representanter för intresserade klimatfinansieringsaktörer. För att ytterligare berika bilden och kompensera för bristande data när det gäller nationellt bestämda bidrag (Intended Nationally Determined Contributions, INDCS), har rapporten använt sig av fallstudier som mer konkret belyser vilka potentiella behov det finns i olika sektorer och länder.

Resultat och slutsatser

Klimatavtalet har dramatiska implikationer för finansiering på flera olika sätt. Avtalets temperaturmålsättning kräver att alla finansflöden måste granskas genom en klimatlins för att försäkra att dessa är förenliga med låga växthusgasutsläpp och understöder anpassning till klimatförändringens effekter. Avtalet konstaterar även klart industriländernas ledande roll i att säkra att tillräcklig klimatfinansiering görs tillgänglig för utvecklingsländer. Avtalet noterar särskilt den offentliga finansieringens roll i att mobilisera privata, klimatenliga investeringar. Behovet att öka finansieringen av anpassningsåtgärder framhävs särskilt i avtalet i likhet med betydelsen av ökad

transparens och förutsägbarhet i klimatfinansiering överhuvud. Medan Parisavtalets framgång bygger på ländernas egna bidrag (INDCS) erbjuder bidragen tillsvidare begränsad information om de verkliga investeringsbehoven och prioriteringarna i utvecklingsländerna (kapitel 2).

De nordiska länderna har många möjligheter att pådriva mobiliserandet av klimatfinansiering för utvecklingsländerna. Den här studien (kapitel 3–4) identifierar ett antal offentliga och privata nordiska aktörer samt ett antal instrument och metoder, som kan hjälpa leverera inom Parisavtalets långsiktiga målsättningar och accelerera sådana finansiella flöden som avtalet syftar på. Möjligheterna innebär att man:

- bygger direkt på erfarenheterna från de existerande samnordiska finansieringsinstitutionerna, inkluderande Nordiska investeringsbanken (NIB), Nordiska utvecklingsfonden (NDF) och Nordiska miljöfinansieringsbolaget (NEFCO) och de nationella utvecklingsfinansiärerna Norfund, Swedfund, IFU och Finnfund, med mandat som bidrar till Parisavtalet och realiserar ytterligare mobiliseringspotential
- bygger på nationella och samnordiska styrkor inom traditionellt biståndsarbete. De nordiska länderna bidrar med nästan 10 % av det globala klimatrelaterade biståndsarbetet och är attraktiva samarbetsparter som fått erkännande för sin förmåga att identifiera utvecklingsländernas behov och för det "nordiska sättet att arbeta och samarbeta" med länderna
- bygger på erfarenheterna från ett antal föregångare inom finanssektorn, både pensionsfonder och banksektorn, som antingen har gjort stora investeringar eller förbundit sig till klimatkompatibla investeringar också i utvecklingsländerna
- bygger på det breda utbudet av testade och internationellt konkurrenskraftiga nordiska klimatteknologier och lösningar som utvecklats inom privat sektor eller genom partnerskap mellan privat och offentlig sektor
- bygger på erfarenheter som skapats genom årtionden av samarbete mellan nordiska institutioner och aktörer, bland annat de initiativ på hög nivå som genomförts under de senaste 10 åren för att bidra till gemensamma nordiska klimatlösningar.

Det är viktigt att påpeka att hindren för mobilisering av finansiering i utvecklingsländerna inte nödvändigtvis är klimatspecifika. Likväl är många av de centrala hindren för klimatinvesteringar gemensamma både för klimatanpassning och för minskning av utsläpp. Välformulerade reformer och investeringsinitiativ har ofta potential att hjälpa överkomma hinder för mobilisering av klimatinvesteringar men även bidra till hållbar utveckling och grön tillväxt överlag.

Rapporten identifierar fyra kärnområden där nordiska åtgärder kan hjälpa överkomma hindren och mobilisera den önskade finansieringen. De nordiska länderna har goda förutsättningar att i) underlätta investeringarna genom att minska på riskexponeringen på olika sätt, ii) öka klimatprojektens finansieringsförutsättningar, iii) befrämja utveckling av policyn som underlättar klimatkompatibla investeringar och iv) hjälpa utvecklingsländer att

ta fram prioriterade investeringsplaner. Exempel på goda nordiska erfarenheter och "best practice" i att överkomma hindren presenteras i kapitel 4.

Väggkarta och rekommendationer

Rapporten tar fram en väggkarta för nordiskt samarbete för de nästa fem till tio åren (kapitel 5). Väggkartan bygger på Parisavtalets centrala implikation för alla finansflöden och omfattar krav både till klimatspecifikt bistånd (ODA) och till den privata sektorns investeringar. Den poängterar behovet av ökad dialog mellan centrala aktörer. För att operationalisera väggkartan 2017–2018 rekommenderas ett antal konkreta åtgärder som inkluderar identifierade nordiska aktörer med central roll i implementeringen. Förslagen till omedelbara åtgärder är:

- accelerera nordiskt samarbete för att vidareutveckla de nationellt bestämda bidragen (I)NDCs till ekonomiskt genomförbara investeringsprogram för klimatsmart utveckling
- förstärka de nordiska finansinstitutionernas (NIB, NEFCO och NDF) roll och kapacitet för klimatfinansiering genom ökat samarbete och/eller mera formell integration
- undersöka möjligheten att lansera en samnordisk klimatifond (Nordic Climate Investment Fund) med särskild avsikt att mobilisera klimatinvesteringar från institutionella investerare och avancera utveckling och konkret implementering av investeringskriterier, i enlighet med kravet att hålla den globala temperaturökningen väl under 2 grader
- visa fortsatt ledarskap inom gröna obligationer (green bonds), bland annat genom att vidga marknaden till utvecklingsländer och försäkra instrumentets miljömässiga integritet
- analysera erfarenheter från och genomförbarhet av klimatrelevant lagstiftning och reglering för finanssektorn i Norden, baserat på erfarenheter bl.a. från Frankrike samt rekommendationer från Financial Stability Board (FSB)
- tala med "gemensam nordisk röst" i internationella fora för att försäkra tillräcklig fokus och finansiering för anpassningsåtgärder i de minst utvecklade och mest utsatta delarna i världen, samt agera som pionjär för den privata sektorns mobilisering när det gäller anpassningsåtgärder
- ytterligare förstärka och systematisera "mainstreaming" av klimatfrågan, för att försäkra att klimatriskerna och möjligheterna är fullt integrerade i all bistånds- och investeringsverksamhet, samt bidra till de internationella målsättningarna om noggrannare spårning av och ökad transparens i klimatfinansieringen.

Appendix 1.

List of people consulted

The following persons kindly contributed to the study by sharing their expertise and insights. The Consultants (i.e. Gaia Consulting Ltd, New Climate Institute and Stockholm Environment Institute) as well as the Nordic Council of Ministers is highly appreciative for their contribution, and notes that any factual mistakes and/or misinterpretations in the report analysis, are the sole responsibility of the Consultant:

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Appendix 2: Case studies

Case study selection criteria

The four case studies were selected based on the following criteria:

- Climate finance needs identified in the INDC review (mitigation and/or adaptation needs, sector specific needs where applicable).
- Relevance of the sector for mitigation or adaptation (or both, i.e. mitigation and adaptation synergies).
- Strong Nordic interest and/or existing cooperation (noting ongoing activities in certain (Nordic long-term ODA partner) countries and sectors) and Nordic thematic and/or technology expertise (that can be expected to match identified needs).
- Data availability (input from INDC review as well as expert knowledge).
- Regional balance.

Approach for analysis

Each of the four, selected country/sector combinations focus on one key sector relevant for mitigation or adaptation (or both) and on specific types of activities within that sector, based on how needs and gaps are expressed in the respective INDC. Central mitigation and adaptation challenges in the country/sector context are identified.

In a *first step*, potentials and technology options to address these challenges are assessed. This includes an estimation of the GHG potential (for mitigation related cases) and an indication of associated costs/ investment needs where available. If relevant for the specific sector, the role of the private sector is discussed. In a *second step*, key barriers to the introduction of the options identified in the first step are analyzed using the following categories: 1) institutional/ political, 2) financial/ economic, 3) technical, 4) informational/ capacities, 5) social, cultural and behavioral, and 6) institutional/ political barriers. In a *third step*, an overview of ongoing policies, programmes and initiatives as well as of available (financial/ technical) support is given that actively advance mitigation or adaptation objectives in the sector. In a *fourth step*, the potential for Nordic actors to step in and fill identified barriers and gaps is discussed. A link is made to existing Nordic good practices and programmes in the analysed (or a comparable) country where such information is available. The case studies were carried out through desk research completed by a number of interviews with country experts or government representatives.

Case: Energy efficiency of buildings in Georgia

This case study provides an overview of the situation, mitigation potential and support needs for energy efficiency improvements for buildings in Georgia in order to identify potential climate finance interventions to catalyse investments in the low carbon development of the sector. The case study focuses on the existing building stock, rather than new constructions, and in particular on the energy consumption and emissions related to the buildings' structure and spatial heating.

Overview

- Profile: Lower middle income country.
- Population: 3,720,400.
- Ease of Doing Business Index: 16.
- Key environmental issues: Air pollution, water availability, land and forest degradation, biodiversity .
- Key growth sectors: Transport, energy, industry, agriculture, and tourism.
- World Risk Index Ranking: 88/173.
- Global Climate Risk Index: 106/178.

Georgia's climate policy and Nationally Determined Contribution (NDC)

Georgia has made significant steps in the development of its climate change mitigation planning in recent years. Georgia has a prominent presence within key international cooperation platforms for climate change, such as the International Partnership on Mitigation and MRV, the Covenant of Mayors programme, forums of the United Nations Development Project, and various platforms driven by the European Union. Georgia is also highly engaged with several international support organisations to develop the climate change mitigation agenda. Completion of the internationally supported, yet nationally driven, Low Emissions Development Strategy (LEDS) is expected in 2016.

In its INDC, Georgia proposed a 15% reduction in GHG emissions in 2030, compared to a business as usual scenario, or 25% conditional to sufficient international technical cooperation and access to low-cost financial resources (Government of Georgia 2015). The targets of Georgia's INDC are economy-wide targets that explicitly include the energy, industrial processes, agriculture and waste sectors. The Forestry sector is not included in the target but further information on forestry initiatives is given in an Annex to the INDC. The level of detail given in Georgia's INDC is moderate; the economy-wide targets for 2030 are not backed up with information on sector specific targets or measures, although some information is included on some sector specific measures for the pre-2020 period. Indications of finance needs for mitigation or adaptation measures are also not made available. The quality of the information cannot be assessed, as the means of determining the INDC target are not clear. It is understood that processes intended to provide key input to the INDC, such as the development of the LEDS and

some sector specific analyses, were delayed, and that the INDC could be revised for greater clarity and confidence on completion of these processes.

Energy efficiency in the building sector

The poor energy efficiency performance of the existing building stock is a considerable economic, social and environmental issue in Georgia, as it is for Georgia's Caucasian neighbours and many other states of the former Soviet Union.

A large majority of Georgia's existing buildings was constructed in the Soviet era, when structures were typically built using low cost designs that gave little consideration to measures for energy efficiency and comfort. The thermal resistance rating of many of the buildings in Tbilisi, Georgia's capital, is three to four times lower than recommended for the local climate zone (Kochladze 2012). Unabated deterioration of buildings that are decades older than their designed lifespans has reduced the energy performance of these structures further still.

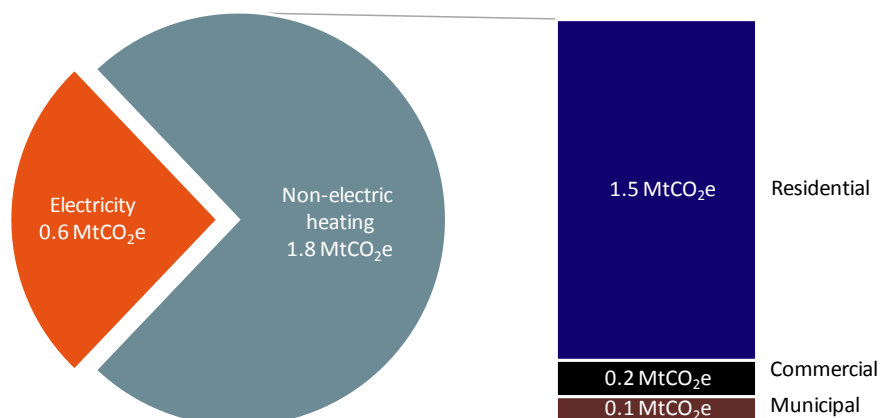
Georgia uses approximately 50% more energy per unit of floor space than EU countries with a similar climate (Kochladze 2012). Energy consumption in Georgia would be far higher still, if it weren't for considerable fuel poverty. Most residential building occupants in Georgia heat only one room, if any, of their home due to high energy costs and energy leakage. The nation's average urban household spent approximately USD 45 per month on utility bills in 2015, approximately equal to 25% of average net monthly income for non-professional trades (GEOSTAT 2016).

Georgia is currently finalising the country's first Energy Efficiency Law, alongside the first National Energy Efficiency Action Plan (NEEAP), which is expected to include the launch of the Energy Efficiency Fund, the development of energy efficiency information systems, and direct investment in more demonstration projects (MOE 2016). Following the adoption of the EU Association Agreement in 2014, Georgia is also currently in the process of developing the country's first energy efficiency building codes (Antonenko 2016), as required by the Agreement. Despite encouraging developments at the policy and planning level, these domestic policy efforts have been, up to now, unable to affect a significant improvement on the status-quo in the building sector.

Relevance of the sector for climate change mitigation planning

The building sector accounted for carbon dioxide emissions of approximately 2.4 MtCO₂ in 2013 (MOE 2015), or approximately 17% of total national GHG emissions (WRI 2016). Of these emissions, Figure 12 shows that the majority are direct emissions in residential buildings (mostly from gas for spatial heating).

Figure 12: Overview of emission sources from the building sector in 2013



Source: Data from Third National Communication (MENR 2016)

Energy efficiency forms a considerable part of Georgia's plans for pre- and post-2020 climate change mitigation action. Improvements in the sector will be important to achieve the INDC target. The INDC also indicates that energy efficiency will be a focus for pre-2020 action, specifically mentioning the new National Energy Efficiency Action Plan (NEEAP), the voluntary activities of ten municipalities under Sustainable Energy Action Plans (SEAPS) within the Covenant of Mayors programme, and the development of a nationally appropriate mitigation action (NAMA) in the building sector.

Potentials and technology options

Georgia's Third National Communication to the UNFCCC indicates that improvements in energy efficiency and the use of integrated renewables in the building sector is by far the greatest source of mitigation potential in the energy sector (MENR 2016).

Table 5 gives examples of some of the technology options for energy savings and emission reductions in the residential building sector based on information from the Government of Tbilisi City (2011). The exemplary renovation measures given in the table are for typical 9 storey soviet-era constructions in Tbilisi. These examples are given for illustrative purposes, but are roughly representative of similar energy and emission reduction potentials in other residential sub-sectors as well as the commercial and municipal sectors across the country.

The combined energy savings and emission reductions from gas heating through basic window and door weatherisation, insulation of exterior structures and roof insulation could reach approximately 72%, with payback periods of 5–7 years (Government of Tbilisi City 2011). These payback periods are consistent with some studies based on demonstration projects (SDAP 2013; NATELI 2011; Abulashvili 2013). Other studies have shown that payback periods of the most basic measures, with energy efficiency savings of 25% to 30%, could actually be as low as 2–3 years (Kochladze 2012). The payback period in some cases, for example, for central heating installation, at just over 3 years with the potential to

effectively reduce 100% of emissions from spatial heating if based on renewable sources, makes this also a highly attractive technology option.

Table 5: Example of energy saving and emission reduction potentials from technology options in the residential building sector

Measure (Typical 9 storey residential building)	Savings on energy consumption and emissions from gas heating	Cost per building (USD)	Payback period (years)
Central heating with biomass or geothermal	100% of emissions	33,000	3.1
Insulation of exterior structure	61% of energy and emissions	62,700	7.5
Weatherisation (window structures)	15% of energy and emissions	11,000	5.3
Roof insulation	4% of energy and emission	3,600	6.7

Note: Data including costs is based on investments in the measures in typical 9 storey residential buildings in Tbilisi, with 99 apartments per building.

Source: Government of Tbilisi City (2011).

Although payback periods are conducive to the implementation of action, upfront costs are still relatively high, relative to available capital. In the example for the 9-storey residential building, costs for central heating installation would be over USD 330 per apartment on average, whilst structural refurbishment would come in at nearly USD 800 per apartment.

Barriers to investment in low carbon options

The specific technical options for energy efficiency retrofits are complicated by the high variability of the existing building stock: one-size-fits-all solutions are hard to come by. However, there is great economic potential for cost-effective energy efficiency improvements.

