RICARDO-AEA

European and International Financial Institutions

Climate related standards and measures for assessing investments in infrastructure projects

Final Report

Report for the European Commission:

DG Climate Action

Ricardo-AEA/R/ED57769
Issue Number 2

28th of May 2013

adelphi

ODI

Customer:

European Commission –
DG Climate Action

Customer reference:

MOVE/D3/2011/571

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Ricardo-AEA reference:

Ref: ED 57769 – Final Issue

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28th of May 2013

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Acknowledgements:

Ricardo-AEA, ODI and Adelphi acknowledge with thanks the significant time and effort offered to the project by experts in the European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), KFW Development Bank and Agence Française de Développement (AFD), World Bank, Asia Development Bank (ADB), International Finance Corporation (IFC) and Inter-American Development Bank (IDB) who contributed to the consultation and workshops as part of this study.

Special thanks to Edward Calthrop, EIB for arranging and contributing to stakeholder events for the study and providing regular feedback on study findings.

We would also like to thank Alastair Marke, ODI and Shelagh Whitley, ODI for providing additional inputs to this study from their internal research work.

The constructive comments and feedback received from Antongiulio Marin, DG CLIMA and colleagues from DG MOVE, DG REGIO, DG ECFIN and DG DEVCO is also much appreciated.

Executive summary

The European Commission DG Climate Action contracted Ricardo-AEA and its partners ODI and Adelphi to get a clearer picture of the current situation regarding the mainstreaming of climate change into the investment activities of public Financial Institutions (FIs). For the purpose of this study, FIs include Multilateral Development Banks (MDBs) (e.g. the European Investment Bank (EIB) and the main Bilateral FIs with focus on activities conducted by European FI, activities on climate change both within Europe and outside Europe. The Project reviewed how FIs are including climate change considerations onto their investment portfolios, including (but not limited to) activities that would be considered climate finance under the UNFCCC. A key part of the study was to review whether climate change is mainstreamed in their sectoral strategies, such as clean energy and transport.

The key findings of the report are as follows:

- Climate financing is by now a priority activity in all the MDBs/FIs. It is increasingly integrated and mainstreamed into the MDBs/FIs development and operational strategies, though not in a consistent and transparent manner.
- Mainstreaming takes place in four distinct ways:
  - Environmental and climate change-related commitments and targets
  - Definition and tracking of climate finance and project impacts
  - Screening criteria and appraisal tools for climate related finance
  - Greenhouse gas accounting tools
- Dedicated climate funds - such as the Climate Investment Funds (CIFs), and Global Environment Fund (GEF) - and the main international private sector standards on climate and investment (Equator Principles, UNEP FI) provide helpful lessons for mainstreaming climate change, although the application of requirements is not consistent.
- Analytic and option evaluation approaches such as cost-benefit analysis (CBA) can be an effective and robust tool to support decision-making in relation to climate change and related infrastructural investments (see in particular use by EIB of shadow carbon pricing).
- An investment decision framework, based on the scope for incorporating climate change in various stages of the project or programme cycle, provides a strong template to evaluate current and recommend best practices.
- Review of the Connecting Europe Facility (CEF) and the Neighbourhood Investment Facility (NIF) indicated that these two EU investment facilities are already quite climate friendly. However, based on EFI and IFI experience, a number of improvements should be considered to improve the transparency, consistency and effectiveness of the tools and processes used to mainstream climate change, especially for project assessment and implementation.
- Based on the review of European and International Financial Institutions best-practice investment frameworks and the insights from the case studies on CEF and NIF, it is possible to draw out recommendations for the European Commission to take action on:
  - The design and operation of financial mechanisms supported through EU budget (e.g. EU Major projects under structural funds, TEN-T/E, NIF and other EU blending facilities)
  - How the EU might influence policy, procedures and tools adopted by FIs
  - Revisions to EU legislation and guidance governing project development
  - Capacity building and training activities for European Commission and Member State staff working on major projects
  - Areas for further research to address knowledge gaps identified in this report and to build the evidence base on best practice.

Climate financing is increasingly integrated and mainstreamed into the MDBs/FIs development and operational strategies, though not in a consistent and transparent manner

Most FIs have announced climate investment targets ranging from 14% to 51 % of investment or lending Portfolio

Over 60% of all new country strategies, which are jointly developed with client governments and other key stakeholders, now address climate issues in some form or another. A number of FIs have exceeded their targets – e.g. ADB, EIB, and IDB. However, targets/commitments are not easily comparable due to different time scales and sector definitions. IFC is planning to introduce a target in terms of absolute and relative GHG for its portfolio by 2014.

Each FI/MDB's methodology for tracking mitigation finance differs, but the joint MDB approach developed in 2012 tries to find commonalities and is an attempt to jointly report on resources mobilised for a set of commonly-agreed mitigation activities

- Strong leadership is being shown by some FIs, such as the World Bank, to track co-benefits at the lowest level of financing information available, even considering individual components of the project, thus adding granularity to the Rio Markers.
- For some projects (e.g. transport, industries, agriculture or energy efficiency), it is challenging to collect the appropriate data to perform a carbon footprint calculation which is supposed to inform climate related investment tracking procedure.
- The EIB has adopted a minimum threshold to classify a project as contributing to energy efficiency, in order to differentiate between standard asset replacement and projects designed primarily to save energy.
- AFD, EBRD and EIB consider the Rio Markers to be very subjective and that a greater level of detail than a simple "yes/no" against the Rio Marker criteria is needed to measure the impact of projects. For Rio marker 0 (no climate impact) and 2 (principal impact) the classification is pretty straight forward, but one of the challenging issues is how to classify projects which have a 1 as Rio Marker (significant impact). For example, Germany considers only 50% of the project spend as climate finance for Rio Marker 1, whereas the corresponding rate is 40% for the EU.
- In a recent OECD workshop, IF/MDB and Rio Marker methodologies to track climate change have been assessed in view of a possible refinement of the Rio Marker methodology using the joint MDB methodology.

Screening criteria, guidelines and appraisal tools have been developed by most FIs to appraise climate related investments, though limited in their coverage of sectors and not applied across the whole investment portfolio

A number of FIs have defined specific eligibility criteria or performance standards to screen carbon intensive or climate sensitive activities. Some FIs have adapted their processes to prioritise projects according to their potential to meet climate change targets. For example:

- The EIB has specific eligibility criteria towards carbon intensive industries, as captured in sector lending policies for transport, energy and water. They provide an additional layer of safeguard beyond their standard technical, financial, and economic viability tests. The EIB is the only institution which applies a cost-benefit screening tool and carbon pricing for all investment and framework loans, both in/outside the EU as well as for private and public sector projects in addition to the standard financial appraisal. CBA tests are used for assessing the economic viability of the project by adjusting for market distortions, subsidies and environmental externalities. The cost-benefit test uses a shadow price for carbon for all projects. Fossil fuel-using projects are penalised by applying the carbon price.
- The ADB has developed sectoral guidelines for climate resilience; though thus far only for the transport sector (guidelines for other sectors are currently under preparation).

- The WBG has established Criteria for Screening Coal Projects (to be integrated in the expected review of their energy strategy), limiting financing to cases in which a country has no other options to respond to urgent demands for electricity, and providing several other conditions have been met and the process reviewed by an external advisory committee. These criteria include approaches for including environmental costs in projects analysis.
- KFW Development Bank's environment and social impact assessments consist of an initial screening for relevant environmental, climate, and social impacts, as well as a scoping or assessment of identified consequences and/or risks (whereby projects and programmes are categorised based on the degree and scope of expected impact).
- IDB estimates the expected annual GHG emissions for each operation susceptible of producing significant quantities of GHG emissions before approval of IDB financing. This information is generated in the EIA process or by the project team using the GHG accounting tool. The IDB has a suite of GHG guidelines on landfills, cement plants, and coal-fired powered plants. These set minimum climate change performance criteria in order for Bank clients to comply with a specific GHG emissions threshold.
- IDB's sustainability report details a project result indicator: 'Percentage of power generation capacity from low-carbon sources over total generation capacity funded by IDB' as a result '100 per cent of power generation funded by IDB in 2011 was from low-carbon sources'.
- IDB addresses the climate change risks for the projects as well as the risks for human life, property and the environment exacerbated by projects based on its Disaster Risk Assessment Policy.
- The IFC has defined performance standards for identifying risks and impacts of climate change, although currently tools to assess these risks are not yet in place. Clients are asked to include GHG emissions in their regular reporting to IFC in accordance with the Performance Standard 3: Resource Efficiency and Pollution Prevention quantification threshold. This allows IFC to quantify, manage and report on the carbon footprint of its direct investment portfolio in accordance with the emerging state of practice on accounting and reporting.
- AFD has developed a project selectivity matrix for selecting projects. This defines exclusion criteria for projects that would not be funded based on a combination of their GHG characteristics and geography.
- The EBRD tries to capture not just the impact on the total tonnes CO_2 saved by a project, but also the impact on the low carbon economy. They have a rating for the potential of the project to make the transformation into the low carbon economy and additionally risk rating to achieve the transition.

A number of different approaches are used in-house between the IFIs in an attempt to assess the GHG impact of climate change

- There is increasing convergence of the outputs of different IFIs' carbon footprinting methodologies. Ten International Financial Institutions (IFIs) – ADB, AFD, EBRD, EIB, IDB, IFC, KFW Development Bank, NEFCO, NIB, and WB – are supporting a framework that provides general principles to harmonise greenhouse gas emissions reporting and accounting. Known as the IFI Framework for a Harmonised Approach to Greenhouse Gas Accounting, it represents an important first step to reporting IFI mitigation impacts, as well as committing to further harmonisation going forward.
- The effectiveness of climate related investment can be assessed by developing a methodology for measuring its GHG footprint at project appraisal stage and also by including it in project tracking systems as a standard indicator.
- Most FIs (ADB, EIB, EBRD, IDB, and IFC) have thresholds (100kt CO_2eq for absolute emissions and 25kt CO_2eq/year for relative emissions) for applying carbon footprinting methodologies.
- IFC quantify (and starting in 2012 will report) gross (absolute) GHG emissions for all direct investments. In addition, IFC also quantifies GHG reductions (net) for all climate-related projects: direct investment, financial intermediaries, and advisory services. This is different from other IFIs that only quantify GHG emissions above a certain threshold of emissions.
- New methods to improve assessment of indirect (Scope 3) GHGs are in the pipeline, but most FIs will apply them selectively to energy, transport, and forestry sector projects.

- Though other MDBs/FIs use similar tools for GHG accounting, to date there is not a completely harmonised approach across the IFIs to define baselines.
- Currently, only AFD measures the carbon footprint of different types of mitigation projects during project appraisal to define climate actions.
- The IDB publish annual gross GHG emissions in addition to the net GHG emissions (emission reductions by Renewable energy and other projects).

Dedicated climate funds – such as the Climate Investment Funds (CIFs), and Global Environment Fund (GEF) – and the main international private sector standards on climate and investment (Equator Principles, UNEP FI) provide helpful lessons for mainstreaming climate change, although the application of requirements are not consistent

- While there are clear project screening requirements for each fund (CIFs, GEF), the funds do not always clearly specify the tools and methodologies that should be used by applicants in providing information to fulfil these requirements. While the information provided may match screening requirements, the majority of information provided in funding applications is primarily qualitative. From publically available sources, when quantitative information is provided, no background is given on the tools/methodologies used to reach these estimates. One of the CIF funds, the Clean Technology Fund, has developed Investment Plans based on beneficiary countries' domestic climate change policies
- International Standards have increasingly incorporated the issue of climate change. The reviewed standards, (Equator Principles, UNEP FI) however, do not provide a rigorous framework for mitigating CO_2 emissions of financed projects. None of the standards requires minimum criteria regarding carbon emission or prohibits the financing of utilities with the most intensive emissions. Even if an alternative analysis is requested, it is not actually required to implement the most climate-friendly solution.
- Some institutions, such as the UNEP FI and, partly, the Climate and Carbon Principles, provide guidance material, publications or training sessions in order to support financial institutions in mainstreaming sustainability and climate change management into their practices.

Analytic and option evaluation approaches such as cost-benefit analysis (CBA) can be an effective and robust tool to support decision-making in relation to climate change and related infrastructural investments (see in particular use by EIB shadow carbon pricing)

CBA, Cost-effectiveness Analysis (CEA) and Multi-criteria Analysis (MCA) are a useful suite of tools to evaluate climate related impacts of infrastructure projects

In principle CBA – broadly interpreted to include CEA and MCA when performed in line with best practice – is a valid framework within which to integrate climate issues when appraising a project, and thus remains an appropriate metric to assess the use of (EU) public funds; These approaches are not mutually exclusive: indeed, some central finance and planning agencies use a combination of these tools in the formal appraisal process.

Care is needed to ensure quality of CBA is not compromised for measuring climate related impacts

CBA is and remains a valuable tool for bringing structure, rationality and transparency to infrastructure decisions and strategic policy choices. However in many cases, CBA/CEA is performed poorly in practice – indeed in some cases it may even be 'gamed' to increase the chances of gaining scarce public support - and thus fails to provide effective guidance to decision makers (hence proposal for EU action in this report). This is a general criticism, but is also valid regarding the integration of climate change aspects.

CBA is not intended to replace decision making

For a variety of reasons, including pervasive uncertainty, methodological shortcomings, ethical dimensions and data limitations, CBA remains an aid to decision making; it will not replace it. In particular, the results from individual project appraisals will often need to be assessed within the context of broader strategic climate goals. The tool is not in itself sufficient to make decisions. It is useful to complement the CBA with decision-making methods that facilitate capturing — if only qualitatively — the full costs and benefits and the corresponding uncertainty of climate impacts.

CBA is technically evolving to include climate aspects and is already used by a number of financial institutions

CBA techniques are developing, in particular to consider the costs and benefits of the design, timing and sequencing of projects in order to reduce exposure to an uncertain, changing climate. Dissemination of best practice should be promoted.

- **Climate mitigation in CBA:** Mainstreaming of climate change considerations in EIB operations is an on-going process that dates back to 2001. The EIB includes carbon pricing in economic appraisal (CBA) of projects with a shadow price of €30 per tCO2 to 50€ per CO2 by 2030. The EIB is using economic tools (CBA, shadow pricing) to incorporate climate change in investment decisions. The EIB uses an economic based approach to define baselines both in the economic analysis and GHG accounting.
- **Climate adaptation in CBA:** Adaptation is far more complex to include in cost-benefit analysis (CBA) as it involves calculation of risk exposure and risk reduction. Current approaches are based on past experience to measure risks rather than looking at benefits of climate proofing projects in the future. There is already some good evidence available on cost-effectiveness of climate proofing larger projects. However**,** CBA could be used in synergy with other instruments for project identification and appraisal, such as SEI and EIA, as well as the upstream planning of adaptation projects. A number of recommendations developed in the study Acclimatize/Cowi, 2012 "Guidelines for Project Managers: Making vulnerable investments climate resilient" would need further investigation to be operationalized.