There is potential for a major role for the private sector in the mobilization of capital, given the large volumes of capital required for action across the sector, and considering the generally attractive returns associated with the potential measures. A wide range of private stakeholders could find commercial interests in the provision of such capital, assuming a conducive political and economic enabling environment, such as energy distribution companies, energy service companies (ESCOs) suppliers of energy efficient materials, and commercial lending services. However, models that mobilize private sector finance for building retrofit have proved difficult to implement in countries worldwide, with the situation in Georgia particularly challenging.

Regardless of the source of capital, investments in energy efficiency retrofits could be made by individual households, a collection of households (for example, through condominium associations), from public budgets, or from private sector organisations directly, such as energy service companies. However, several key barriers have prevented investments in such measures. Table 6 provides an overview of these barriers, and a general overview of potential financial instruments that have been applied in some contexts worldwide to address typical barriers associated with private investments in the building sector.

Table 6: Key barriers for private investment in energy efficiency measures in buildings

Condition	Effect	Potential financial instruments and interventions to address private investment barriers (applied worldwide)
Institutional, political and regulatory barriers		
Lack of legal framework for energy efficiency.	No legal basis to stimulate policies for investment or to catalyse increasing uptake of energy efficient materials.	<i>Policy incentives: Incentive or penalty scheme to incentivize compliance with standards (once operational).</i>
Lack of compulsory or voluntary standards.	No requirements or locally appropriate guidance for best practices.	<i>Non-financial instruments: Capacity and institution building.</i>
Lack of legal recognition for potential condominium associations (CAs), which could mobilize collective investments.	Homeowners often do not join CAs and are not required to share costs. Even where they are established, CAs cannot make investments as they are not legally registered. CAs are a common vehicle for collection and application of private investment in building retrofit in many countries.	
Lack of a responsible body or central information point for energy efficiency.	Actions of various stakeholders are not coordinated. Stakeholders and policy makers have limited access to consistent and reliable information and guidance.	
No competition between electricity and gas distribution companies.	No incentive for distribution companies to invest in / stimulate energy efficiency.	
Financial and economic barriers		
Suppressed heating demand due to fuel poverty. Many households are not heated to a comfortable level, and would increase heating and comfort levels if energy efficiency savings allowed them to afford such improvements.	Energy efficient retrofit may, in practice, not always result in energy or cost savings, but rather increased comfort due to more heating. This may result in the considerable extension of payback periods, or even to the situation that investments might never be recovered, making speculative private investments unattractive.	<i>Equity: Less relevant; more suitable for larger scale investments with less private sector potential.</i> <i>Loans: Upscaling of existing low-cost loans schemes to finance/lower lending costs.</i> <i>Guarantees: Improve access to finance where projects are perceived as high risk.</i> <i>Grants: Additional investment incentive, especially for small-scale/household level measures.</i> <i>Policy incentives: Tax breaks or subsidy scheme to incentivize investments; removal of import taxes on investments.</i> <i>Non-financial instruments: Capacity building the finance/banking sector.</i>
High interest rates (approx. 12.5% in 2015). Energy efficiency projects are unlikely to benefit from improved conditions unless artificially supported, since the small size of projects and perceived risks make such projects generally unattractive to commercial lending services.	High interest rates increase the costs of finance and lead to longer payback periods. With an interest rate of 12.5%, a payback period of 5 years becomes 8–9 years; whilst a payback period of 6–7 years becomes 11–17 years. These extended payback periods are beyond the norms of many private investment practices.	
No incentives to private banks for delivery of low cost credit lines, resulting in minimal marketing efforts and extended administrative procedures.	Little knowledge and uptake of existing low cost credit lines. Transaction costs from extended admin procedures result in cost reductions not going far enough.	
Informational/capacities		
Poor availability of information and statistical data on the existing building stock.	Limited understanding on the technical and financial options for effective policy intervention. Limited understanding of market potential for private sector stakeholders from supply chain and construction sector, and higher risk. Difficult to assess support needs and engage potential support.	<i>Grants: Investment in demonstration projects.</i> <i>Non-financial instruments: Information and awareness campaigns.</i>
Lack of understanding of economy-wide benefits from energy efficient retrofit.	Limited proactivity in provision of capital or low cost financing options from finance ministry.	
Lack of understanding of private benefits from energy efficient retrofit amongst tenants/owners.	Low demand for energy efficient retrofit from tenants and property owners.	
Poor awareness amongst building occupants of best daily practices for energy efficiency	User practices may undermine potential positive impact and financial returns of energy efficiency retrofit measures, increasing risk for private finance.	

Source: Authors' elaboration from interview insights and literature (MOE 2015; Abulashvili 2013; World Bank 2015; Kochladze 2012).

Existing initiatives and finance support activities

A number of domestic activities are currently ongoing with the explicit objective to improve the implementation and investment environment for building energy efficiency retrofit in Georgia. However, the impact of these activities for the transformation of the sector has, to date, been limited:

Ten cities have signed up to the Covenant of Mayors, developing Sustainable Development Actions Plans (SEAPs) for voluntary emission reductions at the city level before 2020. The SEAPs' proposed programmes seek to reduce building sector emissions in their cities by an average of 18% by 2020, compared to a baseline scenario, translating to a total emission reduction for the ten municipalities of approximately 250 ktCO₂e.⁷¹ However, a recently published progress report for the city of Tbilisi indicates that the implementation of actions is far behind the planned timeline. The indications are that several barriers including the mobilization of finance will be a major challenge for the successful implementation of the SEAPs which is driven primarily at the subnational level (Tbilisi City Hall 2015).

Several pilot projects are ongoing, both involving energy efficiency retrofit auditing and actual implementation of retrofit measures as demonstration projects. Most of these pilot projects focus on renovations in schools, kindergartens and hospitals, with a small number also carried out in the residential sub-sector. Many of these projects are funded by USAID, the European Commission and EBRD.

Georgia is developing a nationally appropriate mitigation action (NAMA) for the building sector, which is expected to include programmes and interventions for energy efficiency retrofits.

Planning and delivery of support options could be considered to build upon synergies of other ongoing international support initiatives in Georgia:

The European Bank for Reconstruction and Development (EBRD) has shown great interest in the provision of finance to leverage private sector capital for building energy efficiency in Georgia. Several private banks have offered lower cost credit lines for energy efficiency projects, mostly supported by EBRD. However, these credit lines have had very little impact: they have been poorly marketed and do not go far enough to reduce the prohibitive costs of credit in Georgia. EBRD has earmarked USD 1.4 billion for sustainable energy financing facilities in ten countries, including Georgia. The total includes an allocation of USD 378 million from the Green Climate Fund (GCF), approved in October 2016.

⁷¹ Authors' calculation based on analysis of SEAPs available from the Covenant of Mayors website: <http://www.covenantofmayors.eu>

The Asian Development Bank (ADB) is highly active in Georgia, with a large portfolio of support projects including grants, loans and technical assistance, for various sectors (ADB 2016). ADB is currently active with ongoing projects for diversification of finance sector services, which may be relevant for energy efficiency finance. However, ADB does not support any projects related directly to energy efficiency in the building sector, although energy efficiency is identified as an area of planned support in the ADB's 2014–2018 Country Partnership Strategy.

Germany's government owned development bank, KfW, has been active in Georgia since 1993. KfW is supporting various projects in the energy sector, and has also had a considerable impact in the development of the private financial sector, particularly regarding the availability of microcredit and credit for small scale projects and enterprises.

Potential for Nordic support

Nordic countries have a strong track record in reducing the role of fossil fuels in the building sector, as well as in step-wise increasing the energy efficiency in buildings, among other through the use of various financial incentives, energy certification (including for certification qualified experts) systems, building code development and awareness raising campaigns. Hence, Nordic countries are well positioned for the provision of technical and financial support, for modernisation and energy efficiency improvements in the building sectors internationally. While the Nordic DFIs have a track record investing in various energy efficiency projects generally, NIB as well as NEFCO have experience in focused financing initiatives for energy efficiency improvements specifically in the buildings sector.

Several potential options exist for Nordics to continue and scale up support to overcome EE investment barriers in the building sector in countries like Georgia:

Within the residential sector, by far the greatest source of emission reduction potential, a programme to reduce the lending rates of private lending institutions through risk management instruments, could facilitate investments in basic weatherisation improvements (e.g. modernised window frames) if targeted at the household, and more extensive building retrofit if targeted at entities that can address structural properties of entire buildings. Whilst removing many barriers for investment, a considerable remaining barrier for this option is the difficulty in bringing households together for collective action, without which private investments are not possible or less effective, regardless of how affordable the finance may be. In this regard, Armenia, a country with very similar conditions in the building sector, has recently secured funding from the Green Climate Fund, for a soft loan programme to address residential energy efficiency; lessons can be learned from the specific modalities of this undertaking and their contribution to barrier removal.

For social housing, specifically, it may be feasible to provide support for energy efficiency retrofit through the existing Municipal Development Fund (MDF) of the Ministry of Regional Development and Infrastructure. The MDF provides finance in the form part-grant part-loan for development projects including retrofit of municipal buildings and social residential housing. Up to now, MDF supported projects usually do not include components for energy efficiency related retrofits, although the MDF is understood to be interested in potential options. Support could target the extension of the MDF remit to focus on energy efficiency outcomes. Similar Nordic programmes such as Sweden's *Kommuninvest* and Finland's *Munifin* could offer an effective model, or useful experiences.

District heating projects are technically feasible options for reducing the emissions from energy used in the building sector in Georgia. Projects utilising biomass boilers or geothermal technologies hold particularly great technical potential. However, the practical feasibility of such measures is limited, particularly for the retrofit of existing buildings, where old soviet-era district heating infrastructure has been dismantled and scrapped, and where collective participation from households, essential for the viability of such interventions, is very difficult to secure. With their extensive experience with district heating technologies and systems, Nordic countries could play a key role through direct investment in demonstration projects for these technologies, supporting further work to enhance the feasibility of such interventions in Georgia, and supporting the development of enabling conditions for investment in technology deployment.

Support will be required for the finalisation and then implementation of Georgia's NAMA in the building sector which is currently under development and likely to be ready for support provision in 2017. The NAMA is expected to focus on the residential building sector, and to include economic and policy instruments that tackle the prevailing barriers directly and leverage private sector investment.

The development of effective options for the building sector faces the considerable barrier that information and data on the existing building stock is fragmented and limited in its depth. Technical assistance to support the development of databanks, data information platforms at the subnational and national level, and enhanced understanding of the wider non-climate related impacts and benefits, would enhance the enabling conditions for the development of effective solutions considerably.

The problems inherent to Georgia's existing building stock are typical of many countries in the region, particularly former Soviet Union states where a history of low energy prices and minimal-cost construction practices has left a similar legacy on the built environment. Solutions may have a large impact on the country but could be replicated in similar contexts around the region, with even greater impacts for the decarbonisation of one of the biggest and growing emissions drivers of the region.

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Case: Renewable energy and water scarcity in Ethiopia

This case study focuses on the implications that climate change has on the water-energy nexus in Ethiopia. It highlights key synergies between adaptation and mitigation measures in the energy sector, identifies major barriers to their implementation as well as current and future intervention areas for Nordic donors.

Overview

- Profile: Least developed country.
- Population: 99,466,000.
- Ease of Doing Business Index: 159.
- Key environmental issues: Floods, droughts, air pollution from burning biomass.
- Locations affected: Rural areas.
- Key growth sectors: Industry, agriculture.
- World Risk Index Ranking: 70/173.
- Global Climate Risk Index: 66/178.

Low emission development in Ethiopia

Ethiopia is a fast growing least developed country (LDC) in East Africa with a strong ambition to achieve middle income status by 2025. This ambition has been formalised in the two Ethiopian Growth and Transformation Plans (GTPs) that have been elaborated for 2010/11 to 2014/15 (GTP I) and 2015/16 to 2019/20 (GTP II). The GTPs serve as medium-term strategic frameworks for realising the national vision to achieve rapid, sustainable and broad-based growth (Ethiopia, 2016).

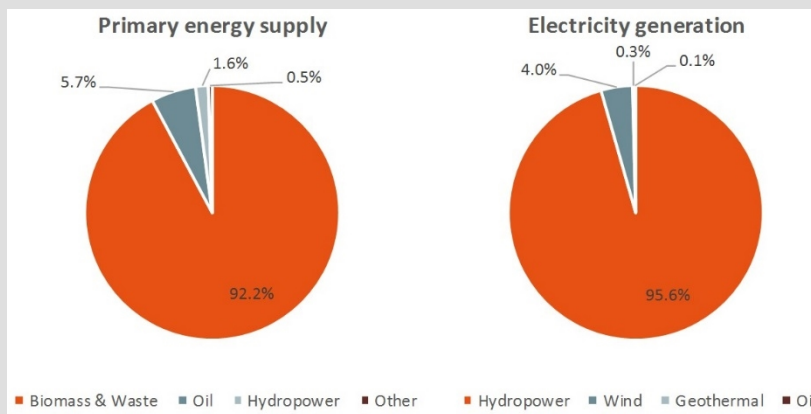
In 2012, Ethiopia launched the Climate Resilient Green Economy (CRGE) Initiative to embark on building a green economy delivered through zero carbon growth. Among the principle economic objectives of both the GTPs and the CRGE is to increase agricultural productivity and production as well as to accelerate industrial growth. Key resources to facilitate these objectives are, primarily, energy and water. Together, an increase in sustainable energy and water supply is expected to account for USD 7.2 billion of planned GDP growth during 2010–2015 (Ethiopia, 2015b).

Water situation in Ethiopia

Ethiopia has large water resources yet is considered “water stressed” due to rapid population growth. Natural variability in rainfall patterns, intensified by the increased frequency of extreme weather events, gave rise to conditions of severe water scarcity, degraded water quality and permanent food insecurity in several regions of the country, while in other parts, flooding is a serious problem. By far the largest consumer of water is agricultural activity, accounting for 93% of all water withdrawals. Yet, water withdrawn for agriculture represents only 4% of the country’s total renewable water resources, of which only a very small part is currently exploitable (USAID, 2016).

Energy mix in Ethiopia

Ethiopia generates most of its energy from renewable sources. Biomass and waste are the country's primary energy sources, with a share of 92.2% of total primary energy supply, followed by oil (5.7%) and hydropower (1.6%). Although hydropower contributes only 1.6% to the total energy supply, it generates 95.6% of electricity and is thus the country's dominating electricity resource, followed by wind (4%), geothermal (0.3%) and oil (0.1%) (IEA, 2014a).



The water-energy nexus in Ethiopia

Water and energy are closely interlinked and highly interdependent sectors. Decisions made in one sector usually have consequences for the other. The form of energy production chosen determines the amount of water required to produce the energy, as water is needed for cooling thermal power plants or in the extraction, transport and processing of fossil fuels. On the other hand, energy is central to providing freshwater, through propelling systems that collect, transport, distribute and treat water. Challenges that result from the sectoral interdependency are most acute in those countries undergoing rapid economic growth or where large parts of the population lack access to modern services, as is the case in Ethiopia where 76% of the population lack access to reliable energy sources. Climate change is likely to add to the existing pressure as changes in rainfall patterns and extreme weather events cause floods, heatwaves and droughts (UN Water, 2014).

In Ethiopia – as is the case in many countries in Sub-Saharan Africa – water plays a vital role as a primary source for energy generation. 60% of the hydropower potential of Sub-Saharan Africa is centred in the Congo and Ethiopia. Yet, only a small fraction of this hydropower potential has been developed up to date and Ethiopia's energy strategy is still focused on the massive expansion of the country's hydroelectric capacity (UN Water, 2014).

Water and energy in Ethiopia's Nationally Determined Contribution (NDC)

On 10th June 2015, Ethiopia became the first LDC to submit its INDC which sets out the plan to reduce the country's GHG emissions by 64% from BAU by 2030. According to the INDC, the agriculture sector (in particular livestock) contributes most to national GHG emissions (42% of the total in 2010). Agriculture is closely followed by deforestation and forest degradation (37%) and crop cultivation (9%). Power generation, by contrast, only accounts for a very small share of emissions (3%). Consequently, emission reductions are planned to focus on agriculture and forestry, while no emission reduction target for the energy sector is included. Instead, the INDC is understood to include renewable energy targets that emanate directly from the country's GTPs and CRGE. With regard to the interdependency of water and energy, two long-term actions are stressed in the adaptation section of the INDC (Ethiopia, 2015a):

- The expansion of electric power generation from geothermal, wind and solar sources to minimise the adverse effects of droughts on the predominantly hydroelectric energy sector.
- The establishment of additional dams and power stations to further develop the energy generation potential from traditional river flows as well as the development of new dams on parallel rivers to maintain the baseline hydropower electricity generation capacity to levels achievable under a "no climate change" scenario.

Regarding finance needs and cost estimates for full implementation of the proposed action the Ethiopian INDC is rather vague: the overall target is conditional upon an ambitious multilateral agreement that promotes international support and stimulates investments in the country. In terms of numbers, Ethiopia's INDC includes a rough estimate for the implementation of the CRGE expected to amount to more than USD 150 billion by 2030. While the necessity of international public and private sector support to manage this financial burden is quoted at several points in the INDC, no details or cost estimates are given as yet. Instead, Ethiopia stresses that further research is needed to identify and quantify finance, technology transfer and capacity building needs for sector-related mitigation and adaptation action (Ethiopia, 2015a).

Potentials and technology options

Key adaptation options for the energy sector

In the context of energy security and water scarcity, many efforts to mitigate climate change and adapt to its effects focus on the expansion of renewable energies. While certain types of renewables, for example wind and solar photovoltaic (PV), have both low emissions and low water consumption, other types, such as concentrated solar power and biofuels, require large amounts of water. Hydropower is a case on its own, as it requires large quantities of water to be stored and may, in some places, go along with considerable evaporative losses (UN Water, 2014).

Ethiopia is one of the African countries that rely almost exclusively on hydroelectric sources for their electricity generation. While in the context of climate change, hydropower is likely to remain an important energy source to promote sustainable and low-emission development, it becomes increasingly important to 1) develop climate resilient hydropower technologies as well as to 2) diversify and balance the energy mix through expanding the use of other sources, including wind and solar PV.

1. *Diversifying the Ethiopian energy mix:* In line with the CRGE vision to achieve a net zero carbon economy by 2025, Ethiopia aims to generate all electricity from renewable energy sources with up to 20% wind and solar, 10% geothermal and 70% hydropower. The GTP II outlines a detailed plan on the expansion of renewable energy technologies and backup sources until 2020, with the target to expand installed electricity capacity in Ethiopia from 2000 MW in 2015 to 17000 MW in 2020. Additional renewable energy capacity is planned to mainly come from large-scale hydropower, while solar PV, wind and biomass are expected to play a limited, yet growing role in the future. With its renewable energy strategy, Ethiopia also recognises important synergies between climate adaptation and mitigation measures, intending to minimise, amongst others, the adverse effects of droughts on the energy sector.

2. *Increasing the sustainability of the Ethiopian hydropower sector:* Over the past years, several studies have been conducted on the adaptation of hydroelectricity technology to increasing climate change vulnerability and water scarcity. The Asian Development Bank, for example, published a report in 2012 that highlights a number of adaptation measures for hydropower systems to adapt better to climate change, including dam and infrastructure design, spillway capacities, number and type of turbines, and improved hydrological forecasting techniques (ADB, 2012). At the international level, several criteria and guidelines have been developed to measure the sustainability of individual hydropower projects, covering various aspects such as energy policy framework, decision-making processes, comparison of project alternatives, improved environmental management, and others (IEA, 2012).⁷²

While diversification of the energy mix is key to the country's energy strategy, limited attention has been paid to options that increase the sustainability of hydropower and make it more resilient to the effects of climate change. The introduction of new hydroelectric technology and the retrofitting of existing ones is likely to become increasingly important in the scope of the broader Ethiopian energy policy.

Associated costs

Regarding diversification of the energy matrix, very rough cost estimates can be retrieved from the World Energy Investment Outlook (IEA, 2014b). Based on this data, investment costs for reaching the renewable energy targets as set out in GTP II would amount to approx. USD 5.75 billion (USD 1.57 bn for wind, USD 0.78 bn for solar, USD 1.48 for

⁷² In 2010, the International Hydropower Association (IHA) published the IHA Hydropower Sustainability Assessment Protocol, which is a comprehensive tool to assess the sustainability of hydropower projects globally. It provides a rigorous, evidence-based assessment of between 19 and 23 relevant sustainability topics, depending on the development stage of the project. Der blev angivet en ugyldig kilde..

geothermal, USD 0.36 bn for waste and USD 1.56 bn for biomass). Costs for the expansion of hydropower – assuming that most of the additional capacity will be met through large-scale projects – would add up to approx. USD 22.54 billion (Table 7).

Table 7: Ethiopia's renewable energy targets and associated costs

Sources of electric power generation	Additional capacity needs (in MW)	Costs (USD per KW, average 2012 and 2020)	Total costs (in billion USD)
Hydro (large scale)	11927	1890	22,54
Wind (on-shore)	1053	1495	1,57
Solar (PV)	300	2612	0,78
Geothermal	572	2585	1,48
Gas turbine	430	400	0,17
Waste (waste incineration CHP)	50	7205	0,36
Sugar (biomass power plant)	474	2130	1,01
Biomass (biomass power plant)	257	2130	0,55
Total	15063	0	28,46

Source: Based on (Ethiopia, 2016) and WEIO 2014.

Cost estimates for retrofitting or improving hydropower technology with the objective to reduce its climate vulnerability, on the other hand, are not available and would likely have to be calculated on a case-by-case basis.

Role of the private sector

The private sector plays a crucial for resilient energy sector development in Ethiopia. The need to mobilize private finance to achieve the renewable energy targets and to meet the rapidly growing domestic demand has early been recognised and is being reflected in most energy related policies and strategies. Given that large-scale hydropower projects are traditionally public sector driven, additional private investments are primarily needed to meet the non-hydro renewable energy targets and support the diversification of the Ethiopian energy mix. Private sector engagement can furthermore spur relevant innovation for hydroelectric adaptation and facilitate respective technology transfer.

In 2015, Ethiopia's first independent power purchase agreement (PPA) was signed between Ethiopian Electric Power and Corbetti Geothermal Plc for up to 500 MW of clean geothermal power from the Corbetti geothermal source. Investors in the Corbetti geothermal project include Reykjavik Geothermal, Berkeley Energy, and Iceland Drilling (USAID, 2015). This PPA is broadly considered a first step towards large-scale renewable power projects that are partly financed by the private sector (Ethiopia, 2015b).

Overall, private sector engagement in Ethiopia's energy sector is still underdeveloped and needs increased attention from the government and other sectors in order to enable full implementation of energy sector related adaptation action.

Barriers to adaptation in the energy sector

Several barriers limit climate resilient development of the energy sector. Some of these barriers inhibit general public sector progress in terms of establishing legal and regulatory frameworks and procedures, which, in the long-term, hinders effective private sector involvement. Others relate more directly to private investment, such as, for example, higher volumes of funding involved in the introduction of climate resilient renewable energy technologies and larger financial risks associated with their exploration. A summary of key barriers in different policy areas are presented in Table 8.

Table 8: Key barriers to adaptation in the Ethiopian energy sector

Barrier category	Summary
Institutional/ political	Insufficient and slowly evolving policy framework for climate resilient renewable energies (e.g. feed-in-tariffs)
	Lack of detailed road maps/ sector-specific strategy development (e.g. long-term solar power strategy)
	Long and slow institutional processes (e.g. licensing procedures)
	Lack of inter-institutional coordination
Financial/ economic	Higher investment requirements for climate resilient renewable energy technologies
	Higher risks associated with climate resilient renewable energy (e.g. geothermal drilling) resulting in difficult access and high cost of finance
	Need for cost-intensive back-up power supply options (due to intermittent electricity capacity from renewable energies)
Technical	Lack of proven track record for climate resilient renewable energy technologies
	Limited technology transfer for climate resilient renewable energy technologies
	Need for locally developed and adapted technologies that fit with local conditions
Informational/ capacities	Low human capacity for renewable energies; lack of local experts and entrepreneurs
	Unequal access to and unequal status of information; inadequate knowledge management
Others	Low levels of socio-economic and infrastructure development

Source: Various.

Existing policies and support frameworks

Existing policy framework in the renewable energy sector

While the Ethiopian government adopted several strategies related to renewable energy over the past years, there is limited evidence on concrete policy action and progress in this field. With regard to renewable energies, the Ethiopian government approved the Energy Proclamation (No. 810/2013) which came into force in 2014. The Energy Proclamation established the Ethiopian Energy Authority (EEA) which is responsible for

private energy investments in the country and determines prices for private and public power distributors, issues licences, sets performance standards and is responsible for off-grid independent power projects. In 2011, the EEA submitted a draft for a Feed-in-Tariff Proclamation. Meanwhile, however, the Ethiopian government abandoned its work on feed-in-tariffs and instead decided to introduce a competitive bidding process for the private sector, following the example of South Africa.

Full implementation of the Energy Proclamation as well as further progress on the regulatory framework for the energy sector will decide on the attractiveness of the Ethiopian energy market for both domestic and foreign investors.

Existing support framework in the renewable energy sector

The Ethiopian government has established the CRGE Facility as a key financial vehicle to mobilize access to and combine domestic and international, public and private sources of finance targeted at the CRGE strategy. The CRGE Facility provides a single engagement point for different public and private sector actors and is intended to enhance coordination and reduce fragmentation of support efforts.

Beyond that, Ethiopia has attracted several bilateral and multilateral actors and organisations over the last decades, many of which focus specifically on supporting the expansion and improvement of renewable energy and energy efficiency. These include for example:

- *Energising Development Programme (EnDev)* by GIZ which supports the Ethiopian government in improving people's access to modern energy services. Emphasis is put on the development of technologies for renewable energies (in particular small-scale solar and hydropower plants), the development of markets for renewable energies (including promotion of private sector), and the enhancement of a policy framework and strategy development. The project is co-financed by the Netherlands' Directorate-General for International Cooperation (DIGIS), the Norwegian Ministry of Foreign Affairs, the UK's Department for International Development (DFID) and Irish Aid.⁷³
- *Scaling-up Renewable Energy Program for Low Income Countries (SREP)*, a funding window of the Climate Investment Fund (CIF). SREP particularly recognises the significant role of the private sector in promoting renewable energy and aims at removing barriers that inhibit scaled-up private sector investments. Under SREP, the Ethiopian government receives USD 50 million in highly concessional financing (96% grant, 4% loan) for investments in wind, geothermal, and small and medium enterprise (SME) renewable energy development. SREP financing is expected to leverage around USD 450 million in additional co-financing in the Ethiopian renewable energy sector (CIF, 2015).
- *Electricity Network Reinforcement and Expansion Project (ENREP)*. Implemented by the Development Bank of Ethiopia (DBE) in partnership with the International

⁷³ For more information see: <http://www.giz.de/en/worldwide/18899.html> (accessed: 07.11.2016)

Development Association (IDA), a USD 20 million credit line provides working capital loans to private sector household solar providers, as well as micro-finance to households for the purchase of solar lanterns and Solar Home Systems (SHS).

Another USD 20 million line of credit was approved by the World Bank in May 2016 as part of USD 200 million in additional financing to ENREP (World Bank, 2016).

- In 2003, the Ethiopian government established the *Rural Electrification Fund* (REF) to enable private and cooperative engagement in rural electrification activities through loan based finance and technical support. The REF received over USD 20 million in funding from the World Bank, Global Environmental Facility (GEF) and government commitment, with the aim to promote energy projects in rural areas in collaboration with private actors and local authorities. The REF provides, amongst others, concessional loans for the development of off-grid electrification projects. The loan amounts to 85% of the total investment for diesel projects and 95% loan with zero interest rate for renewable energy projects (GTZ, 2009).

Potential for Nordic support

Nordics have been supporting Ethiopia in the implementation of its green growth strategy from the start. Norway, for instance, provided financial assistance (in the form of results-based payments) to the Ministry of Water and Energy under the *Energy+ programme*, which assists Ethiopia to achieve universal access to sustainable energy by 2030 and to reduce emissions from the energy sector. In 2011, Norway and the UK agreed on a strategic partnership with Ethiopia on climate policy, aiming at driving implementation of the CRGE in all sectors. The partnership was expanded in Lima (under the so-called Lima Declaration) to include also Sweden, Denmark, France and Germany. All partner countries have made considerable financial contributions to the CRGE Facility.⁷⁴

To achieve the gradual adaptation of the Ethiopian energy sector in a context of decreasing water resources, more and improved support is needed regarding the two main fields of action identified above: diversification of the energy mix and increase in the sustainability of hydroelectric technology. While Ethiopia has already put in place regulatory frameworks and financial support schemes that support these purposes, there is still much room for improvement and additional private sector engagement. Nordic donors can take their ongoing support activities as an entry point to enhance existing initiatives or provide targeted aid to individual barriers that still need to be overcome in order to substantially elevate the development of a climate resilient renewable energy sector in Ethiopia.

Specific areas for enhanced Nordic support in Ethiopia could include the following (also summarised in Table 9):

⁷⁴ For more information on the Lima Declaration see: <http://www.regjeringen.no/globalassets/upload/kld/kl/klima-og-skogprosjektet/141210limadeclaration-signed.pdf> (accessed: 20.11.2016).

- *Enhance the Ethiopian support landscape.*
 - Part of the effort to implement Ethiopia's INDC and related renewable energy targets is research that identifies and quantifies specific needs in terms of finance, technology transfer and capacity building for sector-related mitigation and adaptation action. Nordic expertise might already step in at this preliminary stage to conduct sector-specific gap analyses and help the Ethiopian government to prioritise early action opportunities with regard to the adaptation of the energy sector to increasing water scarcity.
- *Create an enabling environment for climate resilient renewable energies.*
 - To make the private sector more aware of climate risks and boost private sector engagement in adaptation action, it is particularly important to create an enabling environment through policy and regulation. The Readiness for Investment in Sustainable Energy (RISE)⁷⁵ indicators for the investment climate in resilient renewable energy technology show that Ethiopia is relatively progressive with regard to policy planning processes. However, Ethiopia is less efficient in preparing comprehensive, high quality road maps and strategies for the actual introduction and expansion of renewable sources, e.g. in the field of solar PV, wind or geothermal energy. Since Nordic countries have a long track record in the development and implementation of renewable energy regulation, they can advise and support the Ethiopian government in this endeavour through targeted capacity and institution building interventions.
 - In the context of policy enhancement, Nordics can furthermore support the conduction of ex-ante studies on the impact that public incentives have on private sector participation, e.g. in the form of cost-benefit analyses. This may fortify governmental policy planning in Ethiopia and drive implementation.
- *Overcome capital limitation for climate resilient renewable energies.*
 - Since capital limitation and an underdeveloped capital market are major barriers to the broader involvement of the private sector in the expansion of resilient renewable energy technologies throughout Ethiopia, specific financial instruments can help to encourage and direct private investment to where it is most needed. For these financial instruments to have the desired impact, however, the private sector must be further developed and general access of private investors to the capital market must be improved.
 - Low-cost loan schemes can provide investment incentives for better adapted technologies with higher investment requirements, such as small- and micro-scale hydropower or waste incineration technologies.

⁷⁵ The general investment climate of Ethiopia with regard to the introduction of renewable energy has been thoroughly assessed in the Readiness for Investment in Sustainable Energy (RISE) project by the World Bank in an effort to support the Sustainable Energy for All (SE4ALL) initiative. For further information on the RISE project, see: <http://rise.worldbank.org/>

- Issuance of risk guarantees can improve private sector access to finance, especially for higher risk projects or new technologies (e.g. geothermal power plants or modern hydroelectric technology).
- Green bonds can support private sector investment into climate resilient infrastructure that allows for structural changes in the energy sector.
- Specific grant schemes can provide additional incentives for less mature technologies, such as small- and micro-scale hydropower or other small-scale off-grid solutions. Based on the experiences that Nordic countries have made with these financial instruments, they can apply them in a way that targets private sector integration in the broader energy policy implementation.
- *Ensure access to climate resilient renewable energy technologies.*
 - Taken together, Nordic countries have an enormous track record in developing, using and promoting different renewable energy technologies. Connecting Nordic technology developers with Ethiopian businesses has the potential to considerably improve Ethiopia's access to modern technologies, such as solar PV, wind, and geothermal energy, as well as strengthen the country's capacity to further adapt its hydroelectric technology.

Table 9: Overview of barriers and potential instruments to overcome barriers

Barrier category	Summary	Instruments and interventions to address barrier	Existing effort to address barrier
Institutional/ political	Insufficient and slowly evolving policy framework for climate resilient renewable energies (e.g. feed-in-tariffs)	Capacity building; regulatory change	Introduction of competitive bidding process (following example of South Africa)
	Lack of detailed road maps/ sector-specific strategy development (e.g. long-term solar power strategy)	Capacity building; development of tools, knowledge, data	Development of "Energy Masterplan" for coming 25 years, including sector-specific interventions
	Long and slow institutional processes (e.g. licensing procedures)	Capacity and institution building; structural change	
	Lack of inter-institutional coordination	Capacity and institution building; structural change	
Financial/ economic	Higher investment requirements for climate resilient renewable energy technologies	Low-cost loan schemes; green bonds	Low-cost credit lines under ENREP and REF; highly concessional finance under SREP
	Higher risks associated with climate resilient renewable energy (e.g. geothermal drilling)	Guarantees	
	Need for cost-intensive back-up power supply options (due to intermittent electricity capacity from renewable energies)	Green bonds	

Barrier category	Summary	Instruments and interventions to address barrier	Existing effort to address barrier
Technical	Lack of proven track record for climate resilient renewable energy technologies	Grant schemes	Development/ replenishment of national fund (CRGE Facility); access to international funds (GCF, AF)
	Limited technology transfer for climate resilient renewable energy technologies	Low-cost loan schemes; tax breaks; active match-making	
	Need for locally developed and adapted technologies that fit with local conditions	Grant schemes; research and development; pilot projects	
Informational/ capacities	Low human capacity for renewable energies; lack of local experts and entrepreneurs	Capacity and knowledge building	
	Unequal access to and unequal status of information; inadequate knowledge management	Capacity building; information and awareness campaigns	
Others	Low levels of socio-economic and infrastructure development	Public equity	

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Case: Emissions reduction in the forestry sector in Peru

This case study provides an overview of the situation, mitigation potential and support needs for emissions reduction in the forestry sector in Peru in order to identify potential climate finance interventions through REDD+ and other mechanisms to catalyse investments in the sector.