CBA is a powerful tool in Europe, where there is not only a shadow price of carbon, but also a real price

The key question is to understand the link between the tool and the decision making process. CBA is currently is the only framework that consistently allows one to calculate the trade-off between climate impact, and other non-climate benefits for the project. Criticism of the tool is not supported by suggestions for what can be used instead.

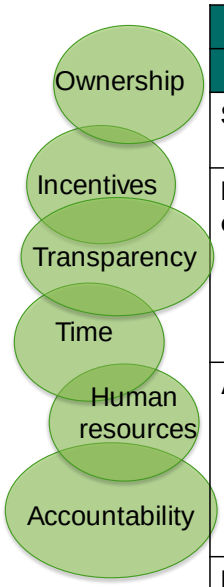
An investment decision framework, based on the scope for incorporating climate change in various stages of the project or programme cycle, provides a strong template to evaluate current and recommend best practices

A review of current practices by MDBs, EFIs and climate funds shows that climate considerations are taken into account at four main stages of the investment decision process. Different approaches and tools are used at each stage. Each tool as used by an FI is very good at a particular element. Each institution has chosen a different area to 'specialise' in, dictated mainly by their mandate and strategic priorities, have built strong capacity in that area with appropriate tools/methodologies. New information is always being produced so it is important to share best practices and harmonise tools and methods.

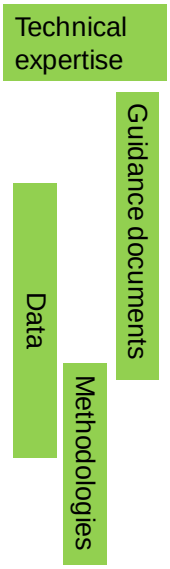
The table below is organised from top to bottom, in terms of level of influence (from broad regional, national or sub-national policy) to narrow (design of individual projects or project sub-components), and from bottom to top in terms of scale of resources required for implementation by the project developer (i.e. options assessment processes are normally more complex than knock-out or eligibility criteria). The impact of climate criteria in the upper sections of the framework (1-5) may potentially have broader impact than at the Options Evaluation, Design and Monitoring phases (6-7); however climate mainstreaming at this upstream level would imply clear policy orientations and political traction.

The choice of methods is dependent on the availability of human and capital resources. The framework suggests that the choice is about having the right tools, and using them in the right place and at the right time. The suggested framework does not prescribe the use of every tool for every project, but rather, to use the most appropriate tool for the size and scope of the project. The table below outlines the resources, both soft (in circles) and hard (in squares), which are required in order to implement/execute the different approaches within the investment decision process.

Figure E1-1 Main stages and approaches for the best-practice investment framework



		Best practices by FIs	
Stage	**Approach**	**Mitigation**	**Adaptation**
Structuring	**1. Policy**	**EU 20-20-20 & MDBs/EFIs**	
Project origination	**2. Knock-out criteria**	**IDB**	
	3. Eligibility criteria	**WB, EIB, AFD**	
	4. Identification	**CIFs**	**NAPAs**
Assessment	**5. Risk analysis**	**MDBs, EFIs**	**EBRD, KFW**
	6. Disclosure	**GEF, CTF**	**AF, SCCF**
	7. Options evaluation	**EIB, EBRD**	
Implement-ation	**8. Design**	**MDBs**	**ADB, EIB**
	9. M&E	**KFW, AFD**	



Review of the Connecting Europe Facility (CEF) and Neighbourhood Investment Facility (NIF) indicated that these two EU investment facilities are already quite climate friendly. However, based on EFI and IFI experience, a number of improvements can be considered to improve the transparency, consistency and effectiveness of the tools and processes used to mainstream climate change.

The investment framework was applied to the decision process for both Multiannual Financial Framework (MFF) periods (2007-2013 and 2014-2020) for the Trans-European transport and energy networks under the CEF and the Neighbourhood Investment Facility (NIF), in order to understand how climate change is incorporated into investment decision processes of the current MFF, and what the implications are for taking climate considerations into account under the forthcoming MFF.

Connecting Europe Facility	Neighbourhood Investment Facility
For the next multi-annual framework (MFF 2014-2020), the TEN-T Programme together with the TEN Programmes in energy and ICT will be managed under a common Connecting Europe Facility (CEF) with more streamlined appraisal processes. The CEF will establish a single framework for investment in EU infrastructure projects and will simplify the EU legal framework concerning TEN infrastructure funding, thereby ensuring a coherent approach to EU project financing across the sectors. It has a stronger emphasis on blended finance to complement direct EU support and build an environment conducive to private investment. The financial envelope for the implementation of the Connecting Europe Facility for the period 2014 to 2020 will be €29.3 billion including €10 billion that will be transferred from the Cohesion Fund.	The NIF has been set up to finance capital-intensive infrastructure projects and to support the private sector in partner countries (see below), which are part of the European Neighbourhood Policy (ENP). The facility was officially launched in 2008. The NIF plays a key role in donor coordination and increasing aid effectiveness in line with the Paris Declaration and the Accra Agenda for Action: It is aimed at pooling grant resources form the EU budget and the EU Member States and using them to leverage loans from European Finance Institutions and with resources from the ENP partner countries. For the 2007-2013 period, total European Commission commitments to the NIF were €766.9 million, complemented by direct contributions from Member States (the NIF Trust Fund).

The CEF and NIF process are already quite climate friendly, especially in terms of setting targets and identifying projects. However, more improvements are required to include climate concerns in the assessment and implementation stages. In terms of risk analysis, CEF projects require compliance with Member State law regarding EIA and SEA, but no climate specific tools and approaches have been developed yet. New methodologies to assess climate risk and vulnerability can be developed based on the toolkits, screening tools and guidelines developed by a number of FIs.

Under the options assessment approach – even though the CEF legal requirement foresees a CBA for each project – there is no mention of climate considerations. Experience from the use of carbon and shadow pricing by the EIB suggests that, at least for TEN-T and other EU major infrastructure projects, these tools are a clear, objective and feasible way to make climate smart investment decisions.

Under the implementation stage, EU Procurement policies do not include climate specific measures or guidelines to ensure projects are climate smart once they are approved or selected. The Commission should propose inclusion of clear climate change considerations in EU procurement policies.

The development of monitoring, evaluation and reporting systems for climate change indicators such as the 20-20-20 target, GHG foot printing, and other climate risks should be devised for all projects. These should be harmonized with best practice of the EFIs/MDBs as the Rio Markers are not yet seen as the definitive metrics for climate consideration within investments by FIs

Table E1-1 Relative strength of climate mainstreaming across the various stages of the project cycle

Stage	Approach	CEF	NIF
Structuring	Policy	Targets already quite high	
Project origination	Knock out criteria	Focus projects are environment friendly	
	Eligibility criteria		
	Project identification	More capacity building	Better investment plans
Assessment	Risk analysis	New or better tools	
	Disclosure	Better indicators	Operationalize Rio Markers
	Options assessment	• Harmonise CBA/MCA • Carbon pricing in CBA, transformational impacts	
Implementation	Design	CC considerations in procurement policies	Operational climate related guidelines
	M&E framework	Better indicators in sync with EFIs/MDBs	

The shadings reflect the relative strength of climate mainstreaming across the various stages of the project cycle (green – high; orange – medium; and red – low).

The policy recommendations summarised in this section have been developed based on the review of European and International Financial Institutions best-practice investment frameworks and the insights from the two case studies on CEF and NIF. These recommendations cover five distinct areas:

1. Recommendations on the design and operation of financial mechanisms supported through the EU budget (e.g. EU major projects under Structural Funds, TEN-T/E, NIF and other EU blending facilities)
2. Recommendations on how the EU might influence policy, procedures and tools adopted by FIs
3. Recommendations for revisions to EU legislation and guidance governing project development
4. Capacity building and training activities for EC and MS staff working on major projects
5. Further research to address knowledge gaps identified in this report and to build the evidence base on best practice in particular in the private sector.

Looking at each of these in turn:

The EC can influence financial mechanisms supported through the EU budget (e.g. EU major Projects under Structural Funds, TEN-T/E, NIF and other EU blending facilities)

The application of the best-practice investment framework on the CEF and NIF indicated that these two EU investment facilities already incorporate a number of features which address climate change. However, a number of improvements can be considered to improve the transparency, consistency and effectiveness of the tools and processes used to mainstream climate change in these two instruments.

The policy targets are already quite strong in the form of the 20-20-20 targets. The European Commission should consider more ambitious targets under the policy and legislative framework of key EU Budget instruments and facilities. This can be achieved by applying more ambitious targets focussed on key priority sectors and activities. Another possibility is the earmarking of a greater portion of grants linked with climate proofing. However, this option should ensure that it does not lead to moral hazard and market distortions; adequate measures should be in place to check for perverse incentives. These measures can be applied to improve the design and legislative framework of other EU financial mechanisms such as the EU Blending Facilities and the EU Major Infrastructure projects financed by the Structural Funds.

The EC should also aim to apply best practice methods and tools in operational and technical implementation of EU major infrastructure projects and EU blending facilities investment guidelines. These pertain to design and M&E aspects of the investment framework. The EC should develop operational guidelines and methodologies to ensure the issues of climate resilience are taken into account. The EC should propose the inclusion of clear climate change considerations in EU procurement policies for design of the project (including project finance structure). Another key area for improvement is around monitoring, evaluation and reporting systems for climate change indicators (20-20-20 target and use of BAT, GHG foot printing, number of project assessed toward climate risk etc.). These should be harmonised with best practice of the EFIs / MDBs.

The EC can also leverage their influence directly on EFIs and indirectly on IFIs by imposing conditions in return for financial support. For example, where these EU mechanisms are used to co-finance projects with other funds, the indictors for eligibility criteria and project identification can also be used to impose climate change conditions in return for financial support. This can be achieved by imposing more stringent knock-out and eligibility criteria for projects based on their environmental performance – for example, by expanding eligibility rules under climate finance or project bonds to cover renewable generation projects. The EC should aim to reinforce links between climate policy and strategies and investment plans. This can be achieved by developing investment plans built on beneficiary countries sectoral analysis and domestic climate related policies and plans (LEDs/NAMA/NAPA).

The EC can influence financial institution policy, procedures and tools

The EC can exert influence via its membership on FI boards for the adoption and sharing of best practice methodologies, such as the tracking of indicators, options valuation, risk analysis, and GHG foot printing. Harmonising the best practices and standards becomes very important as most FIs work with a wide range of partners/stakeholders and, subsequently, implementing projects under the financial mechanism requires cooperation with a number of FIs. There is already a strong precedence with the joint MDB reporting on adaptation and mitigation which can be replicated in other tools as well. The EC can also encourage improvements in other IFI practices through peer pressure by ensuring that it reflects best practice in its own decisions.

The areas which it might seek to improve include the following:

Stage	Approach	Recommendation
Assessment	Risk analysis	Develop methodologies to assess climate risk/ vulnerability and integrate climate considerations and safeguards in sector strategies.
	Disclosure	Indicator development should track developments around the Rio Markers (and use of indicators by EFIs) – as the Rio Markers are not yet seen as the definitive metrics for climate consideration within investments by FIs. Commission to develop performance indicators on climate change (e.g. 20-20-20 target, GHG foot printing, etc.) to be included on application forms for calls for proposals
	Options assessment	EC to support coordination of CBA / MCA tool development between CEF and major projects under structural funds in terms of inclusion of climate considerations, in coordination with DG REGIO, EIB, ENTSOs and JASPERS. Shadow price and carbon price are already included in CBA or financial analysis for instance the EIB.
Implementation	Design	Develop operational guidelines and methodologies for climate proofing in EU procurement policies
	MRV framework	EC to support development of monitoring and evaluation systems for climate change indicators

The EC can influence EU legislation and guidance governing project development

Given that developers of major infrastructure projects within the EU need to comply with relevant EU legislation, the EC can also influence the practices they adopt by including express requirements to mainstream climate issues into their decision making. The EC's influence here is limited because such legislation will be subject to the Co-Decision procedure (and therefore European Council and European approval) and would need to be incorporated at an early stage of the legislative process. For example the EC can use the findings from this study in the revisions of the upcoming EIA Directive.

Mainstreaming climate change in investment to deploy green infrastructure is important, but what is also needed is the shift away from brown investment. Revisions to EU legislation and guidance for major projects should not only be about the increase in overall green investment, but should encourage the shift in all types of investment.

The EC can also use the findings from this Report, especially the recommendations under project assessment, to influence key project guidance documents such as the EIA, DG REGIO Guideline for CBA of EU major projects, etc. Since DG REGIO is regularly improving its Guideline for CBA, the tools and approaches used by the FIs could be extremely useful for sector specific application. CBA is a powerful tool in Europe, where there not only is a shadow price of carbon, but also a real price. The key question is to understand the link between the tool and the decision making process.

However, more efforts are required to quantify projected impacts of adaptation projects for CBA. The technical capability and research material is less advanced in this respect.

The EC can provide capacity building and training for EC and MS staff working on major projects

The EC should take steps to build the capacity and knowledge of Commission staff and in the Member States (e.g. through the provision of training courses and workshops) so that they are better informed of the options for incorporating climate change into investment decisions. The EC could encourage enhanced consultation of the IFIs with EC Delegations at an early stage of project development. Capacity building for project promoters and local authorities can be enhanced by providing the following:

- Information materials and training sessions following a call for proposals for project developers
- Information/tools for climate proofing to project promoters and local authorities that can be used in project identification and design process. This would assist them in determining which projects types/designs have the greatest potential for mitigation/resilience/avoiding technological 'lock-in'.