Overview

- Population: 31,151,650.
- Ease of Doing Business Index: 54.
- Key environmental issues: High urban atmospheric pollution, economic dependency on income generated from production and use of fossil fuels.
- Compounding issues: Low-lying coastal area, areas liable to flood, drought and desertification, fragile mountain ecosystems, disaster prone areas.
- World Risk Index Ranking: 78/173.
- Global Climate Risk Index: 64/178.

Forests in Peru

Peru has over 72 million hectares of forests, 94% of which are part of the Amazon rainforest (MINAM, 2016a). It has the second largest extension of Amazon forest in Latin-America and the fourth largest area of tropical forest, worldwide (MINAM, 2016b). Although this ecosystem covers over 57% of the national territory, it holds only around 13% of the country's population including native communities from 56 distinct ethnic groups, whose traditions and livelihoods are closely tied to the forest (EIA, 2012).

Even though over half of the country's surface area is forested, the economic value of the forest sector is low compared to other forested countries in the continent. According to the Forest Investment Program, currently forest-related activities account for no more than 1% of the country's GDP. Moreover, the largest part of Peru's forest sector activity is informal; meaning that, while forest resources are an important part of people's livelihoods, they are not exploited on a scale or manner that creates additional value to the economy (GGGI, 2014).

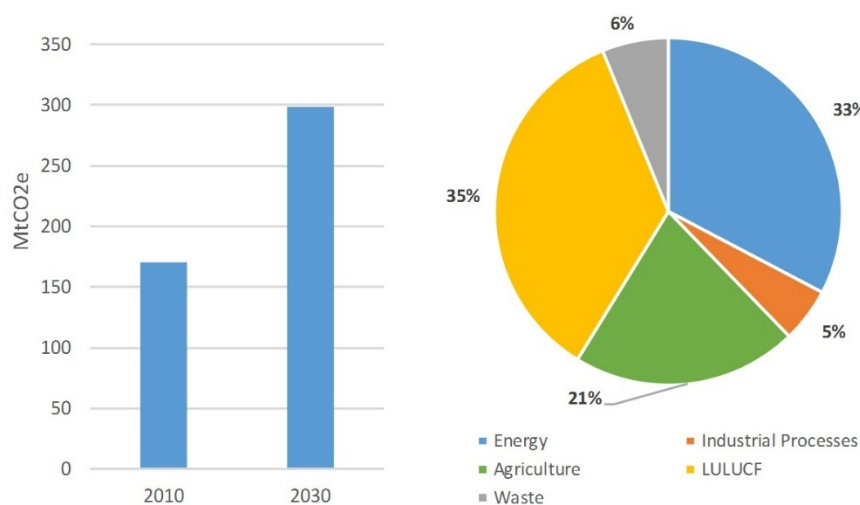
Peru's Nationally Determined Contribution (NDC)

In July 2016, Peru submitted its Nationally Determined Contribution (NDC) where it commits to reduce emissions 20% below a "business as usual (BAU)" scenario by 2030. An additional reduction of 10% by 2030 could be achieved, conditional on international finance. Peru's NDC reports emissions of about 170 MtCO_{2e} for 2010. The distribution of the emissions per sector as reported in the latest country GHG emissions inventory is shown in Figure 13 (MINAM, 2014). The graph shows that over half of the emissions are generated through activities in the land use, land-use change and forestry (LULUCF) sector; followed by emissions from the energy and agriculture sectors.

Currently, over 97% of the LULUCF emissions come from deforestation of the Amazon forest for agriculture, cattle raising and other activities. The government recognises the high potential for emissions reduction in the sector but also highlights that major enabling conditions are required for the successful implementation of mitigation actions in the sector (Government of Peru, 2015a). It is worth noting that there is some uncertainty with regard to the government's mitigation goals for the sector. In January 2016, the Peruvian Government submitted the Forest Reference Emissions Level (FREL) to the UNFCCC which shows an upward deforestation trend from 2015 to 2020. At the same time the Government committed to zero net emissions from land use change and forestry by 2021 in a Joint Declaration of Intent between the governments of Peru, Norway and Germany (see also below). Additionally, Norway and Germany commit to partner with Peru to reduce gross deforestation based on an historical average.

The NDC specifically refers to the REDD+ mechanism as an important tool for the country to achieve its mitigation commitments, and stresses the need to reinforce support for REDD+ under the new agreement (Government of Peru, 2015b). REDD+ can contribute to the reduction of emissions coming from deforestation and forest degradation, through forest conservation, sustainable forest management and enhancement of forest carbon stock.

Figure 13: Left: Sectoral distribution of GHG emissions in Peru (2010). Right: LULUCF emissions in 2010 and 2030 as projected under a "business-as-usual" (BAU) scenario



Synergies of mitigation and adaptation in the forest sector

In terms of adaptation, forests and human societies are closely connected, particularly in developing countries. Human vulnerability and development are, to a significant degree, determined by the provision of ecosystem services; and ecosystems are impacted by human activities. Since people in many regions are highly dependent on forest goods and services, the impacts of climate change on forests may have serious consequences for those people and societies, making especially poor people with already limited adaptive capacity even more vulnerable (Kleine *et al.*, 2010). Globally, 1

out of 1.2 billion extremely poor people depend on forest resources for all or part of their livelihoods and approximately 300–350 million people live within or adjacent to forests on which they depend directly for their subsistence and income (Chao, 2012).

Peru is a “particularly vulnerable” country, as it has seven of the nine characteristics recognized by the UNFCCC to describe vulnerability to climate change. Given the role for both mitigation and adaptation, the sector has been identified as one of five priority sectors by the government – together with water resources, agriculture, fisheries and health (Government of Peru, 2015b). Peru included an adaptation component in its NDC which, for the forestry sector, seeks to promote comprehensive land management with a landscape approach, increase forest resilience to climate change, and to reduce the vulnerability of local populations (Government of Peru, 2015b).

Potentials and technology options

The LULUCF sector in Peru holds the largest potential for reducing emissions in the country. Thus, during the preparation of the country’s INDC, a multisectoral commission identified several mitigation actions to address the direct and indirect causes of deforestation and forest degradation, the main sources of the sector’s emissions. These mitigation actions were grouped into five main categories:

- Sustainable forest management.
- Agroforestry systems.
- Protected areas.
- Reforestation.
- MRV and territory management.

The latter is also referred to as “enabling conditions” or actions that support activities to reduce deforestation while also contributing to the viability of other mitigation actions in the sector. Although not explicitly included in the country’s NDC, the multisectoral commission’s report estimated the mitigation potential and implementation costs of several mitigation actions for all sectors. Table 10 shows a summary of the emission reductions and costs of implementation for the selected measures in the forestry sector (Government of Peru, 2015a).

Table 10: List of mitigation options for the forestry sector, their mitigation potential and the estimated costs of implementation

Measure	Emissions mitigation potential	Implementation costs until 2030 (thousand USD)*
Sustainable forest management		
Forest management in forest concessions	118 MtCO ₂ e	~ -11,400.00 (negative costs represent economic gains)
Rearrangement of permanent production forests		
Forest conservation and conditional payments		
Community forest management		
Forest management for Brazilian nuts production		
Agroforestry		
Agroforestry systems for coffee production (NAMA)	7 MtCO ₂ e	~ 1,500.00
Agroforestry systems for cacao production (NAMA)		
Protected areas		
Consolidating the protected natural areas in the country	14 MtCO ₂ e	~ 150.00
Reforestation		
Commercial reforestation with high yields of inputs	68 MtCO ₂ e	~ 1,350.00
Community reforestation with technology (involvement of native communities)		
MRV and territory management		
Monitoring, control, surveillance and proper land management (also referred as enabling conditions)	241 MtCO ₂ e	~ 1,050.00

Note: * Using exchange rate according to SUNAT (Sept. 2015): S/. 3.20.

Two of the assessed measures under the Sustainable Forest Management group of measures, namely, “forest management in forest concessions” and “rearrangement of permanent production forests”, are expected to generate economic revenues when implemented, assuming the enabling conditions are in place for a successful implementation. Some of the enabling conditions that are needed for the effective implementation of the mitigation measures were: improving land management, controlling illegal logging, reducing informalities in the sector, reducing transaction costs and strengthening the institutions and the monitoring systems. The expected revenues of the above-mentioned measures would come from the sales of the timber produced in the forest under these schemes.

An assessment of the sources of finance to identify potential implementing entities for each assessed measure showed that for some measures, especially those with high economic returns, the private sector plays a key role with over 80% of investments expected to be financed by the private sector (Government of Peru, 2015a). Other measures involving the native communities in the forest and the national protected areas would be mostly financed by public sources. A similar scenario is anticipated for the implementation of the enabling conditions, e.g. the establishment of effective monitoring and reporting systems. Table 11 shows the contributions that could be expected from each finance source, for each assessed measure (Government of Peru, 2015a).

Table 11: Expected sources of finance for mitigation options in the forestry sector

Measure	Finance source		
	Public	Private	International cooperation
Forest management in forest concessions	1%	98%	1%
Rearrangement of permanent production forests	4%	91%	5%
Forest conservation and conditional payments	67%	-	33%
Community forest management	4%	-	96%
Forest management for Brazilian nuts production	10%	50%	40%
Agroforestry systems for coffee production (NAMA)	-	98%	2%
Agroforestry systems for cacao production (NAMA)	-	98%	2%
Consolidating the protected natural areas in the country	95%	-	5%
Commercial reforestation with high yields of inputs	5%	80%	15%
Community reforestation with technology (involvement of native communities)	80%	-	20%
Monitoring, control, surveillance and proper land management (enabling conditions)	80%	-	20%

The multisectoral commission's report also highlighted many co-benefits that can be achieved through the implementation of the above-mentioned measures. Among the most relevant were the improvement in the quality of life of people, increasing the number of jobs along the supply chain of many forest products, increasing the income of families participating in forest conservation projects, contributing to water regulation, reduction of biodiversity loss and deforestation. In addition, mitigation projects can enhance the adaptive capacity and reduce the vulnerability of forest communities.

Barriers to mitigation and adaptation in the forest sector

Despite the high mitigation potential of the measures detailed above, progress towards implementation has been slow. Significant developments have taken place in the last five years, however, several key barriers are still holding back the successful implementation of measures that can effectively slow or stop deforestation in the country. Table 12 provides an overview of the major barriers identified by the government in their latest Forest Conservation report (MINAM, 2016b).

Table 12: Key barriers to mitigation in the Peruvian forestry sector

Barrier category	Summary
Institutional / political/ legal	Limited intersectoral coordination that also hinders the project design process: Conflicts between the Ministry of Environment and the Ministry of Agriculture (previously in charge of forest management) related to access to financial funds and the lack of clarity on the split of responsibilities and topics
	Limited internal coordination: need to strengthen coordination between different directorates within the Ministry of Environment on forest issues
	Coordination of public funding is handled in the country mostly on a sectoral basis, limiting the interaction of the various actors
	Land tenure – small hold farmers do not own the land
Financial / economic	Lack of availability of funding for activities to create the enabling environment, e.g. intersectoral coordination, strategy to stop deforestation
	Lack of availability of funding for private sector and other actors, especially for the initial investment required to implement many of the mitigation options
	Only one instrument in place to stop deforestation (conditional payments), need for development of further instruments to cover initial investment required to implement the mitigation options
	Implementation of mitigation actions has upfront costs, farmers and private investors need to access suitable capital to invest.
Informational / capacities	Capabilities to monitor deforestation on an annual basis and to identify main drivers (direct and indirect) are still being developed
	Reference level of deforestation for the coastal forests and the high Andean forests are still under developed (until now, reference level only developed for Amazon forests)

Existing policies and instruments

A number of domestic activities have taken place in the country pursuing broad objectives such as ensuring forest conservation and promoting sustainable development. Peru is moving forward in reforming its institutional and regulatory frameworks to reduce deforestation and forest degradation, for example with the establishment of a National Strategy on Forests and Climate Change. Moreover, the country is in the process of developing schemes that can promote investments in climate compatible practices in the forest sector. However, the impact of these activities for the transformation of the sector has, to date, been limited:

Conditional transfers to the indigenous and peasant communities under the National Forest Conservation Programme for the Mitigation of Climate Change (PNCBMCC): The government presented this innovative instrument in 2010 to compensate communities, for up to five years, for their contribution to forest conservation. The scheme includes a S/. 10.00 payment (3.50 EUR) per conserved hectare of forest; the payments are conditional because to access them the communities need to register the area as a “deforestation free” area and they must

invest the received payments in sustainable land and forest uses in community-controlled territories, to avoid later deforestation of the same area.

- Finance mechanisms proposed under the country's agriculture NAMA (iNAMAzonía): this is a landscaped-based NAMA that aims at creating the enabling environment for sustainably intensified coffee, cocoa, livestock and oil palm production and to promote the ecological restoration of deforested degraded land in the Peruvian Amazon. The NAMA aims to promote the use of already intervened areas for the expansion of the selected crops, instead of primary forests. The NAMA is in early stages of development, and no public information on its current status is available.
- Financing sustainable landscapes approach: to support regions to achieve sustainable land use goals, a pipeline of investable projects that have the capacity to attract finance and can help reduce deforestation coming from small scale and migratory agriculture, is developed. A pilot project in San Martín showed that transitioning to sustainable agricultural practices has a significant upfront cost, and farmers need to access suitable capital to invest in this transition. The project has developed a financing mechanism that considers finance from multilateral organisations, climate funds and donor governments to provide concessional credits, credit guarantees and weather insurance. These support mechanisms can also come in the form of result-based payments, which would be directly related to the impact of implementation on the ground. The credit element of the framework will be tested through a pilot financed by Agrobanco. The bank will disburse credits directly to producers that are selected in collaboration with the project and who are interested in being part of the program.
- To support San Martín to achieve its sustainable land use goals the Unlocking Forest Finance (UFF) project aims to develop a pipeline of investable projects that have the capacity to attract finance. The project has worked closely with stakeholders in the region over the last three years to design investment plans and innovative financial mechanisms to enable San Martín to achieve its sustainable land use goals.
- REDD+'s results-based payments: Peru is moving towards the implementation of REDD+ (e.g. developing a forest strategy that will serve as a REDD+ action plan, development and improvement of a forest coverage monitoring system, etc.). However, it has not been fully implemented yet. The partnership between Peru, Norway and Germany under the Joint Declaration of Intent (see also below) is an existing mechanism to reduce GHG emissions from deforestation and forest degradation and promote sustainable development. Other finance schemes involving forest plantations are currently under development.

Potential for Nordic support

This section discusses potential options to support the removal of barriers to investments in mitigation options in the forestry sector in Peru and the potential role of Nordic actors. Table 13 presents a general overview of how financial instruments may be applied to reduce identified barriers in the sector.

Table 13: Overview of potential financial instruments and interventions to address barriers for action in the building sector

Financial instruments and interventions	Institutional and political barriers	Financial and economic barriers	Informational and capacity barriers
Equity			
Loans		Upscaling of existing low-cost loans schemes; Microfinance lending schemes targeted at smallholders/ farmers	
Guarantees		Improve access to finance for agro-forestry businesses	
Grants		Results based payments; ecosystem service grants for smallholders/ farmers to cover upfront costs	
Policy incentives			
Non-finance incentives	Capacity and institution building; policy reform (e.g. land ownership)		Information and awareness campaigns.

An interesting point is the fact that many mitigation measures in the sector are cost effective over their lifetime. The main barrier is related to higher upfront costs since the main actors are small hold farmers with limited access to financial services and limited investment capital. The removal of these barriers through, for example, targeted loan and grant schemes, aligned with measures to improve the policy and regulatory environment, has the potential to achieve a shift in the sector and lead to long term, sustainable change.

Nordic countries have a history of contributing to reducing deforestation and promoting forest conservation in Peru. An example is the “Norway International Climate and Forest Initiative” where the aim was to identify economic instruments and business and financing models that help to promote the application of the concept of “production-protection” and an integrated management of Amazonian landscapes, as a fundamental instrument to reduce or control deforestation drivers (MINAM, 2016b).

Similarly, Norway collaborates with Peru and Germany, through a Joint Declaration of Intent signed in 2014. The purpose of the partnership is to contribute significantly to reductions in emissions from deforestation. It is based on contributions for commitments for transformative policies, reforms and institution building needed to reach emission reductions from deforestation (phase 1 and 2) and for reduced emissions from deforestation (phase 3). For the first two phases, Norway has committed up to up to USD 47 million (NOK 300 mill). From 2017 until 2021, Norway

has committed contribute up to USD 240 million (NOK 1.5 bill) for results on reduced deforestation.

Finland, together with FAO, is supporting the development of the first forest inventory in the country, in close collaboration with the Ministry of Agriculture and the Ministry of Environment. The inventory aims to show in detail the current situation of the forests across the country and thus facilitate informed decisions in policy in the forest sector. This project started in July 2014 collecting information on the fields and it is expected to conclude in 2019. In follow up to these activities, a number of potential areas for enhanced Nordic contribution to remove barriers and help mobilizing finance for climate action can be identified, including:

- Continued capacity building and technical support to improve the enabling environment – building on Nordic countries' significant forestry expertise.
- Extension and scaling up of results based payment schemes and payment for ecosystems services, including advancing implementation of REDD+.
- Support to set up microfinance schemes in the remoter areas targeting small hold farmers.

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Case: Bangladesh – Climate Resilient Urban Development

This case study focuses on urban resilience in Bangladesh. It provides an overview of the situation in the country, policy priorities and intervention options as well as barriers to implementation. Support needs are identified and quantified where possible with a view to identifying potential climate finance interventions to enhance current investments and activities in urban resilience.

Overview

- Profile: Least developed country.
- Population: 3,679,000.
- Ease of Doing Business rank: 16.
- Major Threats: Floods, Droughts, Tropical cyclones and Sea-Level Rise due to climate change.
- Locations Affected: Northern Districts (drought and flood); Southern Districts (flood; sea-rise/salination).
- Compounding Issues: Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change.
- World Risk Index Ranking: 5/173.
- Global Climate Risk Index: 5/178.

Bangladesh's Nationally Determined Contribution (NDC)

In its INDC Bangladesh aims to reduce GHG emissions by 5% from Business As Usual (BAU) levels by 2030 in the power, transport and industry sector. The target increases to a 15% reduction, alongside the implementation of additional mitigation activities, subject to finance, technology and capacity building support. For adaptation, the measures in the NDC reflect existing adaptation plans and strategies particularly highlighting potential mitigation synergies. The INDC also includes a qualitative description and indicative estimates of support needs and planned next steps for their quantification.

Relevance of urban resilience in Bangladesh

Cities across the globe, particularly those with poor urban communities, face long-term challenges to ensure the well-being of their inhabitants. These challenges are partly a result of direct and indirect impacts of climate change, and are often compounded by preexisting vulnerabilities (Asian Development Bank 2014). Due to its geophysical location, exposure to extreme conditions caused by climatic stimuli, and high population growth, Bangladesh is one of the world's most vulnerable countries to climate change and natural disasters, with over six percent of the population affected by disasters each year (GFDRR & The World Bank 2015). Predicted sea level rise by 2050 would cover 17% of the country if no protective measures are undertaken (Give2Asia 2016).

Dhaka – Bangladesh's capital – has been identified as the most vulnerable city to climate change among Asian cities (Give2Asia 2016). More broadly, Bangladesh's cities are characterized by an ever-widening infrastructure deficit, and more and more people

are bound to living in sub-standard conditions. Sound planning and development are lacking, and new capital development is encroaching on already limited open space. The sustained growth and rapid urbanization is exerting great pressure on urban development and the delivery of basic public services, and substantial efforts are needed to improve quality of life for all.

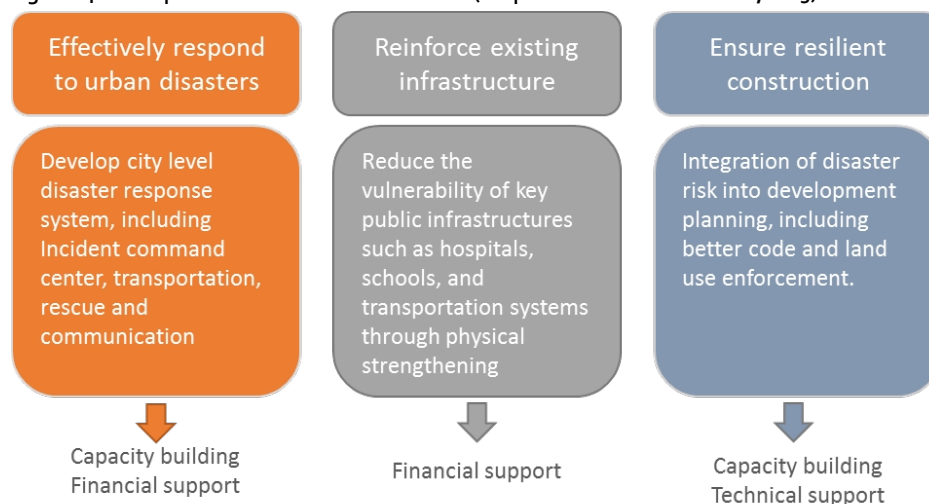
Furthermore, the increasing concentration of populations and assets and the embedded conditions of socio-economic and spatial vulnerabilities make urban centres more susceptible to the risk of being severely affected by natural disasters than rural settings. With the potential adverse impacts of climate change, vulnerability in urban areas deserves special attention for disaster risk reduction. In that context, mobilizing financial resources and technical capabilities, leveraging the efforts of governments, engaging civil society and community efforts, and developing innovative climate services and adaptation technological are essential.

Potentials and technology options

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures (The World Bank 2012).

Planning for resilience requires designing cities that are made up of dynamic linkages of physical and social capacity components (Kim & Lim 2016). Thus, building a disaster-resilient city must encompass creating a broad base of social capacity for the multiple involved communities to respond to disasters and enhance long-term contributions towards sustainable development. A comprehensive approach to increasing urban resilience comprises three main pillars, which are outlined in Figure 14 below. The Figure also highlights types of support for the implementation of such activities.

Figure 14: Three pillars of urban disaster resilience (adapted from The World Bank, 2015)



Building resilience in cities relies on making investment decisions that prioritize spending for activities offering alternatives, which perform well under different scenarios. To manage risks today and plan for the future, a balance must be struck between, on the one hand, common sense approaches that minimize impacts through better urban management and maintenance of existing mitigation measures, and, on the other hand, far-sighted approaches. Long-term views anticipate, defend and build resilience against future hazards by investing in new infrastructure or by altering the urban landscape. The balance will be different for each urban settlement at risk. The overall goal is a strategy under which flexible or so-called “low-regret” measures can be cost effective even in the case of uncertain risks (The World Bank 2013).

Barriers and policy responses

Key barriers to the implementation of urban resilience measures

There are several barriers that prevent interventions and investments into increased urban resilience measures and infrastructure in Bangladesh (See Table 14 below).

Table 14: Key barriers to urban resilience building

Barrier	Description
Institutional/political	Lack of necessary strong political commitment and respective agencies for pro-poor policies in urban areas. Lack of an integrated policy approach for urban resilience. Limited institutional integration and linking between the national and city level.
Financial/economic	High cost of investment in resilient infrastructure coupled with limited public resources Limited potential to draw in private investors due to low investment return potential of infrastructure projects and lacking business concepts for engaging private sector in resilience building Access of urban communities to protective measures (e.g. insurance)
Technical	Lack of national experts on disaster risk and urban resilience – Managing disaster risk and promoting urban resilience requires the engagement of a wide variety of experts Limited access to appropriate technology Overall complexity of the challenge, requiring multiple interventions and long term planning in the face of high uncertainties Managing disaster risk and promoting urban resilience requires the engagement of a wide variety of experts. Previous projects designed to understand and manage disaster risk in Bangladesh have experienced limited success as they focused on individual ministries or only technical experts and failed to consider the larger ecosystem (Fund 2010).
Information /capacities	Low awareness of urban communities in particular urban poor on climate related risks and effective responses Low climate awareness among policy planners to enable mainstreaming of resilience into policy planning Fundamental deficiencies in the emergency management system and the lack of local capacity to conduct search-and-rescue often lead to slow response processes that rely on ad-hoc decision making

Government priorities and plans to increase urban resilience

Given the high vulnerability and socio-economic challenges Bangladesh faces, building resilience to the impacts of climate change is of highest priority and a central feature of the country's climate policy. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) sets out 44 programmes to address climate change, including the following:

- *Comprehensive disaster management* to further strengthen the country's disaster management systems to deal with increasingly frequent and severe natural calamities.
- *Infrastructure* to ensure that existing assets are well-maintained and fit-for-purpose and that urgently needed infrastructure (cyclone shelters and urban drainage) is put in place to deal with the likely impacts of climate change.

In addition, Bangladesh developed a comprehensive National Adaptation Programme of Action (NAPA) back in 2005 which fed into the BCCSAP and subsequent INDC. Key areas of intervention in the INDC and NAPA related to urban resilience are shown in Table 15 and Table 16.

Table 15: Adaptation priorities and estimated investment required as included in the INDC

Key areas to address adverse impacts of climate change	Adaptation priorities for Bangladesh	Estimated investment required (2015-2030)
Comprehensive disaster management	Disaster preparedness and construction of flood and cyclone shelters	USD 10 billion
Flood control and erosion protection	Inland monsoon flood-proofing and protection	USD 6 billion
Building climate resilient infrastructure	Climate resilient infrastructure and communication	USD 5 billion
Enhanced urban resilience	Improvement of urban resilience through improvement of drainage system to address urban flooding	USD 3 billion

Source: *Source: (Bangladesh INDC, 2015).

Table 16: Main projects in the NAPA of Bangladesh related to urban development/resilience

Project sector	Project title
Capacity-building	Capacity building for integrating climate change in planning, designing of infrastructure, conflict management and land-water zoning for water management institutions
Awareness raising and capacity building	Climate change and adaptation information dissemination to vulnerable community for emergency preparedness measures and awareness raising on enhanced climatic disasters
Terrestrial ecosystems, water resources, infrastructure and early warning system	Construction of flood shelter, and information and assistance centre to cope with enhanced recurrent floods in major floodplains
Infrastructure: urban and industry	Enhancing resilience of urban infrastructure and industries to impacts of climate change
Mainstreaming and policy adaptation	Mainstreaming adaptation to climate change into policies and programmes in different sectors (focusing on disaster management, water, agriculture, health and industry)

Source: *Source: (Bangladesh NAPA, 2005).

Derived from the priority actions and current gaps the following support needs are highlighted (Give2Asia 2016):

Investment related

- Construction of cyclone-resistant housing, schools, hospitals and shelters.
- Construction of flood and cyclone shelters.
- Urban drainage systems.
- Early warning systems and communication infrastructure including information and assistance centres.

Technical/ capacity related

- Capacity and institutional support to mainstream urban resilience into national and sub national planning and policies.
- Knowledge management and research on climate impacts on urban communities.
- Disseminate knowledge on use of evacuation centres and early warning systems to local urban communities.
- Develop long-term reading and learning materials on disaster preparedness and climate change adaptation for university curricula.
- Include local NGOs and CBOs in all programme design and implementation to build capacity of local sector and increase community and involvement.
- Support and train volunteer groups to respond to disasters.

The IFC estimates climate-smart investment needs of nearly USD 138 billion between 2016 and 2030 (IFC, 2016). Given the country's aim to reach middle-income status by 2021 an estimated USD 11.4 billion in new building construction is needed by 2020. Additional significant investment is required to develop urban transport systems and rail infrastructure.

Internationally supported programmes

Many bilateral and multilateral agencies, NGOs and development organisations are active in Bangladesh. In total over 2,000 local NGOs are registered with the government that perform some programme work in disaster preparedness and climate change adaptation, of which it is estimated that around 300 are currently active. However most of their efforts are targeted at rural areas and the urban poor tend to be overlooked (Banks *et al.* 2011).

The majority of the activities supported by bilateral and multilateral development agencies focus on providing technical assistance to adaptation and enhancing the government's capacity to respond to the policy and implementation needs on climate change. Many activities also focus on building the necessary data and information base to deliver effective responses. Donors include, amongst others: Asian Development Bank, World Bank, Global Environment Facility, USAID, Canadian international

Development Agency, DANIDA; Swedish International Development Agency, Norad, JICA; GIZ, DFID, AusAID; Swiss and Dutch cooperation. Of the Nordic countries, Bangladesh is long-term development cooperation partner country for Denmark, Sweden and Norway with the Nordic countries providing bilaterally and/or multilaterally support for various adaptation related activities in Bangladesh.

An overview of key existing programmes related to urban resilience is provided in Table 17.

Table 17: Internationally supported initiatives related to urban resilience

Initiative	Description
Urban Partnerships for Poverty Reduction (UPRR) – The Government of Bangladesh, the Government of the United Kingdom, UNDP and UN-HABITAT	Large programme in urban slum settlements targeting 3 million people in 30 cities including Dhaka UPRR involves multiple activities including improvements in infrastructure, health, community banking, education (no specific focus on climate change but poverty reduction and vulnerability more broadly)
The Bangladesh Climate Change Resilience Fund (BCCFR) – The Government of Bangladesh, the World Bank	The innovative mechanism is enabling the Government to channel USD 170 million in grant funds to millions of Bangladeshis to build their resilience to the effects of climate change The objective of the BCCFR is to support the implementation of Bangladesh's Climate Change Strategy and Action Plan (CCSAP). The CCSAP has identified multiple pillars including, among others (i) Comprehensive disaster management and (ii) develop climate proof infrastructure
The Pilot Program for Climate Resilience (PPCR) – Supported by Climate Investment Funds and World Bank	Project financing will focus on improving climate resilient agriculture and food security, strengthening the security and reliability of fresh water supply, sanitation, and infrastructure, and enhancing the resilience of coastal communities and infrastructure. USD 110 million in grants and near-zero interest credits will enable Bangladesh to make strategic investments in critical areas of climate resilience planning and implementation in a manner consistent with its poverty reduction and sustainable development objectives.
Comprehensive Disaster Management Programme (CDMP) – Collaborative initiative of the Ministry of Disaster Management and Relief, Government of Bangladesh and UNDP with the support of UK Aid, European Union, Australia Aid, Norwegian Embassy and Swedish SIDA	Phase II is designed to further scale up and mainstream Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) in all sectors. The key mandate of CDMP II is to strengthen the national disaster management capacities to reduce risk and to improve response and recovery through comprehensive approach.

Potential for Nordic Support

Potential areas and instruments of support

Bangladesh lacks adequate and sustainable flow of resources to meet the demands of its climate vulnerable communities. There is a substantial need for disaster preparedness, risk reduction and resilience building in particular in urban communities presenting many areas for donors to have impact or to add value to existing programmes. This includes specific investments in infrastructure as well as technical and capacity building initiatives.

Table 18 provides a summary assessment of the suitability of different financial instruments as well as other interventions to address the identified barriers.

Table 18: Assessment of barriers versus instruments

	Institutional/ political	Financial/ economic	Information/ capacities	Technical
<i>Summary</i>	<i>Lack of political commitment for urban pro poor policies. Few agencies active in cities. Lack of an integrated policy approach. Limited institutional integration and linking between the national and city level.</i>	<i>High cost of investment in resilient infrastructure. Limited public resources. Limited potential to draw in private investors due to low investment return potentials.</i>	<i>Low awareness of urban communities in particular urban poor. Low awareness of policy planners to enable mainstreaming of resilience into policy planning. High uncertainty and information gaps.</i>	<i>Lack of national experts on disaster risk and urban resilience. Access to appropriate technology. Complexity of the challenge requires multiple interventions and long term planning in the face of high uncertainties.</i>
Suitability of instruments and interventions to address barriers				
Equity		Mainly for public sector as private sector is not expected to play a significant role.		
Loans (non market)		Long term loans to national/ subnational government to increase public budgets; green bonds for infrastructure investments.		
Guarantees		Potential to improve access to finance of public subnational entities.		
Grants		Suitable funding for specific urban resilience projects at smaller scale.		
Policy incentive		Unlikely to be relevant.		Tax breaks to enable technology transfer.
non-finance interventions	Capacity and institution building; Policy change; Donor coordination.	Capacity and knowledge building to improve understanding on investment needs.	Information and awareness campaigns; Capacity building; Data collection and analysis.	

Recommendations for Nordic support

A number of conclusions can be drawn to suggest potential further financial and technical support activities by Nordic (and other) actors in Bangladesh:

- *Focus on urban poor*: a gap has been identified of specific activities and interventions that address the needs of vulnerable urban communities as many of the adaptation related initiatives focus on rural areas. Nordic countries have a solid track record in inclusive urban planning, and Nordic collaboration has a strong focus on green, climate compatible cities (including the newly launched Nordic Prime Ministers' Initiative with one focus area being Nordic Sustainable

Cities), which provides multiple opportunities to support and share lessons learned with cities in developing and emerging countries.