The EC can undertake further research to address knowledge gaps and build evidence base

During this project, we have identified a number of gaps in knowledge and areas for further research which were beyond the scope of this project. These include the following:

- The study provided a practical framework to assess investment decision across the project cycle. However, more work is needed to assess the **relative pros and cons of each approach**. Each of the eight FIs have developed, in varying degrees of comprehensiveness, some method or tool for the stages/approach in the investment framework. The next step is to determine what each FI can do to improve the methodologies that are not best practice examples. There is no 'one size fits all' approach; the choice depends on individual FI experience and circumstances. Although MDBs have different stakeholder pressures, they all realise the importance of improving common methodologies and increasing the sharing of best practices. There is scope for institutions to share and learn from each other; however this is also dictated by their organisational mandate. Harmonising best practices and standards becomes very important when FIs are working with a wide range of partners/stakeholders. The recent joint MDB initiatives on tracking mitigation and adaptation spend and framework for harmonising to Greenhouse Gas Accounting should provide more evidence on the benefit of these harmonising efforts. In particular, more research is needed to contrast approaches and tools for mainstreaming climate change in new projects with measures to upgrade or optimise existing projects. Therefore, in the long term, the aim should be to have a green investment

policy framework broad enough to encompass climate issues, but also flexible enough to be adapted to different countries experiences and FI mandates.

a) **Addressing gaps in framework on best practice for resilience and climate adaptation** is a key requirement. Additional research and development of appropriate guidance for disclosure and monitoring and evaluation of resilience interventions is strongly recommended. Developing new, or enhancing existing, selection tools and indicators on knock-out and eligibility criteria will also improve the investment framework.

b) **Engagement at Member State level is essential**. The strategic priorities and processes to mainstream climate change can be made at the EC level, however the implementation, including project selection, design and reporting will be done at the Member State level. The European Commission will have less direct influence on major investment projects in the next MFF. Independent experts (e.g. JASPER) and Member State systems will take over appraisal and Guidelines for CBA including climate objectives (CLIMA involved). In this context more support and engagement with Member States will be required, especially for climate resilience issues. DG REGIO has developed a new and simple tool (CO2MPARE) to help Member States to assess emission impact of Operational programmes.

c) Lastly, a **review of private finance sector activities** to include climate considerations in infrastructure investment decisions (e.g. links with Equator Principles and incorporating climate risk into corporate bond ratings) could also provide new evidence for mainstreaming climate change in investment decisions. Lessons can also be learnt and shared by looking at dedicated climate funds and processes, including the Green Climate Fund. Further research can look at the role of **national development banks (NDBs) in increasing accessing to climate finance.** NDBs can help to bridge donors and project applicants in developing countries as they are the real main actors that can drive action.

List of Abbreviations

ADB	Asian Development Bank
AfD	French Development Agency
AECID	Agencia Española de Cooperación Internacional para el Desarrollo
AFD	Agence Française de Développement
AfDB	African Development Bank
BAT	Best Available Techniques
CBA	Cost-benefit analysis
CEB	Council of Europe Development Bank
CEF	Connecting Europe Facility
EBRD	European Bank for Reconstruction and Development
EFI	European Finance Institution
EIB	European Investment Bank
ENP	European Neighbourhood Policy
FI	Financial Institutions
FIG	Finance Institutions Group
IDB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFC	International Finance Corporation
KFW	Kreditanstalt für Wiederaufbau
KFW Development Bank	(Branch of KFW Development Bank)
MDB	Multilateral Development Bank
MFF	Multiannual Financial Framework
MS	Member States
NIB	Nordic Investment Bank
NIF	Neighbourhood Investment Facility
OeEB	Österrreichische Entwicklungsbank
RDBs	Regional Development Bank
SIMEST	Societè Italiana per le Imprese all'Estero
SOFID	Sociedade para o Financiamento do Desenvolvimento
WBG	World Bank Group

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1 Introduction

1.1 Rationale

This is the draft final report for the study 'Cooperation with European financial institutions (FIs): Climate related standards in assessing investments/infrastructure projects (hereafter, the 'Project').

DG CLIMA contracted Ricardo-AEA and its partners ODI and Adelphi to get a clearer picture of the current situation regarding FIs activities on climate change both within Europe and outside Europe, and the impact of the FI activities in the context of global activities to reduce GHG emissions. The Project reviewed how FIs are including climate change considerations in their investment decisions, including (but not limited to) activities that would be considered climate finance under the UNFCCC. A key part of the study was to review if climate change is mainstreamed in their sectoral strategies, such as energy and transport. The Project then considered how to maximise the climate benefits of European Financial Institutions' activities by making recommendations for improvements of technical evaluation of projects/portfolios and assessment of value for money in terms of climate benefits. This was undertaken by applying a best practice investment framework on two case studies – the Connecting Europe Facility (CEF) and the Neighbourhood Investment Facility (NIF). The study also provides guidance and policy recommendation to the European Commission and European Financial Institutions (EFIs), such as the European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD), on how to integrate EU climate objectives into investment decisions.

The main findings of the report cover:

- Current best practices and areas of excellence for FIs to mainstream climate change in investment and funding decisions
- Development of a conceptual investment framework for incorporating climate change in all stages of a project or programme cycle
- Evidence from two case studies – CEF and NIF – on practical application of this framework
- Policy recommendations for financiers, Member States and the European Commission from study findings.

The study was undertaken parallel to two other DG CLIMA studies with strong synergies between all three of them. These two studies were:

- 'Guidelines for project managers: "climate proofing" of vulnerable investments', currently being undertaken by Acclimatize and COWI.
- 'Optimal use of the EU's funding and financial instruments in the next Multiannual Financial Framework (MFF) to address climate objective', undertaken by IEEP.

The study team attended regular meetings of the two studies and shared information from interim drafts to ensure cross-fertilisation of ideas and avoided duplication of efforts.

1.2 Report structure

The report is structure as follows:

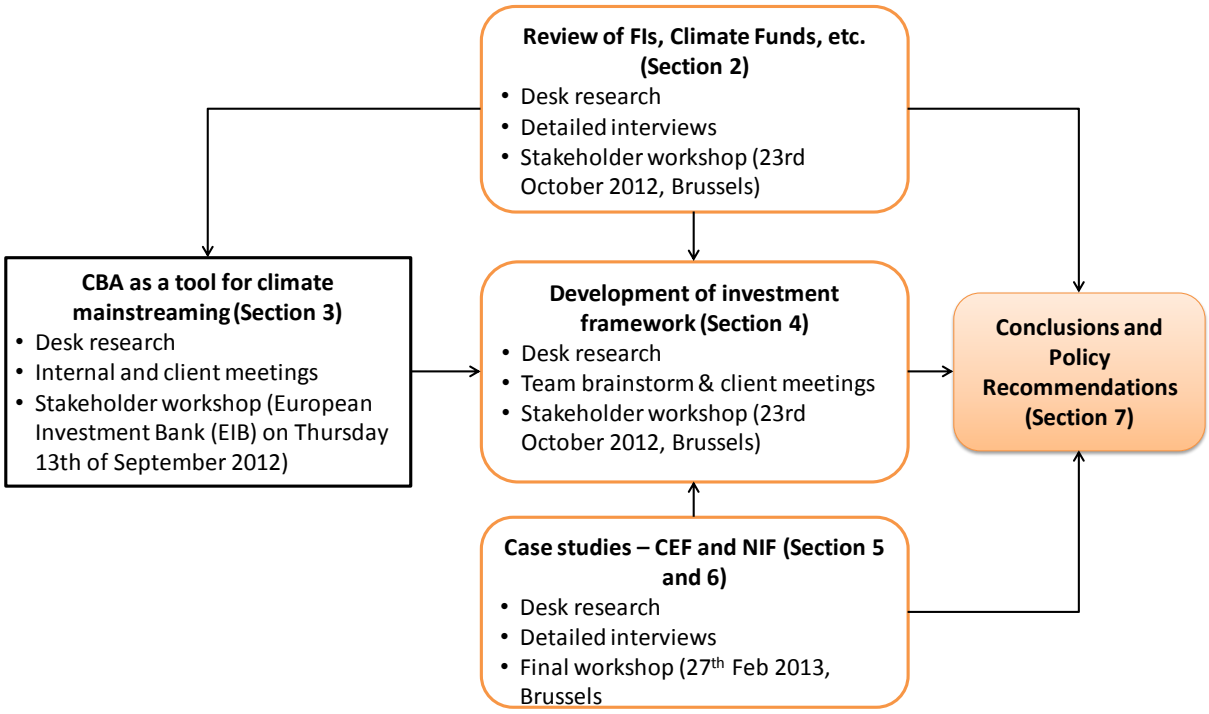
- Section 1 introduces the study covering the main rationale, background and study methodology.
- Section 2 includes findings from FIs, climate funds and international financial standards for mainstreaming climate change.
- Section 3 looks at the scope of cost-benefit analysis (CBA) as a key tool for measuring climate impacts of large infrastructure projects.
- Section 4 outlines the framework for incorporating climate change in investment decisions.

- Sections 5 & 6 summarises the findings from the application of the investment framework on the CEF and NIF case studies.
- Section 7 concludes by providing a discussion on policy recommendations for the European Commission, financiers and Member States.

1.3 Study methodology

To deliver the assessment required under this output, the study team applied a number of different research and analytic techniques. The complex interactions between scope, funding objectives and governance structure that affect investment decisions were captured by combining desk research, interviews, stakeholder workshops and internal brainstorming sessions (*see* Figure 1-1).

Figure 1-1 Study methodology



This report reviews literature from international and European financial institutions from a wide variety of sources which capture academic, policy, NGO and private sector perspectives. The literature review is complemented by a series of detailed interviews, which were used to support the development of the investment framework and policy recommendations found in this report. In addition, three workshops were held throughout the course of the study.

The recommendations (section 7) were developed by aligning them closely with European Commission and EFIs' priorities. The specific recommendations were supported by the two case studies to demonstrate the practicality of the investment framework developed in Section 4.

There is still no clear definition for Financial Institutions (FIs); for the purpose of this study they have been grouped as Multilateral Development Banks (MDBs)[1] and International and Bilateral Financial Institutions (IFIs and BFIs)[2].

[1] World Bank Group (WBG), African Development Bank (AfDB), Asian Development Bank (ADB), European Bank for Reconstruction & Development (EBRD), and Inter-American Development Bank (IDB)
[2] The EIB, KfW Bankengruppe (KFW), Agence Français de Development (AFD)

Given the differences in shareholders, mandates and business models, the climate change policies and practises of the FIs broadly differ. It has been noted however in some areas European FIs are in a process to harmonise due diligence process through the Mutual Reliance Initiative

The main Financial Institutions reviewed as part of this study were:

- EFIs: European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), KFW Development Bank and Agence Française de Développement (AFD)
- IFIs: World Bank, Asia Development Bank (ADB), International Finance Corporation (IFC) and Inter-American Development Bank (IDB)

The EU Member States (MSs) own 100% of the EIB; they have a further stake of approximately 60% of the EBRD, 30% of the WB and less than 20% in other MDBs. The Commission (DG ECFIN) also sits on the Boards of the EIB and EBRD.

Specific questions were developed for all the interviews with the FIs to better understand their internal funding policies and systems. The following points highlight the key topics discussed with each FI (an interview pro forma was created to ensure that appropriate coverage of main issues was captured during the interviews *(see separate Annex document to the report)*:

- FI's climate investments and activities, along with an assessment of performance (where possible). What are they currently doing in terms of the sectoral activities, the geographical focus and the mainstreaming of climate change into investment decisions?
- Existing climate change methodologies to assess the GHG impacts and climate risks of projects developed by FIs.
- Approaches to define and track climate finance to assist the EC in defining its procedures under the new MFF and in the international context.

2 International and European Financial Institutions experience in incorporating climate change in investment decisions

2.1 Overview

Multilateral and bilateral financial institutions are a crucial part of the financing landscape. Starting with the Gleneagles Summit in 2005 and spurred on by ambitious international financing goals, intermediaries are collaborating closely on climate finance activities (e.g. Joint MDB Report on Mitigation Finance 2011 published in Rio in 2012 and the Joint MDB Report on Adaptation Finance 2011 published in Doha in 2012; UNEP, 2010, UNEP-BFI reports 2009, 2010, 2011, 2012).

The term, 'financial resources for climate change' or 'climate financing' usually includes financial flows for reducing emissions, i.e. mitigation, as well as measures for adapting to the consequences of climate change; however there are still no clear and commonly accepted definitions. Furthermore, looking at the US$ 100 billion in climate financing earmarked for the Green Climate Fund post 2020, it is not yet clearly defined what sources (private or public) will be counted towards this objective.

No agreed definitions exist to measure, report and verify current flows and climate financing needs in a comparable and transparent manner. Even though there are various existing institutional frameworks (e.g. OECD DAC, UNFCCC, faststartfinance.org) for reporting on climate finance, there is not one that is specific and comprehensive in its scope for MRV.

The definitional issues are important to:

1) Develop appraisal criteria and screening tools to incorporate climate change in investment decisions, and
2) Track and report financial flows that support climate change mitigation and adaptation, to build trust and accountability with regard to climate finance commitments and monitor trends and progress in climate-related investment.

MDBs and FIs have an important role to play in climate change through addressing market failures (internalising the carbon price), using innovative instruments to reduce/share risk, supporting cross-country lesson learning and investing in infrastructure. However, the MDBs/FIs role in climate change needs to make careful distinction between their capacities in both public and private lending – the MDBs/FIs play different roles in this regard. The latter, in particular, will require more emphasis in the future, as the bulk of climate related investment will need to come from the private sector. MDBs/FIs have already demonstrated the potential to leverage significant amounts of private finance for climate change. According to the Joint MDB Climate Finance report, the leverage ratio of total project cost to MDB/FIs financing ranged between 3.3 and 3.8, with an average leverage ratio of 3.4. Around half of the MDB/FIs financing was targeted to the private sector.[3]

The MDBs membership includes both developed (donor) countries, and the developing (borrower) countries. Whilst the World Bank has a global remit, it is the RDBs (which are regionally owned and staffed) that have the goal of promoting growth and development in their regional member countries (or economic transition in the case of the EBRD).

Climate financing is by now a priority activity in all the MDBs/FIs, and is increasingly being integrated and mainstreamed into development and operational strategies. According to the Joint MDB Climate Finance Report, over 60% of all their new country strategies, which are jointly developed with client governments and other key stakeholders, now address climate issues in some form or another.

Mainstreaming takes place in four distinct ways:

[3] The ADB, AfDB, EBRD, EIB, IDB and the World Bank Group have produced a detailed report of progress in climate finance since the Gleneagles G8 Summit, entitled the 'Joint MDB Climate Finance Report".
http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGF_reports/Work_Stream_4_International%20Financial%20Institutions.pdf

1. **Environmental and climate change-related commitments and target** – this includes climate investment targets as a share of investment or lending portfolio.
2. **Screening criteria and appraisal tools for climate related finance** – this includes guidelines for climate proofing, eligibility or performance criteria, climate risk management tools and use of economic tools (e.g. CBA, MCA) which incorporate climate related impacts into decision making.
3. **Definition and tracking of climate finance** – this includes information on levels of financing, what the financing is used for, which countries and regions they are benefiting and overall impact of lending activities.
4. Greenhouse gas accounting – refers to the use of carbon footprinting and other tools to measure portfolio of greenhouse emissions.

2.2 Environmental and climate change-related commitments and targets

Most FIs have announced climate investment targets ranging from 14% to 51 % of their investment or lending portfolio. However, targets and commitments are not easily comparable due to different time scales and sector definitions. Analysis of the climate related shares of each of the FI's investment portfolio should be mindful of the different mandates for each institution. For example, KFW Development Bank and AFD have strong poverty alleviation and development mandates compared to the EBRD, which predominantly funds private sector projects. A number of FIs have already exceeded their targets – e.g. ADB, EIB, and IDB. Targets/commitments are not easily comparable due to different time scales, currencies, sector definitions and core mandates. Furthermore, some institutions use Rio Markers, whilst others use the MDB methodology (which is component based), thus further complicating the comparison. Considering this, two key points in this respect are:

- Volume of low carbon lending may not correspond directly to impact on GHG reduction, and
- Focussing on the low carbon element of the portfolio does not provide a full picture of IFI climate impact: arguably, the climate impact of the remaining non-climate lending is just as crucial.

Table 2-1 Climate related targets and achievements

FIs	Targets and achievements
ADB	The ADB's Clean Energy Investments report (ADB, 2012b) indicated that of the USD 7 billion allocated to environmental themed projects in 2011, USD 2.1 billion was allocated to clean energy investments (51% of total lending). Total lending in 2011 reached USD 21.7 billion. The Bank exceeded its target of USD 2 billion per year by 2013, two years ahead of schedule.
WB	According to the World Bank projects database, the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA) committed over USD 6 billion to climate change-related activities in 2011, out of a total of USD 35.34 billion (17%).(WB projects website)
IFC	The IFC had a target to make 14% of IFC's investments climate-positive by 2011 (approximately $940 million disbursed).[4] This target was almost met as 13.7% of investments committed were climate positive (approximately $920 million disbursed). IFC has committed that 20% of its long-term financing and 10% of its trade and supply chain financing will be climate-smart by FY15.

[4] In FY2011 IFC disbursed $6,715 million for its own account. (p.7 of IFC Financial report 2011)

FIs	Targets and achievements
IDB	The IDB has at target of 25% of total Bank lending to support climate change initiatives, sustainable energy (including renewable), and environmental sustainability. In 2011 the IDB approved 167 loans of which 54 qualified as loans supporting climate change initiatives, sustainable energy (including hydro), and environmental sustainability. These totalled US$4.6 billion (42%) representing a significant increase in the overall percentage of Bank lending targeting this area and a correspondingly significant increase in the investment value over the same period (US$3.66 billion in 2009; US$3.61 billion in 2010).
EIB	The EIB's target for climate action is 25% of overall lending per annum, with lending in 2011 of approximately 18bn (nearly one third of lending) and 13bn in 2012 (approximately one quarter).
EBRD	Phased targets have been announced since the launch of the Sustainable Energy Initiative (SEI) in 2006. Phase 1 of the SEI covered the years 2006-08 and resulted in total Bank commitments of over EUR 2.6 billion (all these projects were 100% SEI or climate related. Overall, around 166 projects were covered under Phase 1 of the SEI[5]. Phase 2 (2009-11) of the SEI had an investment target of EUR 3 to EUR 5 billion for projects with a total value in the range of EUR 9 to EUR 15 billion, and a physical carbon reduction target of 25 to 35 million tonnes of CO_2 per year.[6] These targets were met, with total investments reaching EUR 6.1 billion with total project value of EUR 29.7 billion; approximately two-thirds of this activity was in the private sector. Building on this, the EBRD adopted new targets for Phase 3 (2012-2014) which included a financing target of 4.5 to 6.5 billion with a target total project value range of 15 to 25 billion; and a target annual carbon emission reduction range of 26 to 32 million tonnes CO_2. In 2012, EBRD saw 26% of its total investment in SEI projects, thus exceeding its 25% target for the year. Within this year, the Bank invested EUR 2.3 billion into the SEI, which was further broken down to: 32% Corporate Energy Efficiency projects, 18% Sustainable Energy Financing Facilities, 19% Cleaner energy production, 17% Renewable Energy, and 14% on Municipal Infrastructure Energy Efficiency projects.
AFD	Between 2005 and 2010, the cumulative value of commitments reached USD 10.9 billion, USD 3 billion of which had been disbursed as of March 2011. These figures demonstrate the growing significance of the 'climate' issue in AFD's operations, whose share of climate commitments rose from 17% of the portfolio in 2005 to 40% in 2009 and 2010. The AFD Group commits for the period 2012-2016 to annual climate-related funding as follows: - 50 per cent of AFD's foreign-aid funding - 30 per cent of Proparco's foreign-aid funding (Proparco is the subsidiary working with the private sector).
KFW DEVELOPMENT BANK	Main targets are: 30% of all investment (based on financial flows) for the whole bank group overall should be climate change or environment related investment; and 50% of all development investment (based on financial flows), should be climate change or environment related investment. In 2011, environmental and climate change-related commitments made up approximately 60% of KFW Development Bank's total new commitments (USD 3.7 billion out of USD 6.2 billion in total new commitments).

[5] Not all projects are 100% SEI, or climate related, some only have a proportion dedicated to climate; a breakdown can be provided by EBRD.
[6] Sustainable Energy Initiative: Summary - http://www.ebrd.com/pages/digital-publications/flagships/sr11/climate-change-and-energy/sustainable-energy-initiative/exceeding-targets-cutting-emissions.html

2.3 Screening criteria and appraisal tools for climate related finance

The overall value of the climate investment portfolios held by EFIs and IFIs are in the billions, and growing. A number of FIs (including WBG, AFD, and KFW Development Bank) have highlighted the need and adapted their processes to prioritise projects according to their potential to meet climate change targets.

All of the FIs surveyed have some version of a framework in place to guide prospective climate interventions. These range from 'operation strategies' that identify climate change as a key institutional and/or operational goal, through to principles that prioritise climate-specific outcomes and methods that help determine whether proposed measures will contribute to climate protection and/or adaptation and mitigation. Strategies can also be distinguished between those actively promoting/incentivising low carbon technologies and those screening out potentially carbon intensive technologies.

Guidelines and screening tools have been developed by most FIs to appraise climate related investment. However, they are limited in their coverage of sectors and not applied across the whole investment portfolio. EFIs apply their methods systematically across all sectors.

At the same time, work is underway across the range of FIs surveyed to improve existing results-based management frameworks and to tailor these to match climate specific objectives. This includes refining processes to capture information related to the achievement of project-specific objectives, conducting pre-project evaluations and appraisal to assess the project potentials and likely impacts, and developing better indicators to measure climate impacts across investment portfolios.

Some of the main initiatives based on climate change performance guidelines for investment, safeguard measures or screening tools are described in Table 2-2.

Table 2-2 Climate change performance guidelines or screening tools for investment

	Mitigation	Adaptation
World Bank	The Independent Evaluation Group (IEG) is the unit responsible for evaluating the activities of IBRD and IDA, and their progress towards meeting their stated objectives. The WB has developed resources for general use in terms of climate proofing - but these are general guidelines to support project development, as opposed to tools that are required to be applied to projects within the WBG portfolio. The WB is currently developing project-specific approaches to incorporate environmental externalities into project appraisals. These apply GHG analysis to WB investments in the IFC portfolio, but only in the energy, transport, and forestry sectors (WB, 2010). These are expected to be rolled out over 2013-14. The WBG has established Criteria for Screening Coal Projects, limiting financing to cases in which a country has no other options to respond to urgent demands for electricity, and providing that several other conditions have been met and that the process is reviewed by an external advisory committee. The criteria include approaches for including environmental costs in projects analysis.	The WB is also developing/piloting methodologies and tools across the main climate sensitive sectors for climate screening. These include Mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management Projects, and an Urban Risk Assessment tool. It is envisaged that in the near future, screening of projects to reduce their vulnerability to climate change impacts will become part of doing business for the World Bank.
KFW Development Bank	KFW Development Bank's Sustainability Guideline provides guidance in conducting an environmental and social impact assessment (ESIA) and a climate change assessment to address the potential environmental/climate change impacts of projects, as well as the recipient country's commitment to such issues. KFW Development Bank's ESIAs consist of an initial screening for relevant environmental, climate, and/or social impacts; a scoping or assessment of identified consequences and/or risks (whereby projects and programs are categorised based on the degree and scope of expected impact); and the design and implementation of an environmental and social impact study and/or climate change adaptation, or mitigation, assessment. The GHG reduction assessment consists of an evaluation of GHG emissions in the project area/sector and an estimation of the project impacts on these expected emissions. KFW Development	All KFW Development Bank projects, among them adaptation projects, are subjected to a systematic climate change assessment, using a two stage process. This assessment makes sure that the intended effects are not endangered by climate change and that any arising opportunities are utilised. In the first step, an initial assessment is made to roughly understand whether the proposed project is at significant risk of being adversely affected by climate change, or whether there are any opportunities to exploit climate change impacts to the advantage of the project. The assessments only proceed to the more detailed second stage if the initial assessment offers some

	Mitigation	Adaptation
	Bank does not provide any tools or estimation methodologies for baseline setting. KFW Development Bank and GIZ prepare data sets on their projects using the OECD DAC coding. BMZ has the final responsibility to carry out quality assurance and report the data set. All projects are assessed for their viability on their own basis; Rio markets are then attributed to relevant projects (climate finance is not considered a separate funding stream). In addition, for mitigation, KFW Development Bank has an internal definition for energy efficiency projects, which includes both grounds for inclusion and exclusion from the definition of climate finance. This has not been published, but aspects of this definition may be shared on request. Renewables, energy efficiency and transport projects are prioritised to achieve targets.	indication that the project is relevant to climate adaptation. The screening establishes whether there is any indication that a project depends to a significant degree on climate parameters, e.g. wind or precipitation. It also checks whether the adaptive capacity (resilience) of the people or ecosystem can be significantly increased.
IDB	As part of the Environmental and Social Management Report, each operation susceptible of producing significant quantities of GHG emissions estimates the expected annual GHG emissions before approval of IDB financing. This information is generated in the EIA process or by the project team using the GHG accounting tool. It is not critical for the approval decision however it informs the discussions between IDB and borrower on reduction and control of GHG emissions which the Bank encourages under the IDB's Environmental Safeguards Compliance Policy (2006) The IDB has some additional tools that are recommended (or used on an ad-hoc basis) by sector – e.g. IDB Biofuels Sustainability Scorecard, Tourism Sustainability Scorecard for Private Sector Projects, RET Screen (for RE projects). Based on the IDB's Integrated Strategy for Climate Change Adaptation and Mitigation, the IDB uses GHG guidelines for GHG emission intensive sectors which are decision relevant. These set minimum climate change performance criteria in order for Bank clients to comply with a specific GHG emissions intensity and an energy efficiency threshold. By end of 2012 IDB has adopted guidelines for landfills, cement plants, coal-fired as well as oil-and gas fired power plants.	IDB's Disaster Risk Management Policy (2007) requires Disaster Risk Assessment and further steps in the project cycle for operations which are classified as high and moderate disaster risk. IDB addresses the climate change risks for the projects as well as the risks for human life, property and the environment exacerbated by projects based on its Disaster Risk Assessment Policy. Climate change which increases intensity and frequency of hazards is addressed in the screening process. Currently, the procedures of screening, assessment and solutions are revised and extended to refine the classification, take into account the emerging slow onset climate risks as well as the growing knowledge and experience about potential impacts and potential solutions. As part of Climate Change Strategic Action Plan 2012-2015 (CCSAP, 2012), IDB is developing methodological approaches to assess and implement climate resilient alternatives and low-carbon options.

	Mitigation	Adaptation
		The Bank will develop methodological tools to review investments in climate resilience and low-carbon growth. They will include: best practices that integrate climate change considerations into the design, construction and maintenance/operation of infrastructure; decision support planning methods and tools; approaches to assess vulnerability; screening tools to assist with the identification of climate change adaptation and mitigation opportunities; and requirements for accessing/blending Bank resources with other concessional climate finance resources; Providing technical support to design, monitor, report, and verify GHG emission reductions and adaptation measures. The Bank will support the process of designing, monitoring, reporting, and verifying results from adaptation measures.
IFC	IFC quantify gross (absolute) GHG emissions as part of the appraisal process for all direct investments. In addition, IFC also quantifies GHG reductions (net) for all climate-related projects: direct investment, financial intermediaries, and advisory services. IFC developed the Carbon Emissions Estimator Tool (CEET) for estimating project GHG emissions, and though not currently incorporated into financial assessment, these figures are used for internal decision making. IFC carbon emission calculations are well integrated into the projects screening / design process, with investment officers and internal staff (as opposed to external consultants) using the CEET. Recognizing knowledge gaps in how climate change will affect the private sector over shorter time horizons, IFC has published Climate 'Risk and Financial Institutions'[7], a publication that covers climate-related risks material to financial institutions, including commercial banks, institutional investors, and international financial institutions.	In 2008, IFC initiated the Climate Risk Program, a series of pilot studies that analyses climate risks and adaptation options for projects implemented in different sectors and regions.[8] The objective of these studies is to test and develop methods for evaluating climate risks to the private sector and to identify appropriate adaptation responses. This included analysing barriers and gaps preventing evaluation of risks and adaptation options, and understanding the roles of different stakeholders (private and public) in addressing those constraints. However, to date specific tools to assess these risks across the IFC's broader portfolio of activities are not in place or under development.
ADB	**ADB's Safeguards Policy Statement (SPS), 2009:** a consolidated policy that updates and revises three previous documents: the *Involuntary*	Guidelines for climate proofing are required for all projects in the relevant sector, and have thus far only been

[7] IFC Website: http://www1.ifc.org/wps/wcm/connect/ed21d4804a830d65860bff551f5e606b/ClimateRisk_FinancialInstitutions.pdf?MOD=AJPERES
[8] IFC Website: http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/CB_Home/Policies+and+Tools/Assessing+Climate+Risks/

	Mitigation	Adaptation
	Resettlement Policy (1995), the *Policy on Indigenous Peoples* (1998), and the *Environment Policy* (2002), stipulates a screening process for each proposed project as early as possible. This process determines the appropriate extent and type of environmental assessment that will be needed, commensurate with the significance of potential impacts and risks. This includes: • Conduct an **environmental assessment** for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. • Assess potential trans-boundary and global impacts, including climate change. • Use strategic environmental assessment where appropriate. **Safeguard Requirements 1 (Environment)** outlines the requirements that borrowers/clients are required to meet: • *Pollution Prevention, Resource Conservation, and Energy Efficiency* - the borrower/client will avoid, or where avoidance is impossible, will minimise or control the intensity or load of pollutant emission and discharge. In addition the borrower/client will examine and incorporate in its operations resource conservation and energy efficiency measures consistent with the principles of cleaner production. • *Greenhouse Gas Emissions* - the borrower/client will promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner appropriate to the nature and scale of project operations and impacts. • *Analysis of Alternatives* - to the proposed project site, technology, design, and operation (including the no project alternative) in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under	developed for the transport sector. This guidance note presents a step-by-step methodology to help project teams incorporate climate change adaptation into transport sector investment projects These guidelines are applied at the same time as the safeguards review/EIA completion, and influence the classification of the project in the context of the Safeguards Categories. Mission Leaders have been trained in the use of the guidelines, and incorporate them in the process of project design. The ADB is in the process of finalising Guidelines for Climate Proofing Investments in the Electric Power Sector, as well as Guidelines for: Water, Agriculture, and Urban. The projects that undertake climate proofing are included in the climate finance tracking to adaptation.