- *Build on existing efforts*: an unusually large number of organisations and actors are active in Bangladesh including local and international organisations, government and NGOs. Of the Nordic actors in particular DANIDA and SIDA are currently supporting adaptation related programmes. Scaling up existing initiatives and bundling of efforts represent an opportunity to improve effectiveness.
- *Drive donor coordination*: given the large number of initiatives and donors there is a strong need for donor coordination. A detailed analysis of existing initiatives and gaps is considered useful to align efforts and to enable joint planning of interventions responding to short and long term needs.
- *Design system based and comprehensive interventions*: building urban resilience requires systemic thinking and interrelated activities involving different sectors and communities. Coordination between donors and stakeholders is also highly important in this context.
- *Support the public sector and community groups/NGOs*: in the near future the role of the private sector is likely to remain limited to build urban resilience in Bangladesh. However, many of the interventions require scaled up investment in (costly) infrastructure with limited or no return on investment as well as targeted interventions at the community level. Hence opportunities for public private partnerships and innovative benefit sharing models should be identified and piloted to stepwise engage responsible private sector investments in adaptation.
- *Scale up capacity building and knowledge dissemination*: information and awareness of urban communities is essential to ensure effective response to emergencies and disasters. Significantly scaled up activity will be needed to ensure such responsiveness as well as to build knowledge of relevant government and community actors.
- *Transfer knowledge on effective policy planning*: the mainstreaming of urban resilience into policy planning will be essential both at the national as well as local government level. Best practices and knowledge between Nordic and other countries, including twinning city action can help long term resilience building and effective policy planning in partner as well as in Nordic countries. This may also include the Nordic countries' experience with innovative finance models, such as green bonds at the municipal level.

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Appendix 3: Nordic climate-related ODA (additional data and country profiles)

This appendix provides additional data on Nordic climate-related ODA as well as on country profiles to complement the analysis presented in report Sections 3 and 4.

With regards to data constraints and limitations it is important to note still varying application of tracking guidance across Nordic countries and internationally. For example, according to OECD (2015) and CRS (2016), over half of the global climate-related ODA is marked as having climate change as a principal objective.⁷⁶ The corresponding percentage for the Nordics is 43%. The difference is largest in adaptation, where the share of principal projects in the Nordics is only 20% whereas the share for other countries is 34%. These differences indicate the overall challenges in tracking of climate-related projects, and the need for continued work to improve mainstreaming and the comparability of climate finance data.

Nordic climate-related ODA

Figure 15 presents the evolution of main sector shares 2010–2014, with Figure 16 presenting the regional distribution of Nordic climate-related ODA.

⁷⁶ As per the Rio Markers, a principal objective (mitigation or adaptation) score is given when promoting adaptation or mitigation is stated in the activity documentation to be one of the principal reasons for undertaking the activity.

Figure 15: Evolution of main sectors in Nordic climate-related ODA during 2010–2014

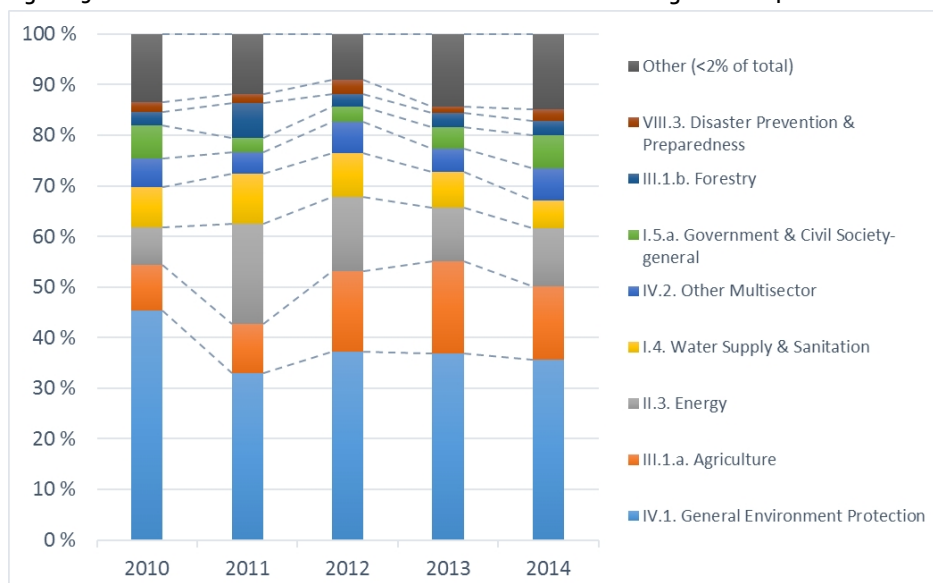


Figure 16: Evolution of main regions of Nordic climate-related ODA during 2010–2014

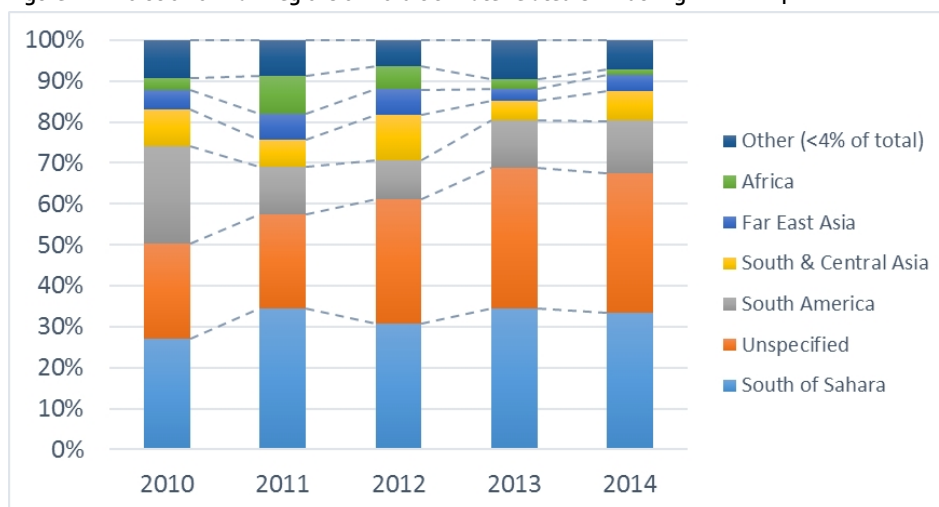
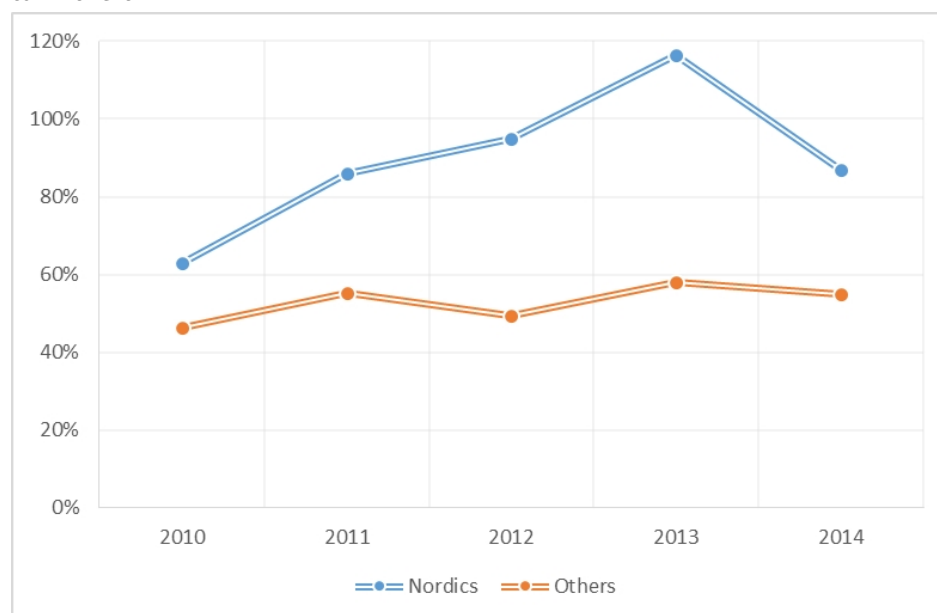


Figure 17 presents annual disbursements divided by annual commitments, which could serve as one indication of the Nordic countries' overall approach and why Nordic countries generally are respected for their work ("living up to their commitments") in climate finance.

Figure 17: Nordic and Other countries' climate-related ODA's annual disbursement divided by annual commitment



Climate-related finance profiles for Nordic countries

Denmark

Of the total Nordic climate-related ODA during 2010–2014, Denmark has contributed 18% with approximately USD 380 million per year. Denmark is third behind Norway and Sweden when measured by volume, but it has some interesting characteristics and gained international attention through initiatives such as the Danish Climate Investment Fund (KIF), which has managed to mobilize major institutional investors for climate action. Climate-related ODA represents on average 19% of annual Official Development Assistance from Denmark.

Denmark (as with other Nordic countries) has focused on activities with dual climate objectives of mitigation and adaptation (73% over the years 2010–2014). The share of adaptation and mitigation are 10% and 17% respectively.⁷⁷

Of all the Nordic countries, Denmark is the one with the highest share (approx. 12%) of climate-related ODA allocated to activities, where adaptation and mitigation are principal objectives (using the Rio Markers). In other Nordic countries, the share of this allocation ranges from 5% to 0.2% with much more focus on activities where climate objectives are “significant”, but not principal. When looking at mobilized

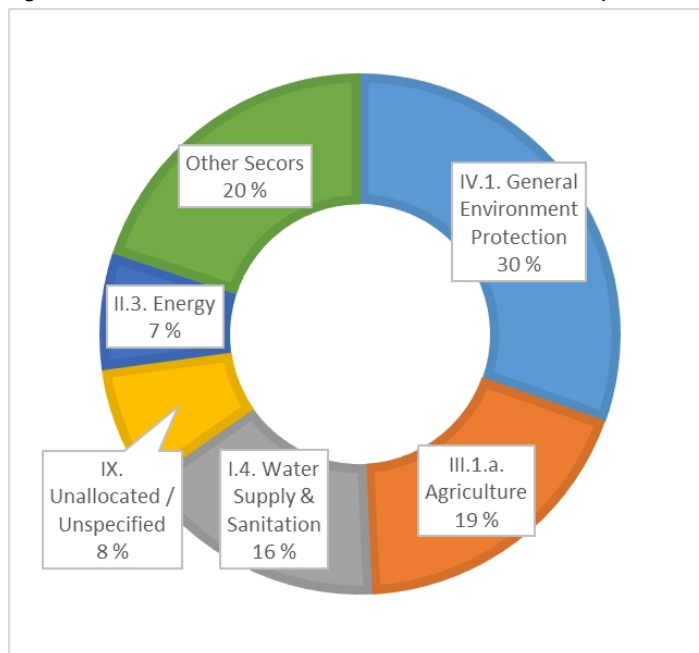
⁷⁷ These allocation shares differ significantly by year: in 2012 the share of adaptation was over 30% (compared to mitigation at 11%) and for 2014 no funding was allocated to adaptation-specific activities (whilst mitigation was at 23% and the rest was for dual objectives).

private finance by official development finance interventions, Denmark is among the top 6 countries through its contributions through collective investment vehicles (development-related investment funds).⁷⁸

In addition to contributions to general environment protection (30% of all climate-related ODA), Denmark has been active in the agriculture (19%) and water and sanitation (16%) sectors (see Figure 18). Under general environment protection, Denmark's largest contributions (by committed funding) include the following (among others):

- the Bolivia country programme (through the Ministry of Environment and Water) supporting in particular forestry and energy related activities
- supporting the mainstreaming of environment and climate change in Mozambique
- contributions to the World bank's Strategic Climate Fund, promoting climate investments in developing countries in cooperation with the private sector through the World Bank
- supporting the development of a new economic model for green growth helping also to mainstream climate aspects (among others), to name a few.

Figure 18: Danish climate-related ODA commitments 2010–2014 per Sector



⁷⁸ Benn *et al.* 2016 "Amounts Mobilised from the Private Sector by Official Development Finance Interventions", OECD.

The main recipients of climate-related ODA have been Sub-Saharan Africa (approximately one third of all flows) and multilateral institutions (“unspecified” in Figure 19 below), which has grown over the years. South America has also received increasing funding during 2010–2014.

Figure 19: Danish climate-related ODA commitments 2010–2014 per region

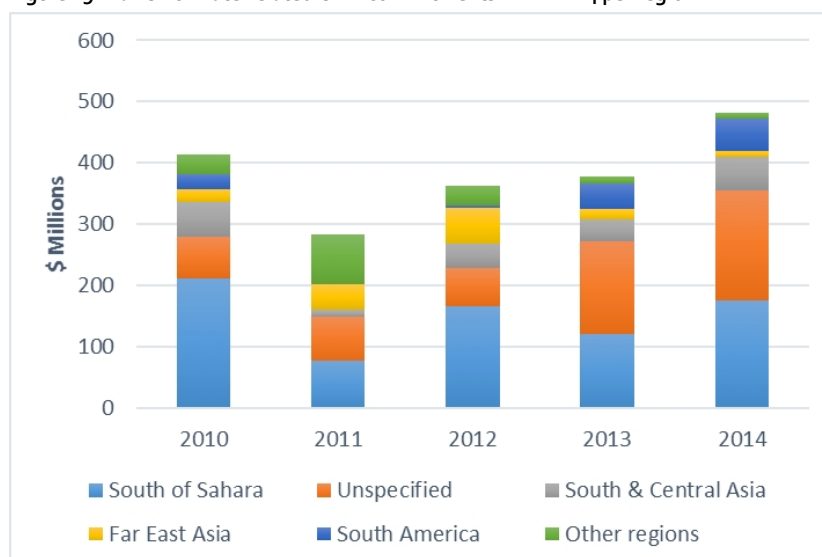
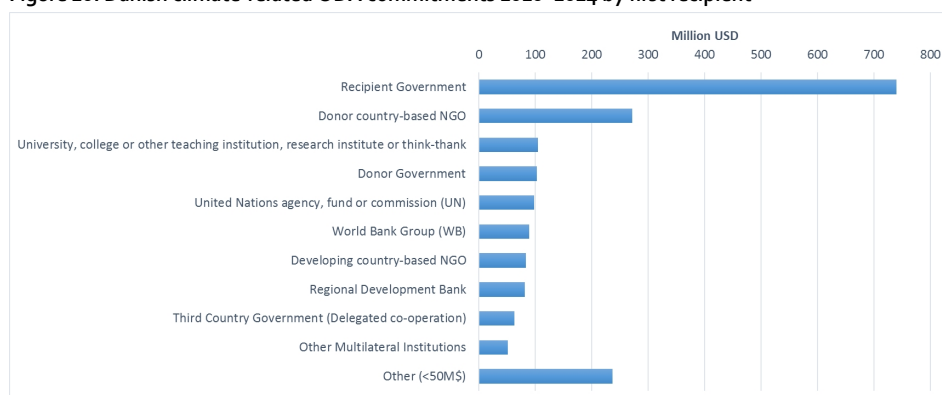


Figure 20 shows Danish climate-related ODA commitments by first recipient. Denmark clearly emphasises working directly with the recipient governments and Danish NGOs, which together constitute approximately USD 1 billion, or more than half of the total.

Figure 20: Danish climate-related ODA commitments 2010–2014 by first recipient



Finland

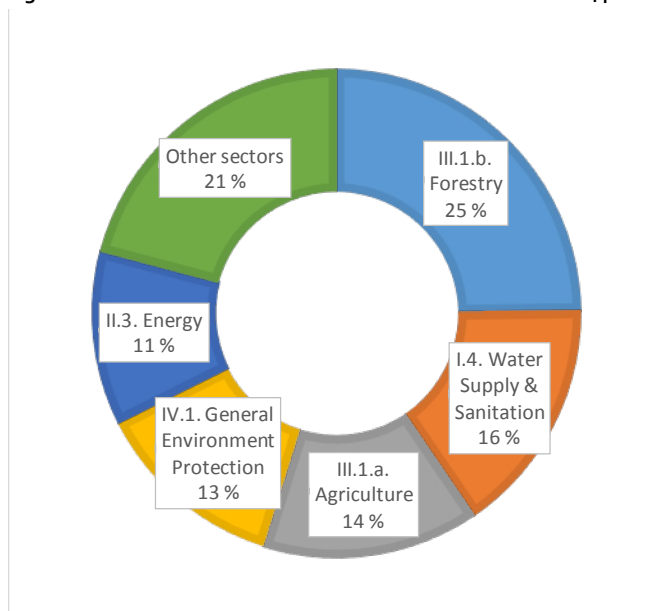
According to OECD CRS (2016), Finland’s climate-related ODA funding has averaged USD 200 million per year during the period 2010–2014, topping at USD 350 million in 2011 and reaching some USD 130 million in 2014. During 2010–2014 about one fifth of

Finnish total ODA was climate-related. Finland's share in total Nordic ODA climate finance was 9% during the time period making it the 4th largest Nordic contributor.

Unlike in other Nordic countries, the largest share of Finland's climate-related ODA is aimed at adaptation (40%), while mitigation and cross-cutting finance represent approximately 30% each. This being said, the share of pure mitigation finance has risen from 22% in 2010 to 48% in 2014, especially due to a rise in mitigation principal finance. Only 20% of the climate finance has been principal, but this share has increased from 14% in 2010 to 32% in 2014.

The most dominant sectors include forestry, water, agriculture, general environmental protection and energy (Figure 21). It is noteworthy that the share of energy finance has been constantly rising from an initial 5.5% in 2010 to 37% in 2014. This has been quite evenly on the expense of other sectors, but mainly general environmental protection (down from 17% to 6.5%). General environmental protection can be further broken down to project-type interventions (90%) and core contributions, pooled programs and funds (9%). The largest individual transactions under general environmental protection include e.g. Mekong Core Environmental Program (CEP), support of environmental movements in developing countries, impact of climate change in ecosystems in Eastern Africa as well as the regional biodiversity programme in the Andean community.

Figure 21: Finnish climate-related ODA commitments 2010–2014 per Sector



Over one third of Finnish climate-related ODA was aimed at Sub-Saharan Africa, while multilateral financing (23%) and South & Central Asia (11%) were also significant (Figure 22). No significant changes in the regional distribution have occurred during 2010–2014 apart from the share of South & Central Asia rising from 7,5% to 23%. UN agencies, funds or commission were the largest individual channel with a share of 17%.

Figure 22: Finnish climate-related ODA commitments 2010–2014 per region

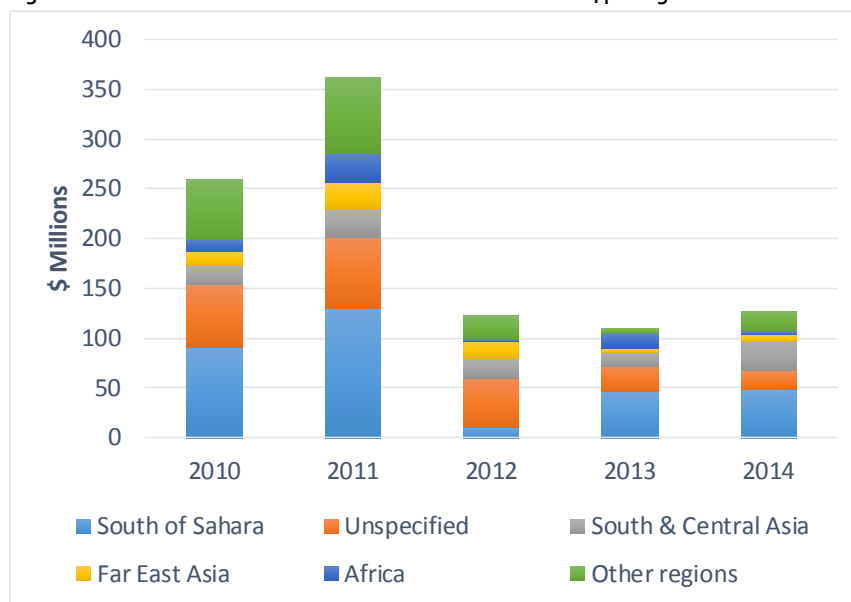
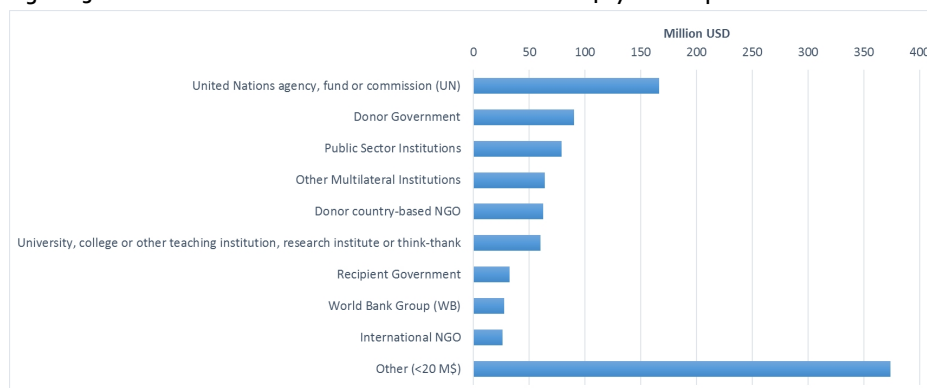


Figure 23 portrays Finnish climate-related ODA commitments by first recipient. Finland emphasises channel categories, which are labeled as other.

Figure 23: Finnish climate-related ODA commitments 2010–2014 by first recipient



Norway

Based on OECD data (credi), Norway's contribution in climate-related ODA was between USD 800 million to 1 billion per annum during 2010–2014 (slightly below one fourth of Norway's total ODA funding). Norway was the largest Nordic financier with a share of 43% of all Nordic climate-related ODA.

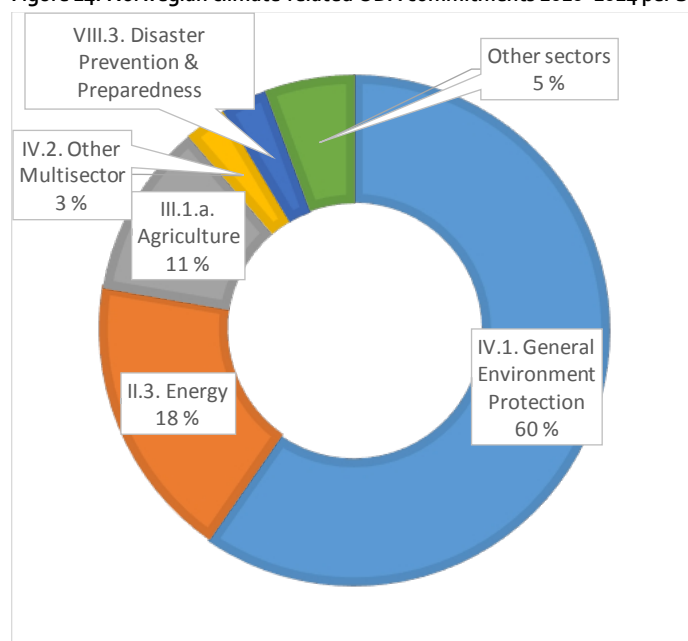
A clear majority of Norway's climate-related ODA is aimed at mitigation (70%), while adaptation and cross-cutting finance represent approximately 15% each. During 2010–2014, the share of pure mitigation finance has declined from nearly 85% to 65% and this has been replaced by finance with objectives for both mitigation and

adaptation. The mitigation focus of Norwegian climate finance is also visible from the fact that 77% of Norwegian mitigation finance was principal, whereas the Nordic average is 64%.

The most dominant sectors include general environmental protection, energy and agriculture (Figure 24). General environmental protection can be further broken down to core contributions, pooled programs and funds (76%) and project-type interventions (22%). The largest transactions within the category “general environmental protection” are, for example:

- Guyana REDD-Plus Investment Fund.
- contribution to Brazilian Development Bank for the Amazonas fund (reduction of greenhouse gases and deforestation).
- participation in the BioCarbon Fund.
- participation in the Forest Carbon Partnership Facility, forest investment program.
- Himalaya climate change adaptation programme (HICAP).
- support to WB programme pollution management and environmental health.

Figure 24: Norwegian climate-related ODA commitments 2010–2014 per Sector



In terms of region, South-America, South of Saharan Africa and multilateral financing each represent an approximate 30% share of the climate finance (Figure 25). The regional distribution has remained relatively constant throughout 2011–2014, but in 2010 the share of South-America was significantly higher and that of Sub-Saharan Africa lower than in the following years. Norway relies on World Bank, UN and NGOs as channels with roughly 10–15% share each of the climate finance.

Figure 25: Norwegian climate-related ODA commitments 2010–2014 per region

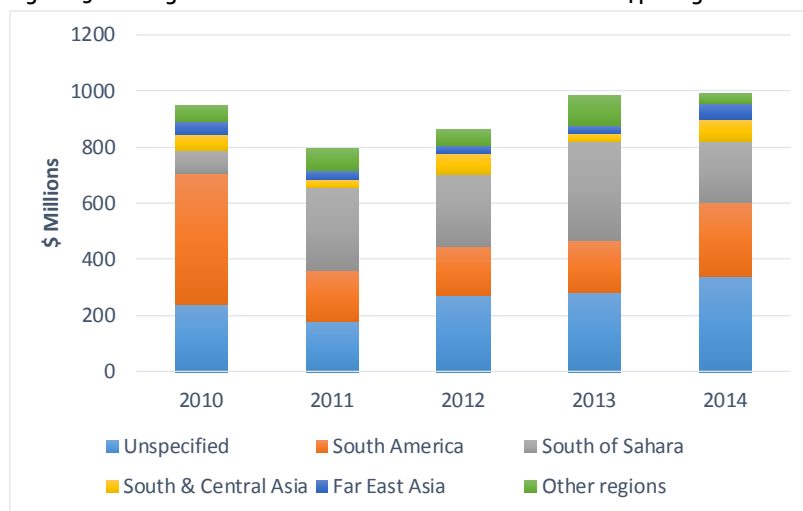
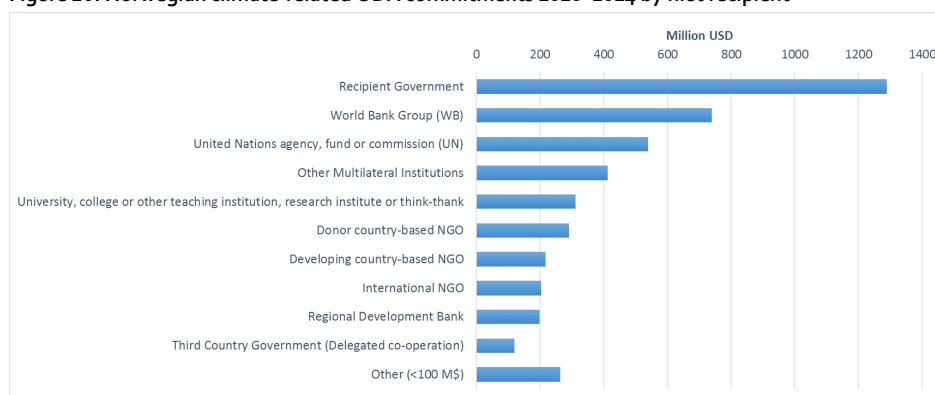


Figure 26 depicts Norwegian climate-related ODA commitments by first recipient. Similarly to Denmark, Norway works primarily directly with the recipient government, which constitutes 30% of the finance. Other main channel categories are the World Bank and the UN.

Figure 26: Norwegian climate-related ODA commitments 2010–2014 by first recipient



Norway has also recently introduced a program for “climate proofing” of all bilateral development assistance. Through examination of development activities by Norwegian embassies, the aim is to make sure that all assistance takes account of climate change.⁷⁹

⁷⁹ Norway biennial report to the UNFCCC:
http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br2_norway.pdf

Sweden

During the years 2010–2014, 17% of all Swedish official development assistance supported climate change objectives, totaling on average around USD 623 million each year. A notable increase in both general ODA and the share of climate-related ODA is observed in 2014, when the climate component reached 21%.

All Swedish ODA tagged as addressing climate change could be viewed as financially additional because Sweden's development cooperation exceeds the target of 0.7% of their gross national income.⁸⁰ The current analysis includes all activities that respond to climate change issues as their primary (or "principal") objective as well as those that target other development challenges primarily but that have climate change co-benefits (i.e. climate change is a "significant" objective). These funds have been managed mainly by Sida (96% of the climate-related ODA portfolio), with the remainder being channeled via the Ministry of Foreign Affairs.

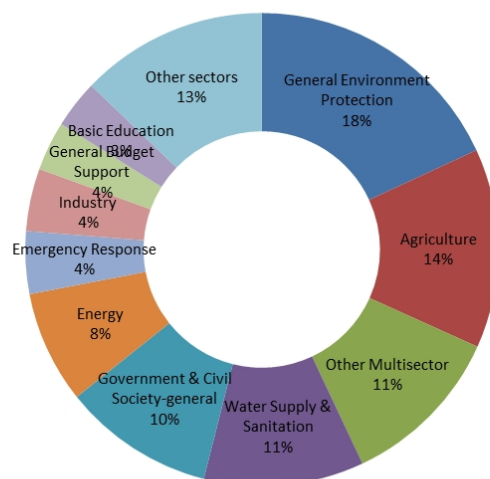
A large portion of this funding (59%) has been allocated to activities which have the dual objectives of addressing both mitigation and adaptation simultaneously. This may be at least partly explained by the fact that the sectors given focus by Swedish development cooperation tend by their nature to be relevant for both adaptation and mitigation, such as agriculture, urban development, and water supply and sanitation (see Figure 27). Another interesting feature, contrary to the global trends, is that Swedish support for adaptation is larger than for mitigation. Sweden's Special Climate Change Initiative (2009–2013) was specifically designed to support adaptation in Least Developed Countries, which may thus help to explain this trend.

In sectoral terms, climate-related ODA has supported mainly activities linked to "general environment protection", "agriculture" and "other multisector".⁸¹ The relatively large share categorized as general environmental protection reflects to a large extent the contributions from the Swedish government to a range of global and regional projects and institutions (e.g. Climate Investment Funds), which are included in this sector classification. In agriculture, agriculture development (e.g. contributions to Oxfam, FAO and ADB agricultural programs) and agricultural research (e.g. contribution to CGIAR research program) are the main categories. In other multisector support, most of the funding goes for urban and rural development. Historically infrastructure has not been significant within Sida's portfolio, but an increase in the support for energy infrastructure is expected in the coming years.

⁸⁰ Government of Sweden. Sweden's report on financial and technology support for climate action provided to developing countries - Article 16 of the EU monitoring mechanism regulation, N 525/2013. Descriptive section, year 2015. [Online] 20. September 2016. [Referenced: 05. October 2016.] <http://rod.eionet.europa.eu/obligations/704/deliveries>.

⁸¹ Using the OECD DAC sector classification.

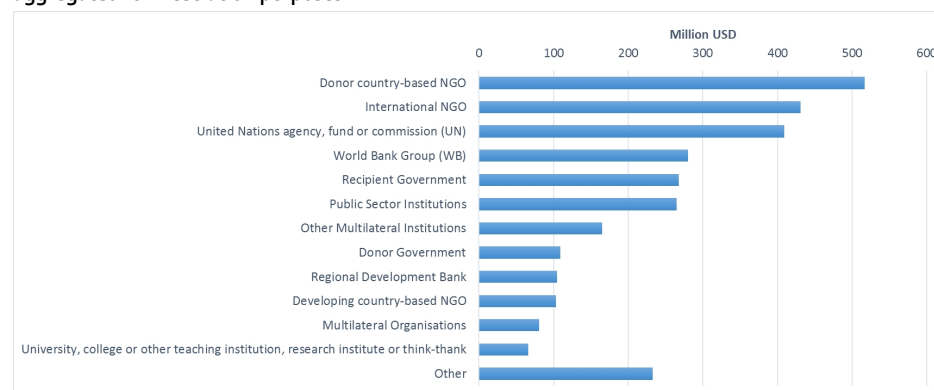
Figure 27: Swedish ODA climate finance 2010–2014 by sector



Regionally, the largest portion of Swedish public climate finance has targeted Sub-Saharan Africa (35%), with Mozambique and Kenya as the main single country recipients. Contributions to global or multi-regional programs are also a significant component, representing a third of the climate-related funding.

Direct cooperation with government has reduced across the board, and more finance is going to civil society as well as to multilaterals (representing together 60% of the total funding). The push for “results based reporting” dis-incentivised the use of budget support. It may be that both budget support and a focus on social protection systems are now coming back again (see Figure 28).

Figure 28: Swedish ODA climate finance 2010–2014 by first recipient. Channel codes have been aggregated for illustration purposes⁸²



⁸² Non-governmental organisation includes codes 20000, 21000, 21016, 22000 and 23000. United Nations Entity includes codes 41000, 41101, 41103, 41106, 41107, 41108, 41111, 41112, 41114, 41116, 41119, 41120, 41122, 41125, 41127, 41130, 41134, 41140, 41146, 41301, 41304, 41305, 41313, 41315 and 41316. Multilateral Development Bank includes codes 42004, 44000, 44001, 44002, 44004, 44005, 46000, 46002, 46004, 46015 and 46016. Other includes codes 31000, 50000 and 52000. Other Multilateral includes 40000, 47000, 47005, 47034, 47066, 47079, 47089. Research Centre/University/Think Tank includes codes 47015, 47018, 47053, 47056, 47063, 47075, 51000. Climate Fund includes codes 41317, 47134, 47135.

Iceland

Compared to other Nordic countries, Iceland is a rather new player in terms of ODA funding. OECD CRS (2016) data for Icelandic ODA starts from 2011 and climate-related ODA starts from 2012. In the Nordic scale, Iceland contributes 0.25%, or approximately USD 10 million per year, of climate-related ODA during 2010–2014. Over a quarter of Iceland's total ODA was climate-related, which is the highest percentage in Nordic countries.

Total climate-related ODA has risen from USD 7.5 million in 2012 to USD 10 million in 2014, while total ODA has increased by USD 4.5 million. Only 7% of Icelandic climate-related ODA is targeted at mitigation only projects, whereas cross-cutting projects represent 49% and adaptation the remaining 44%. The distribution has remained fairly constant during 2012–2014. Approximately half of Iceland's climate-related ODA has a principal objective in mitigation and/or adaptation (according to Rio Markers). Iceland has the highest percentage (40%) of mitigation principal, adaptation significant (M2A1) projects in the Nordics.

Whilst the OECD CRS data does not capture everything – namely also because ODA flows are currently not tracked for climate impact – it is fair to state that Iceland is less active than the other Nordic countries. A new draft policy for the Directorate for International Development Cooperation within the Ministry for Foreign Affairs for the years 2017–2020 recognises climate issues more than previously and it is foreseen that climate will play a larger role in the future.