	Mitigation	Adaptation
	local conditions; and their institutional, training, and monitoring requirements.	
AFD	AFD has developed a project selectivity matrix for selecting projects; this defines exclusion criteria for projects that would not be funded based on a combination of their GHG characteristics and geography. This criterion combines with others in AFD's standard impacts analyses, such as poverty reduction, local employment, and other social or environmental criteria. The approach is tailored to countries' different development levels, and aligns with AFD's mandate. AFD uses this project selectivity matrix to reinforce its image and identity in compliance with its mandates and its primary role, supporting economic and social development. Development and mitigation - A development project contributes to greenhouse gas emissions reduction when the emission reductions it generates are greater than the emissions it produces during its lifetime.	AFD has adopted the OECD's definition relating to adaptation projects: "An adaptation project is a development project that reduces goods, people or ecosystems vulnerability to climate risks". An operational matrix to classify adaptation projects was developed to measure the real impact of the project taking into consideration objectives of the countries' adaptation concerns (e.g. water stress, precipitation, sea level rise…). A case by case approach is taken to assess climate risk and resilience for each project, using multiple metrics. The AFD Group adds criteria and specifications to ensure that projects reduce vulnerability vis-à-vis a proven risk, or increase the resilience of communities or the economy vis-à-vis the risk compared to a business as usual baseline. Unlike mitigation, there is no tool or indicators to measure the impact of adaptation projects funded by the AFD Group. Thus, AFD has decided to operationalize the definition with a crossing of different criteria: (i) existing vulnerabilities on the geography involved and (ii) the type of action based on the vulnerability that it can help reduce or resilience it induces among populations.
EBRD	Within EBRD there is an energy efficiency and climate change team (consisting of more than 30 specialists including engineers, finance specialists, and policy experts), who work with different banking departments on the funded projects. The members of this team screen potential EBRD projects to identify energy saving and carbon reduction opportunities. EBRD are currently in the process of revising/formalising their SEI standards, which define exactly what classifies as 'climate finance'. In addition, the bank is in the process of implementing an extensive MRV	The EBRD energy efficiency and climate change team also review potential projects to identify those that are part/wholly adaption focussed. Climate change adaptation was introduced as an important new component of its strategic energy initiative (SEI) Phase 2. In 2010, the Bank developed a "toolkit" for identifying and managing climate change risks to investments. This includes guidelines for climate change screening and risk

	Mitigation	Adaptation
	system.	profiling, as well as guidance on integrating risk assessment and adaptation into project feasibility studies, environmental and social impact assessments (ESIAs), environmental action plans and water audits. EBRD are in the process of defining a common coding for sectors (common sector categories) to make data comparable and provide further insights into financial flows dedicated to adaptation.
EIB	All projects deemed eligible for potential EIB finance undergo a due diligence process to assess technical, financial and economic performance of the project. This includes an assessment of impact on the environment, as detailed in the Environment Handbook. In addition to the integration of climate impacts within the technical, financial and economic assessment, a specific assessment is made, where relevant, of: • Whether a project has the potential to significantly reduce GHG emissions in a manner consistent with and eligible under the Kyoto Protocol's Clean Development Mechanism (CDM) or Joint Implementation (JI), thereby potentially generating carbon credits; and whether technical assistance (under the Climate Change Technical Assistance Facility – CCTAF) may be required by the promoter to tap this potential. • Whether the carbon footprint of a project is above the Bank's threshold (100kt of CO2-e in absolute terms, or 20kt in relative). Where a project is likely to have a significant carbon footprint, this is assessed by the EIB using its proprietary sector-specific methodologies (cf. EIB Carbon Footprint Manual). The carbon footprint of a project is assessed both in terms of its absolute (or gross) emissions, and its relative (or net) emissions compared to the baseline. The baseline is the likely emissions of greenhouse gases into the atmosphere from an alternative credible source of supply to	The EIB's approach to adaptation finance assessment and tracking requires that the project promoters should identify and apply adaptation measures to ensure the sustainability of their projects[9]. It has in in-house guide that outlines general principles and methodologies that can be followed to build resilience to current climate risks, build adaptive capacity and planning and take action to address future climate risks. It builds on 5 key principles: 1. Identifying critical assets and interdependencies 2. Assessing direct and indirect risks and vulnerabilities to climate impacts 3. Identifying and assessing adaptation measures 4. Implementing adaptation measures 5. Monitoring and performance evaluation.[10]

[9] EIB Statement of Environmental and Social Principles and Standards, 2010
[10] EIB External Adaptation Guidance II, July 2012

	Mitigation	Adaptation
	meet demand of the project. In addition to reporting aggregate absolute and relative emissions, since January 2012, the EIB discloses the carbon footprint assessments (both gross and net) of individual projects with significant emissions upon request. • **Energy efficiency:** Projects that are major users of energy are systematically screened by the EIB to identify energy efficiency opportunities, as well as to ensure the use of best available techniques (BAT) in terms of energy efficiency. Promoters are likewise required to demonstrate that all likely significant opportunities for improving energy efficiency have been explored and will be acted upon where it is cost effective to do so. In certain cases, the EIB can provide technical support for undertaking an energy audit. EIB also has specific eligibility criteria towards carbon intensive industries, as captured in sector lending policies for transport, energy and water. They provide an additional layer of safeguard beyond their standard technical, financial and economic viability tests. In operational terms, the most restrictive concerns coal and lignite power plants, though restrictions also apply to motorways and airports.	

2.3.1 Use of Cost-Benefit Analysis (CBA) for incorporating climate impacts in project appraisal

Most FIs only screen projects in terms of their financial viability. Use of CBA by FIs to **incorporate climate change impacts** is summarised in Table 2-3 (see section 3 for detailed discussion on the use of CBA as tool for incorporating climate change in investment decisions).

Table 2-3 Use of CBA as an options tool for account for climate impacts

FIs	Use of CBA and related tools
World Bank	Evaluation of FI practices – such as from the Independent Evaluation Group of the WBG – indicate that the percentage of Bank projects that are justified by cost-benefit analysis has been declining for several decades, owing to a decline in adherence to standards and to difficulty in applying cost-benefit analysis. Where cost-benefit analysis is applied to justify projects, the analysis is excellent in some cases, but in many cases there is a lack of attention to fundamental analytical issues such as the public sector rationale and comparison of the chosen project against alternatives. Cost-benefit analysis of completed projects is hampered by the failure to collect relevant data, particularly for low-performing projects. The Bank's use of cost- benefit analysis for decisions is limited because the analysis is usually prepared after the decision to proceed with the project has been made.[11]
ADB	ADB has funded two case studies as part of developing guidelines for climate adaptation and climate proofing of proposed projects in the Pacific developing member countries (DMCs), which are extremely vulnerable to climate change, particularly sea level rise. The case studies mainly involved the development of economic models of cost and benefit analysis for the climate proofing of projects under different climate change scenarios, using two ADB-funded road development sector projects in the Solomon Islands and Timor-Leste. The climate-proofing options are analysed using project evaluation criteria, such as the net present value (NPV), the internal rate of return (IRR), and the benefit–cost ratio (BCR). Analyses are done for scenarios (i) without a climate event; (ii) with a climate event, without climate-proofing investment; and (iii) with a climate event, with climate-proofing investment. Calculation of the project's NPV, IRR, and BCR for scenario (ii) considers the truncated project life, the lower benefit profile, and the unchanged or higher operation and maintenance (O&M) costs. Calculations for scenario (iii) consider the higher initial investment cost, the unchanged or higher benefit profile, and the lower O&M costs. Sensitivity analyses with respect to key variables and parameters affecting the discount rate, and project benefits and costs are also carried out. A matrix of multiple criteria determining the level and timing of investments is then prepared to assist the final decision regarding investments in climate proofing.

[11] http://siteresources.worldbank.org/INTOED/Resources/cba_overview.pdf

FIs	Use of CBA and related tools
IFC	In 2008, IFC initiated the Climate Risk Program, a series of pilot studies that analyses climate risks and adaptation options for projects implemented in different sectors and regions.[12] The case studies were undertaken in the following sectors and countries: • Hydropower: in Nepal and Zambia • Agribusiness: in Ghana • Ports: in Colombia • Manufacturing: in Pakistan The objective of these studies was to test and develop methods for **evaluating climate risks to the private sector** and to identify appropriate **adaptation responses**. Cost benefit analysis of adaptation actions to respond to the risks identified has not been undertaken in these studies because of the specific assets and conditions required in order to undertake such analysis. The CBA was done wherever there was sufficient information and risks were high[13]. Common limits found in all the case studies included: • The lack of high quality climate statistics • The lack of understanding of the factors (both climatic and non-climatic) that influence projects performance (e.g. oil palm yield that can be affected by both climatic and non-climatic factors).
EIB	The EIB use economic appraisal as well as financial appraisal to screen projects. The economic appraisal, where appropriate, follows the principles of the cost-benefit analysis (CBA) measuring the net impacts of the project on economic welfare. In some sectors, notably investments motivated by compliance to legislation, cost effectiveness analysis or multi-criteria analysis are used. This range of economic tools takes into consideration the cost for environmental externalities (e.g. carbon, local air, noise or water pollutants). The value has been updated on several occasions subsequently, in light of new evidence, as well as applied more systematically across all relevant sectors of Bank operation. • For fossil-fuel based on electricity production, greenhouse gas emission costs and residual airborne pollution costs are not based on the current market price of EU Allowances, but rather on the Bank's economic price scenario for CO_2 emissions; starting from approximately 30 EUR/t in 2013 and increasing to 50 EUR/t in 2030 in the base case scenario (in 2012 prices), and from 50 to 88 EUR/t in the high price scenario. • For assessing the viability of mature renewable projects, EIB's approach is based on the economic cost of fossil fuel alternatives. The Bank calculates the levelised cost of electricity (LCOE) for the proposed project and its alternative – usually CCGT in Europe, for a 5% discount rate, and evaluates if the renewable project is economically competitive against this alternative. This calculation includes the environmental externalities associated with CO_2 and other pollutants, and an additional benefit related to security of supply.
EBRD	Economic assessments are not made for climate vulnerability or resilience. However, the Bank tries to capture the impact on the low carbon economy in addition to the impact on the total tonnes CO_2 saved by a project. Projects are

[12] IFC Website: http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/CB_Home/Policies+and+Tools/Assessing+Climate+Risks/

[13] See pg. 35 of Climate Risk and Business Ports case study for Colombia http://www1.ifc.org/wps/wcm/connect/98f63a804a830f878649ff551f5e606b/ClimateRisk_Ports_Colombia_Full.pdf?MOD=AJPERES

FIs	Use of CBA and related tools
	assessed under three dimensions: • What extent a project contributes to the low carbon market, and to the structural changes in the market/improvements of the framework for markets (e.g. of emission trading, energy efficiency markets etc.) • What extent an EBRD project (or any related interventions such as technical assistance or policy dialogue) contributes to the strengthening of the institutions and policies that support the low carbon market. • What extent the project demonstrates new and market friendly behaviours, transfer of skills (previously unknown to the market) and can deliver innovative technology or business models or new products. For example, is it an innovative financial product that serves the purpose to reduce emissions and can also be commercially replicated by other member in the market? As a primarily private sector bank, EBRD rarely undertake CBA on projects. EBRD do however sometimes use carbon price in carbon intensive projects during the course of credit analysis; it is driven by the risk considerations. EBRD use a shadow pricing tool to appraise carbon intensive projects in countries covered by the EU ETS to account for climate risk considerations as part of its sensitivity analysis. The Bank looks at sensitivity analysis of the financial viability of the project with various assumptions of the EU ETS allowance price. A range of carbon prices is applied, ranging from the current EU ETS price at EUR 4/5 per tonne to DECC/IEA shadow prices that range from $ 25 – 80 / tonne. However this is not a mandatory bank practice and is applied at the discretion of the reviewing officer. The Bank does not in the course of credit analysis have a requirement to conduct a shadow price of carbon sensitivity analysis for projects outside the EU. Individual departments may do so, but it is not a mandatory Bank policy. A new area where shadow pricing is increasing being applied is when loans are blended with subsidies or other EU funds. In these cases, the Bank is using shadow price of carbon to calibrate subsidy levels in order to reward low carbon investments. The aim of this adjustment is to account for the fact that carbon is not priced or adequately. For example, if a sector is not covered by ETS sector in Ukraine. The aim is to try and structure subsidies that leverage positive behaviours and do not create subsidy dependence investment culture.
AFD	CBA is performed at the project appraisal stage. This includes inputs such as energy efficiency savings, and policy support such as feed-in tariffs. For some major infrastructure projects (e.g. transport or hydropower plants), carbon emissions (compared to the project baseline scenario) are considered as externalities and valued at a certain carbon price. The carbon footprint of a project can be included in the CBA analysis but is not included in the financial analysis.
KFW Development Bank	KFW Development Bank supports options or ideas to ensure climate change is better accounted for in investment decisions and processes – both in terms of accurately assessing risk, and identifying opportunities. Feed-in tariffs are included in the calculation of the return on investment, but not carbon prices. Even though formal processes are not in place, KFW Development Bank believes an economic-based cost/benefit analysis approach with firm criteria should be applied for adaptation assessments, to make these assessments concrete and viable, rather than simply applying subjective analysis approaches.