Most investments flow to multilateral partners and the important of these are the Green Climate Fund and the UNFCCC LDCF. A dedicated budget has been set for climate finance and specifically flows to climate funds. Bilateral cooperation is focused on geothermal energy. Here Iceland has supported governments and geological organisations conduct surface exploration studies (to evaluate whether geothermal can be developed or not). As part of the World Bank's response to the UN's Sustainable Energy for All Initiative, the World Bank and Iceland have made an agreement to collaborate on advancing geothermal energy utilisation in East Africa through five year project between 2013 and 2017. It is the largest initiative of its kind for promoting the utilisation of geothermal energy in developing countries. It is envisioned that the project could include up to 13 countries in the East Africa Rift Valley and it is already proceeding with involvement from seven of them.⁸³ Iceland is working actively to get geothermal knowhow into new project pipelines also through the Geothermal Risk Mitigation Facility⁸⁴ together with KfW and the EU, and some cooperation has also been engaged with the African Development Bank. Iceland sees geothermal energy to be an appropriate niche, where it can contribute more with knowhow and experience

International network includes codes 21017, 30004, 30008, 30011, 32000, 41144. And European Union Institution includes codes 42000, 42001, 42003.

⁸³ Iceland biennial report to the UNFCCC

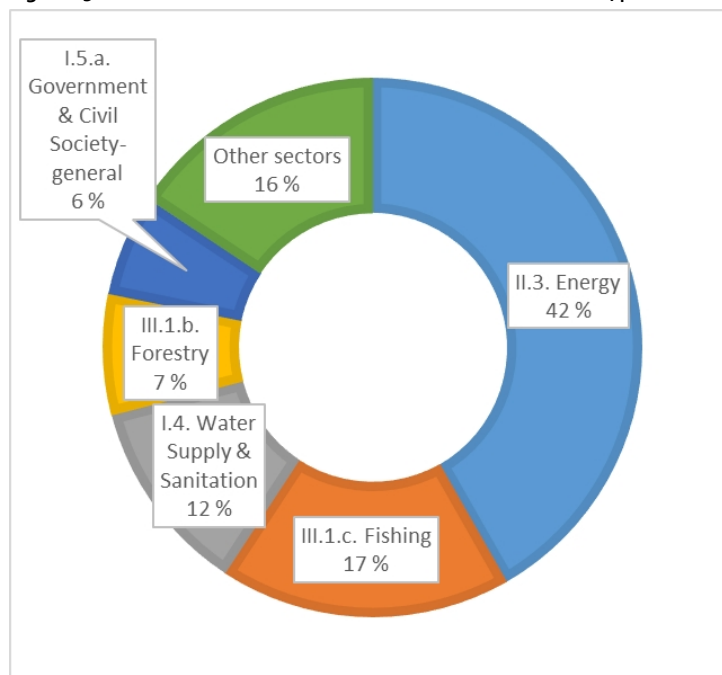
http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/iceland_biennial_report_2nd.pdf

⁸⁴ See <http://www.grmf-eastafrika.org/> for more information.

than only with funding. It is roughly estimated that contributions to geothermal energy development account for 10% of ODA flows (in 2015).

Unlike in other Nordic countries, general environmental protection is not high in the sectoral agenda of Iceland's climate-related ODA. Energy accounts for more than 40%, followed by fishing (17%) and water supply & sanitation (12%) sectors (Figure 29). The importance of water supply & sanitation has increased during the period, but no other major changes have occurred in the sectoral distribution.

Figure 29: Icelandic climate-related ODA commitments 2010–2014 per Sector



Sub-Saharan Africa (30%) is the largest known recipient region of Icelandic climate-related ODA, but most (62%) of the finance is allocated to unspecified regions, which implies multilateral channels Figure 30). During 2012–2014, Sub-Saharan Africa has increased its share from 20% to 38% during 2012–2014.

Figure 30: Icelandic climate-related ODA commitments 2010–2014 per region

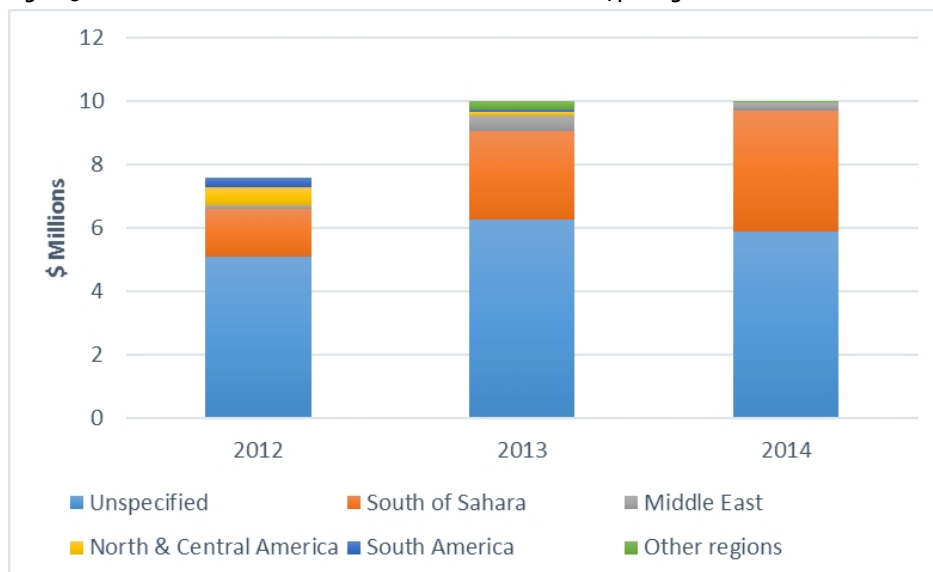
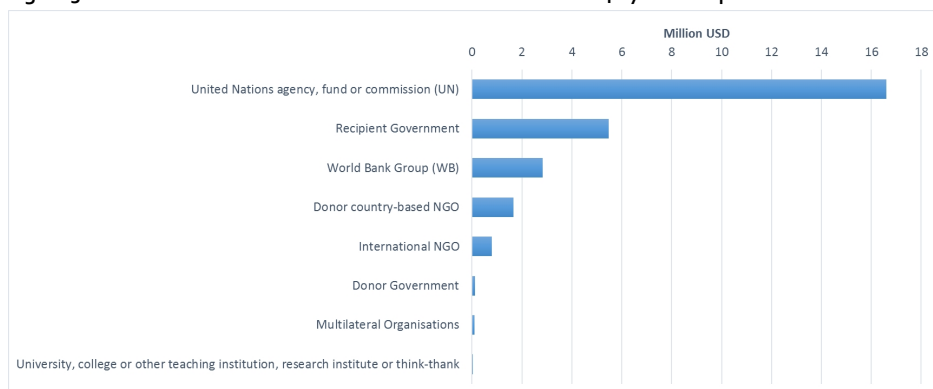


Figure 31 illustrates Icelandic climate-related ODA commitments by first recipient. UN agency, fund or commission is the first recipient for 60% of the finance.

Figure 31: Icelandic climate-related ODA commitments 2010–2014 by first recipient



Appendix 4: New Nordic Finance – the next Generation of climate finance Seminar

As part of this study, a Nordic seminar with a wide spectrum of participants was arranged in Helsinki 30.11.2016, in order to consider the strategic roles that Nordic actors might play to mobilize much larger flows of finance internationally, based on their experience and mandates.

The seminar discussed in particular Nordic solutions to identified barriers for mobilization as well as opportunities to engage the private sector and finance sector more broadly as solutions provider for scaling up both Nordic and international finance for climate compatible action. The focus thus extended beyond public climate and development finance, to also explore how private finance is being – or might be – activated.

The seminar programme and list of participants are presented on the next pages.

Seminar programme



NEW NORDIC FINANCE – the next generation of climate finance

30.11.2016 at 9:00 – 15:30
Sonck Hall, Eteläesplanadi 16, 00130, Helsinki, Finland

9:00 Arrivals and morning coffee

9:30 Opening words: Nordic Investment Bank (NIB)

9:35 Key note: Kai Mykkänen, Finnish Minister for Foreign Trade and Development

9:50 Key note: Outi Honkatukia, Chief Negotiator for Climate Change and Co-Chair of the UNFCCC Standing Committee on Finance

10:10 Introduction to discussions: Julia Illman, Leading consultant, Gaia Consulting Ltd

10:30 First panel:

New actors and instruments - how to mobilize more funding and get institutional investors on board? Introduction and moderation by Mikko Halonen, Leading consultant, Gaia Consulting Ltd

Panelists: Pelle Pedersen, Responsible Investment Analyst, PKA Ltd. // Charlotta Dawidowski Sydstrand, ESG Manager, Swedish Pension fund AP7 // Christopher Flensburg, Head of Climate and Sustainable Financial Solutions, SEB // Harro Pitkänen, Senior Director, Deputy Head of Lending, Nordic Investment Bank (NIB) // Christopher Knowles, Associate Director, European Investment Bank (EIB)

11:30 LUNCH

12:45 Second panel:

Harnessing the knowhow and resources of private sector - how to remove barriers & lessons learned from success stories? Introduction and moderation by Aaron Atteridge, Research fellow, SEI

Panelists: Noara Kebir, MD - MicroEnergy International and Chairwoman - ME SOLshare // Terje Osmundsen, SVP Business Development, Scatec Solar // Victor Gancel, Programme Manager, Low Carbon City Lab, Climate-KIC // Helle Lindegaard, Vice President, Nordic Environment Finance Corporation (NEFCO)

13:45 COFFEE

14:00 Third panel:

Filling gaps, combining instruments and catalyzing action?

Introduction and moderation Mikko Halonen, Gaia

Panelists: Frauke Röser, founding partner of NewClimate Institute // Milan Rusnak, Senior Climate Finance Expert, Adaptation Mitigation Readiness Project (ADMIRE), UNEP DTU // Leena Klossner, Vice President and Deputy Managing Director, Nordic Development Fund (NDF) // Jaakko Kangasniemi, Managing Director & CEO, Finnfund

15:00 Closing discussion: Roadmap for action - value added by Nordic actors & partnerships

Plenary session with Q&A, moderated by Mikko Halonen, Gaia and Aaron Atteridge, SEI.

15:30 Closing words: Nordic Council of Ministers and the seminar host NIB



List of workshop participants

Name	Organization
Jukka Ahonen	Nordic Investment Bank
Hanna-Mari Ahonen	GreenStream
Aaron Atteridge	SEI
Björn Bergstrand	Kommuninvest
Nella Canales	Stockholm Environment Institute
Charlotta Dawidowski- Sydstrand	Swedish Pension fund AP7
Lars Eibeholm	NIB
Hildigunnur Engilbertsdóttir	Ministry for Foreign Affairs, Iceland
Bjørn Holter Eriksen	Norad
Christopher Flensburg	SEB
Victor Gancel	Low Carbon City Lab, Climate-KIC
Asger Garnak	Danish Ministry of Energy, Utilities and Climate
Signe Graakjær Staal	Danish Energy Agency
Erlend Grøner Krogstad	Norwegian Ministry of Climate and Environment
Mikko Halonen	Gaia Consulting
Mette Sønder Hansen	EKF – Danmarks Eksportkredit
Outi Helenius	Evli Bank
Tuuli Hietaniemi	Kepa
Vegard Hole Hirsch	Norad – Norwegian Agency for Development Cooperation
Outi Honkatukia	Ministry of the Environment, Finland
Kari Hämekoski	NEFCO
Julia Illman	Gaia Consulting
Matti Kahra	Ministry of Finance, Finland
Jaakko Kangasniemi	Finnfund
Hanna Kaskela	Varma
Nina Kataja	Ministry for Foreign Affairs, Finland
Noara Kebir	ME SOLshare
Kirsi Keskitalo	Elo
Markus Klimscheffskij	Gaia Consulting
Leena Klossner	Nordic Development Fund
Christopher Knowles	European Investment Bank
Erlend Grøner Krogstad	Norwegian Ministry of Climate and Environment
Satu Kuoppamäki	OP
Marie Kurdziel	NewClimate Institute
Hanna-Leena Lampi	Ministry for Foreign Affairs, Finland
Outi Leskelä	Nordic Council of Ministers
Mika Leskinen	OP Wealth Management
Mads H. Lie	Norad
Helle Lindegaard	NEFCO
Johan Lunabba	Neste Oyj
Jukka Luukkanen	EIB
Magdalena Lönnroth	The Church Pension Fund, Finland
Lauren McNicoll	OECD
Emeli Möller	Nordic Development Fund
Gunilla Nilsson	Swedfund International AB
Terje Osmundsen	Scatec Solar ASA
Pelle Pedersen	PKA
Janne Peljo	Sitra
Jens Perus	Nordic Council of Ministers – MEG
Johanna Pietikäinen	Ministry for Foreign Affairs, Finland
Harro Pitkänen	NIB
Esa Rantanen	Turaco Consulting
Frauke Röser	NewClimate Institute
Mikko Routti	FIBS
Milan Rusnak	UNEP DTU Partnership
Henrik Sjöblom	Gaia Consulting
Mark Storey	Ministry of Finance, Sweden
Helena Teppana	Finnfund
Joanna Tikkanen	Ministry of Finance, Finland
Jukka Uosukainen	Climate Technology Centre and Network, CTCN
Tapio Wallenius	Finnfund
Heidi Valtari	Gaia Consulting Oy

Name	Organization
Pirta Wentzel	Varma
Charles Wetherill	Nordic Development Fund
Max von Bonsdorff	Ministry for Foreign Affairs, Finland
Kristina Åkesson	Ministry of Finance, Sweden
Pernille Østensjø	GIEK

Appendix 5: On terminology within the sphere of mobilizing climate finance

Within the sphere of mobilizing finance for climate action, a number of different terms are being used, referring among others to leverage impacts, co-finance harnessed and climate finance (public and/or private) catalysed or “unleashed”. In order to harmonize the terminology being used, and contribute to improved clarity and transparency in tracking climate finance flows, several initiatives are on-going. For example, the OECD Research Collaborative on Tracking Private Climate Finance has conducted extensive work in this area, in collaboration with numerous partners. The approaches and frameworks established within this initiative (see e.g. Jachnik *et al.* 2015 and OECD 2016b) for estimating climate finance mobilization, have become widely accepted and used by a broad range of stakeholders internationally (e.g. KfW (Stumhofer *et al.* 2015), CIF (de Nevers, 2014) and NDF). The need for such measures have been widely recognized and further highlighted in the Paris Agreement (see section 2.4).

The terminology related to leverage and catalysing is used rather inconsistently by various parties working in the sphere of climate finance. Approaches to estimating financial and non-financial impacts of funding institutions have yet to be harmonised. The narrowest definition of leverage comes from basic financial terminology, where leverage refers to the ratio of debt to equity financing for an investment. This is used widely for all kinds of financing organisations and implies that the instruments used lower the risk or increase returns enough to make the investment attractive to other investors (Brown *et al.* 2011). Lowering risk and increasing returns essentially describe the basic mechanisms through which leverage is created and are relevant also for development finance. E.g. OECD suggests referring to catalytic effects in connection to instruments focused on building enabling environments and leverage effects and mobilization in connection to instruments directly aimed at private finance unleashing (see 4.2).

Many also argue, that in order to “claim leverage” in a project or investment, the additionality and causality of the added finance from other investors needs to be proven (Bodnar *et al.* 2015). This has led to many institutions stating that leverage applies only to private sources i.e. only private funding that has been attracted by a DFI can count in calculating leverage ratios (Bodnar *et al.* 2015, de Nevers, 2014). This is based on the assumption that public funding is often more readily “earmarked” for development and/or climate change compared with private funding, which is likely to be directed to higher return investments. This assumption is not always valid and this has led to critique towards undermining the value of public funding. It further highlights

the importance of transparency in reporting on both public and private finance. Looking at how development finance institutions (DFIs) have themselves defined or publicly reported, leverage often is equal to co-financing (Brown *et al.* 2011, de Nevers, 2014). This means that leverage is measured as the ratio of the funding a DFI has provided to the total amount of funding a project or investment has received. The New Climate Economy report for 2015 refers to leverage ratios exclusively in the context of public finance (mainly Multilateral Development Banks) leveraging private finance (New Climate Economy, 2015). Bodnar *et al.* (2015) present that some stakeholders will perceive a more direct causal effect in cases where public financing attracts private investment at the project level compared to a publicly funded feasibility study grant that later enables the project to attract private finance.



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Mobilizing climate finance flows

If the Paris Agreement's goal – limit the global temperature increase below 2°C – is to be met, all financial flows need to shift dramatically and rapidly from current investment patterns to 2°C compatible pathways. This study analyses the roles Nordic actors might play in mobilizing finance flows internationally and outlines a roadmap that can guide joint Nordic action during the next five to ten years. While the roadmap covers components of climate related ODA and climate compatible contributions from the private sector, the focus of the roadmap lies on the crucial bridging and dialogue that is required between key actors. Building on identified Nordic strengths and areas needing accelerated international support, the report concludes with a set of immediate next steps to operationalize the roadmap in 2017–2018.



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