2.4 Definition and tracking of climate finance

Existing studies have concluded that the complexity of the emerging climate finance architecture exacerbates the challenges for tracking climate change mitigation and adaptation projects. Complexity ranges from definitional issues of 'climate finance' and 'additionality of climate finance' to the source of finance, its governance, and its delivery, involving many actors at all stages. Finance for climate change is sourced from both government budgets and capital markets and can be channelled through various agents, notably bilateral and multilateral finance institutions, development cooperation agencies and the UNFCCC.

It is increasingly important to track and report financial flows that support climate change mitigation and adaptation, to build trust and accountability with regard to climate finance commitments and monitor trends and progress in climate-related investment. Strong leadership is being shown by some FIs, such as the World Bank, to tracks co-benefits at the lowest level of financing information available, even considering individual components of the project, thus adding granularity to the Rio Markers. AFD, EBRD and EIB consider the Rio Markers to be very subjective and that a greater level of detail than a simple "yes/no" against the Rio Marker criteria is needed to measure the impact of projects. For Rio marker 0 (no climate impact) and 2 (principal impact) the classification is pretty straight forward, but one of the challenging issues is how to classify projects which have a 1 as Rio Marker (significant impact). For example, Germany considers only 50% of the project spend as climate finance when Rio Marker is 1, whereas the corresponding rate is 40% for the EU.

Each MDB's and FI's methodology for tracking mitigation finance differs. The numbers reported over time and across FI's by various sources are not easily comparable as shown in Table 2-4. Some studies provide a snapshot of flows and are not updated on a regular basis. When making comparisons between financial institutions it is important to assess how their climate finance definitions vary. The joint MDB approach tries to find commonalities and is an attempt to jointly report on resources mobilised for a set of commonly agreed mitigation activities (see Box 2 1).

Table 2-4 Details on climate finance flows by FIs

USD million	2009	2010	2011
Multilateral Financial Institutions			
World Bank Group			6180[+]
• IFC International Finance Corporation		1,680[a]	1664[+]
• IBRD	4,629[b]		
• IDA International Development Association	466[b]		
EU institutions	691[b]		
EIB European Investment Bank	1,515[c]	2099*	2417[+]
EBRD - European Bank for Reconstruction and Development		482[d]	3400[+]
ADB Asian Development Bank		1,770[e]	2196[+]
AfDB African Development Bank		108[d]	859[+]
IDB Inter-American Development Bank	846[f]		1531[+]
Nordic Development Fund	25[b]		
Multilateral Climate Funds		1,402[g]	
Bilateral financial institutions			
AfD - French Development Agency		3,717[a1]	
		3672*	
BNDES - Brazilian Development Agency		3,149[b1]	
China Development Bank		600[b1]	

USD million	2009	2010	2011
IREDA - Indian Renewable Energy Development Agency		115[b1]	
OPIC - Overseas Private Investment Corporation		95[b1]	
JICA - Japan International Cooperation Agency	6,418[c]1	8,170*	
KFW Development Bank		3,451[d1]	
		1778*	
		2255[h]	3179[h]

Notes

[a] Transitional Committee (2011). The figure is referred to FY 2010 climate operations.

[b] OECD CRS database data with Climate Change Rio Marker (OECD, 2011a). EU Institutions figure consists of projects by the Commission of European Communities and the European Development Fund only.

[c] UNEP (2010)

[d] BNEF (2011). Data represent project finance loans and equity contributions to renewable energy projects only. Note: given that EBRD financing focuses on Central and Eastern EU countries, the figures presented do not refer to "North-South" flows only, but may include those directed towards countries now part of the European Union (e.g. Poland, Slovakia and Slovenia). We consider BNEF numbers as a lower-bound estimate of EBRD climate financing, given that since the launch of their Sustainable Energy Initiative (SEI) in 2006 – aimed specifically at mitigating climate change and improving energy efficiency – they demonstrated a growing engagement in energy efficiency and clean energy related sectors as well as in the development of the carbon market. In 2010, SEI financing reached almost EUR 2.2 billion. Source: EBRD (2011).

With regard to AfDB, bottom-up calculations based on AfDB (2011) suggest that climate-focused projects in the energy sector approved in 2010 account for approximately USD 53.2 million. Some of these projects may have multiple objectives. AfDB is showing a growing commitment in helping African countries cope with climate change. For instance, in 2009 it developed its Strategy of Climate Risk Management and Adaptation (CRMA), which resulted in a 2011-2015 action plan that includes investments of approximately USD 8 billion by 2015. The plan envisaged the contribution of AfDB's partners, multilateral and bilateral entities as well as the private sector. Source: AfDB web site: http://www.afdb.org/.

[e] ADB (2011). 2010 data include USD 1.76 billion of clean energy investments (renewable energy and energy efficiency activities) and USD 10 million related to the replenishment of ADB's own Climate Change Fund.

[f] IDB online project database accessed December 2010. Includes approved amount totals for projects approved in 2009 in the "Climate Change and Renewable Energy" Topic Area, supplemented with additional 2009 projects that do not appear in this topic area but are referenced in the 2009 Annual Report, or appear in a database search on the keyword: climate change (data on these projects are also taken from the project database).

[g] Figure is indicative only, aggregating data from a number of different time periods. See Appendix B for detailed sources.

[h] KFW Development Bank submission for CPI Climate Finance Survey

[+] Joint Multilateral Development Bank Report on Mitigation Finance, (June 2012)

*UNEP (2011). Data are for 2010

[a1] Transitional Committee (2011) and AFD (2011 a, b). Data refer to climate finance commitments. Of the USD 3,717, USD 3,450 was dedicated to mitigation projects and USD 518 to adaptation interventions (USD 265 million of which having both co-benefits for mitigation and adaptation). Mitigation interventions are directed towards the following regions: Sub-Saharan Africa, Latin America, Asia and the Pacific, The Caribbean, Middle East and Northern Africa, Multi-countries. In 2010, more than a third of commitments was focused in the Latin America region. Adaptation interventions are directed towards the following regions: Sub-Saharan Africa, Latina America, Asia and the Pacific, The Caribbean, Middles East and Northern Africa. 46% of the 2010 commitments were focused in Asian countries.

[b1]BNEF (2011). Data represent project finance loans and equity contributions to renewable energy projects only. Investments in large hydro, supply chain (e.g. component manufacturing, feedstock production and recycling), and energy efficiency projects are excluded from the BNEF calculations, as well as those in renewable energy companies. Loans from commercial lenders and equity provided by other investors are also excluded. Data are based on deals recorded on the BNEF Desktop, and deals disclosures in annual reports; for additional information on the methodology followed by BNEF see BNEF (2011).Chinese Development Bank contributions are likely to be higher than those reported. In fact, although USD 600 million was confirmed, the Bank announced USD 36 billion in credit lines to low-emitting energy manufacturers.

[c1]UNEP (2010). Data are for 2009

[d1] Transitional Committee (2011)

Box 2-1 Joint MDB approach for mitigation and adaptation finance

A group of MDBs/FIs (AfDB, ADB, EBRD, EIB, IDB, WB, IFC) has recently developed a joint approach to improve tracking of mitigation and adaptation finance. Each MDB methodology of tracking climate finance is currently different so this is an attempt to jointly report on resources mobilised for mitigation activities that are commonly agreed.

The following principles characterise the joint MDB mitigation approach:

- Activity based: focuses on the type of activity to be implemented, not on its purpose, sources of financial resources or actual results.
- Classification is based on ex-ante project implementation.
- An activity can be a project or a project component: this approach aims to provide data granularity by providing breakdown of projects components.
- The joint approach measures financial flows, not GHG emission reduced by the investment.

MDB Mitigation Finance According to the Joint Approach, 2011 (USD millions)

MDB	MDB resources		External resources	
	Investments and technical assistance	Policy-based instruments	Investments and technical assistance	Policy-based instruments
AfDB	859	-	185	-
ADB	2,196	-	222	-
EBRD	3,400	-	132	-
EIB	2,417	-	70	-
IDB	1,091	440	168	-
IFC	1,664	-	40	-
WB	4,592	1,588	411	-
TOTAL	**16,219**	**2,028**	**1,228**	**-**

MDB Mitigation Finance According to the MDBs' Methodologies (when Different), 2011 (USD millions)

MDB	MDB resources		External resources	
	Investments and technical assistance	Policy-based instruments	Investments and technical assistance	Policy-based instruments
AfDB	925	-	185	-
IDB	1,256	860	169	-
IFC	1,671	-	40	-
WB	5,379	1,588	411	-

Source: http://climatechange.worldbank.org/sites/default/files/MMF_2011_version_21.pdf

The following principles characterise the joint MDB adaptation approach:

- It is purpose, context and activity based. A project activity must fulfil three design process criteria for finance to be reported: context of climate vulnerability, statement of purpose to address climate resilience and link project activities to the context of climate vulnerability.
- It follows a conservative approach to prevent the mislabelling of development activities as adaptation. Activities that do not explicit meet all the above criteria are not included in reporting.
- Project activities should reflect at least one of the following adaptation categories, reflecting the broad range of mandates of MDBs:
  - Addressing current drivers of vulnerability
  - Building resilience to current and future climate risks
  - Incorporation climate risks into investments
  - Incorporating management of climate risks into plans, institutions and policies
- While fulfilling one of the above adaptation categories, project activities should also avoid inadvertent increases in vulnerability of systems or social groups,
- Recognising that adaptation activities can never be exhaustive, and the primary test will be whether a project can demonstrate purpose, vulnerability context and activity response. Each MDB may develop its own sector coding guidance, reflecting is specific mandate and sectoral/geographical interests.

MDB Adaptation Finance According to the Joint Approach, 2011 (USD millions)

MDB	MDB resources		External resources	
	Investments and technical assistance	Policy-based instruments	Investments and technical assistance	Policy-based instruments
AfDB	593	-	2	-
ADB	585	-	172	-
EBRD	181	-	16	-
EIB	225	-	65	-
IDB	13	275	1	3
WB	2,080	224	85	-
TOTAL	**3,677**	**499**	**341**	**3**

Source: http://climatechange.worldbank.org/sites/default/files/Joint%20MDB%20Report%20on%20Adaptation%20Finance%202011.pdf

FIs rely on the use of Rio Markers and internally developed frameworks for tracking climate related activities. Tracking defers to defining, measuring and reporting climate related investments. BFIs have developed and used methodologies based on the Rio Marker system since 2009.[14] In addition, 19 national development banks used a very similar methodology for their International Development Finance Club (IDFC) report.[15]

The summary of the main approaches used are summarised in Table 2-5.

[14] see detailed methodology in UNEP BFI reports 2009-2012
[15] see report for the methodology http://www.idfc.org/Downloads/IDFC_green_finance_mapping_report__2012_06_14.pdf

Table 2-5 Climate finance tracking systems

	Mitigation	Adaptation
WB	The World Bank's internal tracking system for Climate Finance tracks co-benefits at the lowest level of financing information available, even considering individual components of the project, thus adding granularity to the Rio Markers. The WB published a detailed Typology of Activities with Climate Co-Benefits by WB Sector. For example, if only $10m of a $100m power project tackles energy efficiency, then only $10 million will be recorded as having mitigation co-benefits. The WB is also part of the MDB group on harmonisation of climate finance tracking.	
	Activities with Mitigation Co-benefits • Rehabilitation of existing power plants to decrease GHG emission intensity. • Replacement of existing power plant with more efficient facility. • Improvement of energy efficiency in end-use -- in buildings, agriculture, industry and municipal services. • Improvement of energy efficiency through norms, building codes, fuel efficiency standards, regulatory support, awareness and institutional strengthening (incl. capacity building). • Improvement of utility scale energy efficiency through efficient pricing (subsidy rationalisation, end user tariffs, and regulations on generation, transmission, or distribution), energy use, and loss reduction. • Efficient energy market operations. • Strengthening the capacity of institutions to plan for low-carbon growth and environmentally sustainable energy supply. • Waste heat recovery (including co-generation). • Reduction of gas flaring. • Dedicated finance (including credits and guarantees) directly or through intermediaries for promoting energy-efficiency (investments or capacity building). • Pilot programs on above energy efficiency activities.	Activities with Adaptation Co-benefits • Taking account of climate variability and change in planning and designing future energy supply mix. • Design and application of new design criteria and technical standards in planning location, and construction of power generation facilities in order to respond to CC&CV. • Reinforcement or establishment of new services for the energy and mining sectors to respond to increasing frequency in extreme climate events. • Climate adaptation-related advisory services, regulatory support.

<table>
<tr><th></th><th>Mitigation</th><th>Adaptation</th></tr>
<tr><td>IFC</td><td colspan="2">The IFC website offers details guidance on what it considers to be “climate-related” from its IFC Definitions and Metrics for Climate-Related Activities[16]. The IFC is also part of the MDB group on harmonisation of climate finance tracking for mitigation and adaptation.</td></tr>
<tr><td></td><td>‘Mitigation implies either reduction in emissions of GHG into the atmosphere or absorption of them from the atmosphere. Most reductions are measured against a “no-project” or BAU baseline’. IFC has project categories for direct and indirect mitigation. To scale-up mitigation impacts through all private sector interventions available, IFC also promotes indirect mitigation where activity by an IFC client leads to GHG reductions by third parties.</td><td>‘Adaptation implies reduction in the vulnerability of human or natural systems to the impacts of climate change and climate variability related risks by maintaining or increasing adaptive capacity and resilience’.
Adaptation projects are IFC investments or advisory services that incorporate information about climate change risks into decision-making (ex ante) and, by directly addressing identified risks, vulnerabilities, or impacts to:
a) reduce the risk, exposure or sensitivity to climate change
b) increase climate resilience
c) build problem solving capacity to develop responses to identified risks, vulnerabilities or impacts
d) address impacts directly linked to climate change
while avoiding inadvertent increases in vulnerability of systems or social groups, and avoiding placing assets or systems in harm’s way.</td></tr>
<tr><td>ADB</td><td colspan="2">Information on reporting/tracking of climate activities is available from a wide variety of sources including the ADB Annual Report, Development Effectiveness Review, and Clean Energy Investments report. The ADB did not provide information on the distinctions between, and definitions for, environment themed projects, climate change interventions, clean energy related project, mitigation, and adaptation (in the context of its existing targets and indicators). However, it is important to note that for tracking climate finance, the ADB are using the MDB definitions and approach. ADB confirmed that this is an evolving space and that they are developing more specific definitions in that context.

The ADB use the Rio Markers as a reference point but find that they are limited in terms of their applicability for adaptation, particularly in terms of including climate proofing of infrastructure projects. The ADB is using a modified version for that purpose, and discussions of the Rio Markers are part of overall MDB collaboration on climate finance tracking. ADB has only submitted climate finance information using the MDB methodology, and will use this methodology going forward. The main differences between the FIs are around accounting for sustainable transport and forest and land use projects.</td></tr>
</table>

[16] IFC website: http://www1.ifc.org/wps/wcm/connect/534495804a803b32b266fb551f5e606b/IFC+Climate+Definitions+2012_final.pdf?MOD=AJPERES

<table>
<tr><th></th><th>Mitigation</th><th>Adaptation</th></tr>
<tr><td>IDB</td><td colspan="2">The IDB are committed to the development of a broader suite of sustainable indicators as discussed at Rio +20, and believe that these will be more useful than the Rio Markers system.

The Bank has adopted, together with the sustainable energy and other environmental sustainability investments for the calculation of the achievement vis-a-vis the target of 25% by 2015. This work will be coordinated under the MDB group on harmonisation of climate finance tracking. The main differences for the IDB's own calculations (higher spend on mitigation) vs. the MDB agreed methodology are:
• The IDB includes energy efficiency in greenfield investments (based on the use of 'beyond standard technology', but there is no definition or guidance on how 'non-standard' is determined)
• The IDB includes support for land tenure rights (in the belief that land title contributes to mitigation of emissions due to avoided deforestation)</td></tr>
<tr><td></td><td>Activities that lead to reduced emissions over the baseline or business as usual, and those activities that increase carbon sources and sinks. This includes low-carbon transport systems (mass transit, non-motorized transport, freight logistics, railways, waterways transport, short sea shipping); transport-based urban development (re-densification of urban centres, dense growth, multiple land-use); renewable energy and bioenergy (electricity, heat or fuel production); increased energy efficiency (substitution of technologies or processes in end-use sectors, new cogeneration systems, new energy-efficient buildings); reforestation; avoided deforestation (protected areas, sustainable forest management, titling); low-carbon agriculture and cattle-raising; solid or liquid waste management that reduces methane emissions and/or converts waste to energy; reduction of fugitive methane emissions in the oil and gas sectors; changes in the chemical processes of specific industrial subsectors leading to reductions of greenhouse gas emissions that are independent from energy use; support for manufacturers of low-carbon technologies; support for the preparation of national GHG emissions inventory systems; capacity building to support policy and economic analyses related to mitigation actions; and, support for needed changes in legislation to implement mitigation activities.</td><td>Activities that increase the capacity of human and natural systems to adapt to a changing climate, including activities to close current "adaptation deficits" (where countries have regions or sectors that are currently vulnerable to climate events), and to increase adaptive capacity of human systems and resilience of natural systems; diffusion and dissemination of technologies for: i) resilient agricultural production, ii) the conservation and protection of coastal zones, iii) the prevention of natural disasters or to minimize impacts from climate-related natural disasters; the provision of health services for those disease vectors that will be affected by climate change (e.g. malaria and dengue); climate change vulnerability assessments; technical support and capacity building for climate change adaptation-related policy and economic analyses; and, improved capacity for emergency prevention and preparedness for climate-related disasters.</td></tr>
<tr><td>EIB</td><td>The EIB reporting indicators for mitigation are defined primarily at sector level, and are broadly consistent with the joint MDB</td><td>Adaptation projects are tagged when they intended primarily as measures taken specifically to anticipate climate change, when these</td></tr>
</table>

	Mitigation	Adaptation
	reporting guidelines.[17] However, the Bank applies partially stricter thresholds within some sectors, notably energy efficiency. This threshold has been used to distinguish between routine asset replacement projects, which inevitably involve a gain in energy efficiency, and projects undertaken primarily to save energy. The EIB's climate action sector list differs from the joint MDB climate action typology, only by nuclear energy tracking. Moreover, the thresholds and definitions of the sectors activities are also different. The EIB considers the joint MDB reporting as a step in the right direction to ensure regular communication on climate-related spend. Once a project receives investment, the Bank does not differentiate which projects are 'climate action' on their website.[18]	measures either exceed €20 million in value or account for at least 50% of the total project cost.
EBRD	The EBRD have developed a system to track climate change investment which is in line with the joint MDB **mitigation** approach and definitions. The EBRD welcome the joint methodology as it will ensure all MDBs are tracked and reported in a similar format for viable comparisons across the market.	EBRD follows the Joint MDB Approach, thus is able to identify the proportion of its investment which is dedicated to adaptation.
AFD	Since 2007 AFD has been progressively developing robust criteria and tools to classify 'climate' projects. AFD tracks the Rio Markers for all of its projects, but does not use them for tracking climate-related investments.	
	A development project contributes to greenhouse gas emissions reduction when the emission reductions it generates are greater than the emissions it produces during its lifetime. This definition is used along with a list of eligible sectors for tracking mitigation projects. AFD's financing – whether direct or via lines of credit – covers a wide range of sectors. AFD tailors its climate-related operations to each of its major regions of intervention.	AFD has adopted the OECD's definition regarding the contribution of development projects to the adaptation of countries to climate change: "An **adaptation project is a development project** that reduces society's vulnerability to climate risks". An operational matrix of criteria to classify 'adaptation' projects was also developed, which enables focused accounting on the real impact of funding for adaptation projects according to the type and the level of vulnerability concerned (e.g. water stress, precipitation, sea level rise).
KFW	For climate flows to developing countries, Rio Marker 1 or 2, in	All KFW Development Bank projects, among them adaptation

[17] The full list is available in Annex 1 of the Bank's report on climate strategy under the External Lending Mandate (http://www.eib.org/infocentre/publications/all/eibs-climate-strategy-outside-the-eu.htm)
[18] BankWatch interview

	Mitigation	Adaptation
Development Bank	combination with the new DAC adaptation definition is used. KFW Development Bank and GIZ prepare data sets using the OECD DAC coding based on their projects. BMZ has the final responsibility to carry out quality assurance. The data set is reported once a year to the OECD by the Federal Statistical Office. All projects are assessed for their viability on their own basis; Rio Markers are then attributed to relevant projects (climate finance is not considered a separate funding stream). Germany account for 50% of the project commitment when Rio Marker is 1 attributed. In addition, for mitigation, KFW Development Bank has an internal definition for energy efficiency projects, which includes both grounds for inclusion and exclusion from the definition of climate finance. This has not been published, but aspects of this definition may be shared on request.	projects, are subjected to a systematic climate change assessment, using a two stage process. KFW Development Bank applies a well-defined set of monitoring instruments to ensure projects stay on track (both financially and with regards to implementation). If KFW Development Bank have reason to believe a project is not on-track, then KFW Development Bank staff will visit the project to conduct an assessment.

2.5 Greenhouse gas accounting

A number of different approaches are used by MDBs and FIs to assess greenhouse emission of their projects. Since December 2012, Ten International Financial Institutions (IFIs) – ADB, AFD, EBRD, EIB, IDB, IFC, KFW Development Bank, NEFCO, NIB, and WB – are supporting a framework that provides general principles to harmonise greenhouse gas emissions reporting and accounting. Known as the IFI Framework for a Harmonised Approach to Greenhouse Gas Accounting, it represents an important first step to reporting IFI mitigation impacts, as well as committing to further harmonisation going forward.[19]

Methodologies for calculating absolute footprints are widely acceptable and there is a common understanding. However, the calculation of relative footprints use different methodologies as they monitor relative emission in different ways and have different system boundaries to calculate their baselines.

Most FIs (ADB, EIB, EBRD, IDB) have thresholds (100kt CO_2 eq.) for applying carbon footprinting methodologies (the IFC is the exception). New methods to calculate GHGs are in the pipeline, but most FIs apply them selectively to energy, transport, and forestry sector projects.

The effectiveness of climate related investment can be assessed by developing a methodology for measuring its GHG footprint at project appraisal stage and also by including it in project tracking systems as a standard indicator. Currently, only AFD measures the carbon footprint of different types of mitigation projects, from project appraisal through to investment and operation.

The EBRD has assessed and reported on the GHG impact of its direct investments (both loans and equity) since 2003. Since 2008, it has had an explicit objective of promoting the reduction of project-related GHG emissions, and it requires an assessment of a GHG baseline and target for all new projects with significant GHG emissions. The EIB has published a guidance note with a methodology for measuring the impact of its projects on GHG emissions. The IFC has developed guidance for calculating GHG impact for use by project sponsors and internal evaluations. This includes a transparent online tool that builds on the AFD's methodology.

A list of existing tools and methods used by FIs are provided in Table 2-6.

Table 2-6 GHG accounting or carbon footprint tools used by FIs

FIs	Description
WB	The World Bank has developed tools and methods to assess GHG emissions from its investment lending operations in the transport, energy, and forestry sectors, and is expected to make GHG Analysis a business requirement from FY13/14.
IFC	IFC started measuring its portfolio greenhouse gas (GHG) emissions since February 2009. IFC quantify (and starting in 2012 will report) gross (absolute) GHG emissions for all direct investments. In addition, IFC also quantifies GHG reductions (net) for all climate-related projects: direct investment, financial intermediaries, and advisory services. This is different from other IFIs that only quantify GHG emissions above a certain threshold of emissions. There is as yet no requirement for carbon footprint calculations to be incorporated into investment decisions within the IFC (i.e. through a shadow cost of carbon).[20] This Excel-based calculator, which is available online, was derived from the AFD's Carbon Tool, and it is consistent with the World Resources Institute/World Business Council for Sustainability Development (WRI/WBCSD) GHG Protocol. It calculates baseline and emissions after the project intervention and takes into account both direct (Scope 1) and indirect (Scope 2) impacts. Since February 1, 2009, the IFC has required the estimation of GHG emissions for all its new direct investments. It also plans, as a

[19] http://climatechange.worldbank.org/sites/default/files/IFI_Framework_for_Harmonised_Approach%20to_Greenhouse_Gas_Accounting.pdf
[20] From Interview with IFC Staff on 07-08-2012.

FIs	Description
	second phase, to assess activities supported through financial intermediaries. Moreover, it is also developing measures of GHG intensity.
AFD	The AFD has developed a tool and a standard methodology to measure the carbon footprint of different types of mitigation projects, from project appraisal through to investment and operation. Building upon ADEME's Bilan Carbone®, the carbon footprint tool is Excel-based and aims to be simple and usable by everyone. The carbon footprint tool has been used by the AFD since 2007. Between September 2010 and February 2011, an updated version was developed in order to make it coherent with the IFC's tool and other international standards (e.g., International Energy Agency, ISO), as well as to update the old database to include additional industrial activities and sectors.
ADB	Other than the requirement that projects with estimated annual emissions over 100,000 tonnes eq. to quantify Scope 1 and Scope 2 emissions, there are no general requirements for GHG emission reporting across the ADB portfolio. A report from the ADB's Independent Evaluation Department (IED) found that data and tools to support CO_2 impact analysis in the transport sector are inadequate to address emerging public policy analysis needs. This gap is distinctly evident in ADB's project appraisal processes. The IED completed a study on Reducing Carbon Emissions from Transport Projects (2010) which developed a new set of CO_2 impact analysis tools. It reviews existing global research literature on CO_2 estimation methods and factors for various transportation project types and develops a new set of CO_2 impact analysis tools. These methods and factors were synthesised and applied to data drawn from project appraisal reports, feasibility studies, and other sources for 14 projects to derive indicative CO_2 footprint and savings indicators by project type.
KFW	Each year KFW Development Bank calculates the GHG emissions (Mt CO_2/pa) of its projects and assesses whether there are any opportunities to reduce these emissions. These calculations comply with the harmonised approach to project-level greenhouse gas accounting, a framework of international finance institutions to which KfW Development Bank is committed to. The Tool for Calculating GHG in Solid Waste Management (SWM-GHG) was developed by KFW Development Bank and GIZ.
IDB	The IDB has developed accounting tools to screen sector loan investments for GHG emissions, and has applied these tools to calculate emissions for projects approved in 2009, 2010, 2011and 2012. This includes public and private sector loan investments that fall under the environmental impact category A and B and belongs to one of seven sectors causing substantial GHG emissions: agriculture, energy, industry, tourism, transport, urban development, and water and sanitation. The Bank uses the information in the project cycle, and reports externally aggregated GHG accounting data for the operations approved in the respective year. The bank reports gross emissions (the footprint) as well as net emissions (i.e. emission reductions by respective projects). IDB is part of a working group of international financial institutions (IFIs) committed to harmonising accounting for GHG emissions associated with project investments. At a March 2011 meeting of the IFIs' Carbon Footprint Working Group, a comparison of greenfield and expansion project calculations based on the different methodologies and tracking tools found no major discrepancies among the different instruments. Differences mainly stem from the diverse data requirement of the tools and some variations in calculation methods.

FIs	Description
EBRD	The EBRD's methodology for assessment of GHG emissions provides guidance to consultants working on EBRD-financed projects and is publically available. Assessment methodologies for specific sectors are provided, and are largely based on approaches recommended by the 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories and the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories. In many cases, it uses the WRI/WBCSD GHG Protocol[21] for its sector guidance.
EIB	The EIB has developed Methodologies for the Assessment of Project GHG Emissions and Emission Variations, which is available online. The objective of the methodologies is to assess the scope 1 and 2 GHG emissions of the projects financed by the EIB and to assess any emission variations compared to a baseline, referred to as 'relative emissions'. The methodologies are based on the IPCC guidelines and the WRI/WBCSD GHG Protocol. Currently this methodology does not include a spread sheet based calculation tool. In January 2009, the EIB launched a 3-year pilot exercise to assess the carbon footprint induced by the projects the Bank finances, with the aim of gaining a better understanding of its contribution to global GHG emissions. As part of the pilot, sector-specific assessment methodologies have been developed internally. The aim has been to develop a robust and practical guide for EIB staff undertaking the pilot footprint calculations.[22] Three types of emission are now routinely calculated during the appraisal of projects above the threshold, supported through investment loans and large framework loans: 1. Absolute emissions – a project's absolute GHG emissions are the total for a typical year of operation (i.e. not including commissioning or unplanned shutdowns). 2. Baseline emissions – the project baseline is the expected alternative means to meet the output supplied by the project. Where possible, this choice of baseline provides consistency with the cost benefit analysis of projects. 3. Relative emissions – a project's relative emissions is the difference between the absolute project emissions and the baseline scenario emissions. It can be both a positive and a negative figure. Emissions are assessed for one average fully operational year, ex-ante (at the project appraisal). This quantification period applies to the absolute project emissions and to the baseline project scenario.

2.6 Areas of excellence (recommendations)

Most FIs are excelling in certain aspects of mainstreaming climate change in the investment decision process such as appraisal criteria, GHG accounting and sector/activities definition. It is worth noting the strengths of each FI in order to share best practices and set high standards for the rest of the FI to follow. Each tool as used by an FI is very good at a particular element. Each institution has luckily chosen a different area to 'specialise' or have the best method/tool and have built strong capacity in that area. This is mainly dictated by their mandate and strategic priorities. These areas of excellence are discussed below and summarised in Table 2-7 (areas of excellence are shaded for each FI).

EIB

Mainstreaming of climate change considerations in EIB operations is an on-going process that dates back to 2001. Over the past decade, the EIB has developed a number of sector strategies (in

[21] The Greenhouse Gas Protocol (GHG Protocol) was jointly convened in 1998 by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). http://www.ghgprotocol.org/about-ghgp/about-wri-and-wbcsd

[22] EIB's Pilot Carbon Footprint Exercice - http://www.eib.org/attachments/strategies/footprint_summary_of_the_methodologies_en

particular Energy, Transport and Water) which take into consideration climate change mitigation and adaptation issues. The EIB only finances projects that fulfil the requirements described in the EIB Environmental and Social Statement and Handbook.

According to the characteristics of an individual project, the EIB requires that a number of good practices are adhered to at appropriate stages in the project cycle in order to ensure that climate change is given adequate and appropriate consideration during the design, implementation and operation of projects. The climate change-related part of the appraisal process aims to make a determination on the following:

- Whether a project has the potential to significantly reduce GHG emissions in a manner consistent with, and eligible under, the Kyoto Protocol's Clean Development Mechanism (CDM) or Joint Implementation (JI), thereby potentially generating carbon credits; and whether technical assistance (under the Climate Change Technical Assistance Facility – CCTAF) may be required by the promoter to tap this potential
- Whether a project may be vulnerable to climate change
- Whether the carbon footprint of a project is above or below 100kt of CO_2-e.

Environmental externalities are incorporated within two main economic appraisal techniques employed by the Bank: cost-benefit analysis and cost effectiveness. For power or heat generation, with broadly homogenous outputs, the analysis focuses on the levelised cost per unit of energy produced. Environmental externalities are included as a cost and hence penalise relatively polluting or carbon-intensive generation technologies.

EBRD

The EBRD has assessed and reported on the relative GHG impact of its direct investments (both loans and equity) since 2003. Since 2008, the EBRD has had an explicit objective of promoting the reduction of project-related GHG emissions, and it now requires a GHG baseline assessment and target for all new projects with significant GHG emissions.

It is also the only FI to capture not just the impact on the total tonnes CO_2 saved by a project but also the impact on the low carbon economy.

The Bank has toolkits for identifying and managing climate change risks to investments. This includes guidelines for climate change screening and risk-profiling, as well as guidance on integrating risk assessment and adaptation into project feasibility studies, ESIAs, environmental action plans and water audits.

ADB

The ADB's main leadership is in the development of guidelines for climate proofing. These guidelines are applied at the same time as the safeguards review/EIA completion, and influence the classification of the project in the context of the Safeguards Categories.

Guidelines for climate proofing investments in the transport sector: road infrastructure projects (August 2011)[23] - This publication, presents a step-by-step methodology to help project teams incorporate climate change adaptation into transport sector investment projects. The information presented in this Guidelines draws in part from the existing climate change and transport literature and knowledge. It also draws from a number of projects that the team of consultants supported over the course of a year in Cambodia, the Solomon Islands, and Timor-Leste. This operational support allowed the consultants to test tools for designing the adaptation methodology in real-world operations to ensure its relevance to transport sector practitioners.

The ADB is in the process of finalising Guidelines for Climate Proofing Investments in the Electric Power Sector (to be released in 2012), and is also in the process of developing guidelines for water, agriculture, and urban development.

[23] Guidelines for Climate Proofing Investment in the Transport Sector Road Infrastructure Projects , ADB (2011) http://www.sefifrance.fr/images/documents/basdguidelines_climate_proofing_roads.pdf

WB

The World Bank's main leadership is building consensus among MDBs in the area of classification of projects and tracking climate finance. Detailed Typology developed for Adaptation and Mitigation co-benefits, along with an accounting methodology has already been developed (provides additional guidance than the list developed by the Joint MDB working group).

For climate proofing, the World Bank has toolkits for mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management Projects, as well as an Urban Risk Assessment tool.

IDB

IDB belongs to the core group of MFIs and European DB, and has incorporated GHG accounting in its routine operations since 2012. IDB has published gross and net GHG emissions for the approved portfolios since 2009.

Leads in the development of minimum climate change performance guidelines for investments in GHG emissions-intensive sectors including fossil fuel power plants (coal as well as oil and gas fired), industry sectors and landfills. These set minimum climate change performance criteria for Bank-client compliance

IDB addresses the climate change risks for the projects as well as the risks for human life, property and the environment exacerbated by projects based on its Disaster Risk Assessment Policy.

Based on existing policies for environmental and social compliance as well as disaster risk policies, IDB incorporates GHG emission impacts as well as climate change risks into the project cycle.

IFC

The IFC's main leadership is in the calculation of portfolio-wide GHG emissions. This is completed as part of the appraisal process (though not in financial assessment) of all investments apart from financial intermediaries and advisory services. The IFC developed the Carbon Emissions Estimator Tool, which is used by investment officers and internal staff in the project screening/design phase and for IFC reporting.

IFC Performance Standards are used by all of the WB Group (for public/private and private sector projects), and include a review (in a systematic and documented manner) of the potential environmental and social risks and impacts of the project to be financed to determine the need to:

(i) Eliminate or minimise (mitigate) the identified risks and impacts
(ii) Modify the project plan
(iii) Conduct further focused assessment.

The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities.

AFD

AFD has invested significant resources in the development and implementation of its carbon footprinting approach and undertakes a carbon footprint of all projects in its portfolio.

AFD uses a qualitative method to determine whether or not the project will ultimately reduce GHG emissions. Three broad categories of projects are concerned:

- Budget support (to countries or local authorities)
- Credit lines dedicated to finance renewable energy or energy efficiency investments
- The actions of capacity building

The Carbon Footprint Tool enables the AFD Group to make robust classifications of its climate change mitigation projects. AFD's operational procedure manual prescribes doing a carbon-footprint estimate as early as possible during the project review phase.

AFD includes a greater number of quantitative factors in its CBA than some other financial institutions.

KFW Development Bank

KFW Development Bank has a strong governance process, with monthly reporting to the Board on progress against climate targets. KFW Development Bank is performing strongly, with 60% of all current KFW Development Bank Entwicklungsbank projects having environment or climate change characteristics

Table 2-7 Areas of excellence for mainstreaming climate change

	Screening criteria and appraisal tools for climate related		Definition and tracking of climate finance	Greenhouse gas accounting
	Mitigation	**Adaptation**		
WB	The WBG has established Criteria for Screening Coal Projects, limiting financing to cases in which a country has no other options to respond to urgent demands for electricity, and providing several other conditions have been met and the process reviewed by an external advisory committee. These criteria include approaches for including environmental costs in projects analysis.	Methodologies and tools are being developed/piloted across all climate sensitive sectors (Agriculture, transport, energy, built environment) for climate screening. It is envisaged that in the near future, screening of projects to reduce their vulnerability to climate change impacts will become part of doing business for the World Bank	Use Rio Markers The World Bank's internal tracking system for Climate Finance tracks co-benefits at the lowest level of financing information available, even considering individual components of the project, thus adding granularity to the Rio Markers. Part of joint MDB group on harmonisation of climate finance	The World Bank has developed tools and methods to assess GHG emissions from its investment lending operations in transport, energy, and forestry sectors, and is expected to make GHG Analysis a business requirement from FY13/14.
IFC	There is no current systematic use of CBA tools across IFC portfolio to incorporate climate considerations in investment decisions. IFC quantify (and starting in 2012 will report) gross (absolute) GHG emissions for all direct investments. In addition, IFC also quantifies GHG reductions (net) for all climate-related projects: direct investment, financial intermediaries, and advisory services.	In 2008, the IFC initiated the Climate Risk Program, 5 pilot studies to evaluate climate risks to the private sector and identify appropriate adaptation responses. These are: Hydropower (Nepal and Zambia), Agribusiness (Ghana), Ports (Colombia) and Manufacturing (Pakistan). The pilot studies provided recommendations on adaptation actions within mid and long-term financial and operational plans.	Do not use Rio markers The IFC has a list of project/investment types internally that they classify as 'climate relevant'.	The IFC developed the Carbon Emissions Estimator Tool (CEET), which provides investment departments with a simple way to estimate actual project emissions based on information commonly collected during project appraisals, as well as enabling the calculation of changes in GHG emissions by comparing project emissions to alternate project options/designs and reference scenarios. Uses IPCC and WRI/WBCSD GHG Protocol guidelines.
EBRD	In 2010 the EBRD developed a 'toolkit' for identifying and managing climate change risks to investments. This includes guidelines for climate change screening and risk-profiling, as well as guidance on integrating risk assessment and adaptation into project feasibility studies, environmental and social impact assessments, environmental action plans and water audits. This toolkit will be used to screen all potential investments for sensitivity to climate change. Carbon intensive projects in non-EUETS/carbon market countries are subject to sensitivity analysis of the financial viability of the project with various assumptions of the market carbon price. Climate change adaptation was also introduced as an important new component of		Do not use Rio markers. The EBRD has a system to track climate change investment which is in line with the joint MDB mitigation approach and definitions.	The EBRD uses the Methodology for Assessment of Greenhouse Gas Emissions to assess the GHG emissions of its direct investments (loan and equity).

	Screening criteria and appraisal tools for climate related		Definition and tracking of climate finance	Greenhouse gas accounting
	Sustainable Energy Initiative (SEI) Phase 2. The EBRD has a dedicated team of over 30 experts who work with banking departments to screen potential projects to identify energy savings opportunities and adaptation projects/components of projects			
EIB	All projects deemed eligible for potential EIB finance undergo a due diligence process to assess technical, financial and economic performance of the project. This includes an assessment of impact on the environment, as detailed in the Environment Handbook. The EIB uses economic appraisal as well as financial appraisal to screen projects. The economic appraisal involves either applying the principles of cost-benefit analysis to measure the net impacts of the project on economic welfare, or cost effectiveness in meeting a prescribed target. These economic tests take into consideration the cost for environmental externalities (e.g. carbon and local air pollutants, noise and water). EIB also has specific eligibility criteria towards carbon intensive industries, as captured in sector lending policies for transport, energy and water.	The EIB's approach to adaptation finance assessment and tracking requires that the project promoters should identify and apply adaptation measures to ensure the sustainability of their projects. It has an in-house guide that outlines general principles and methodologies that can be followed to build resilience to current climate risks, build adaptive capacity and planning and take action to address future climate risks.	Do not explicitly use Rio Markers. EIB's climate action sector list is broadly in line with the joint MDB group.	The EIB developed the Methodologies for the Assessment of Project GHG Emissions and Emission Variations.
AFD	AFD has developed a project selectivity matrix for selecting projects, which defines exclusion criteria for projects that would not be funded based on a combination of their GHG characteristics and geography. This selection criterion combines with other strategic priorities in AFD's standard impacts analyses, such as poverty reduction, local employment, and other social or environmental criteria.	A case by case approach is taken for each project to assess climate risk and resilience, using multiple metrics. The AFD Group adds criteria and specifications to ensure that a project reduces vulnerability vis-à-vis a proven risk or increases the resilience of communities or the economy compared to a baseline (business as usual) scenario.	Uses a footprint-based tool to classify 'climate' projects. AFD tracks Rio Markers for all of its projects, but does not use it for tracking climate-related investments.	The AFD tool is a simplified version of the Bilan Carbone emissions assessment tool developed by the French Environment and Energy Management Agency (ADEME). The Carbon Footprint Tool enables the AFD Group to make robust classifications of its climate change mitigation projects. AFD's operational procedure manual prescribes undertaking a carbon-footprint estimate as early as possible during the project review phase.
ADB	Not systematically developed or applied.	Has developed climate proofing guidelines for the transport sector, to incorporate adaptation considerations	Use the Rio Markers as a reference point.	Other than the requirement that projects with estimated annual emissions over 100,000 tonnes CO_2 eq. to quantify Scope 1 and Scope 2 emissions, there are no general

	Screening criteria and appraisal tools for climate related		Definition and tracking of climate finance	Greenhouse gas accounting
		into the design of projects. For investment decisions, ADB completed a study on Economics of Climate Proofing at the Project Level: Two Pacific Case Studies (November, 2011) which found that climate proofing projects at the design stage could increase their costs by about 10%–20%. However, the study also found that the additional cost will normally be much less than would be incurred by repairing infrastructure or other assets over their lifetimes if they were not climate proofed. The ADB aims to develop basic economic models of CBA for climate proofing investment projects.	Part of joint MDB group on harmonisation of climate finance	requirements for GHG emission reporting across the ADB portfolio.
IDB	Not systematically developed or applied. The IDB has a suite of GHG guidelines on landfills, cement plants, and coal-fired powered plants. These set minimum climate change performance criteria in order for Bank clients to comply with a specific GHG emissions threshold (from Sustainability Report 2011).	Not systematically developed or applied. As part of the Climate Change Strategic Action Plan 2012-2015 (CCSAP, 2012), IDB is developing methodological approaches to assess and implement climate resilient alternatives and low-carbon options.	Do not use Rio Markers but use internal definitions Part of the joint MDB group on harmonisation of climate finance	The IDB has developed accounting tools to screen sector loan investments for GHG emissions.
KFW	KFW Development Bank's ESIAs consist of an initial screening for relevant environmental, climate, and social impacts, as well as a scoping or assessment of identified consequences and/or risks (whereby projects and programs are categorised based on the degree and scope of expected impact). KFW Development Bank and GIZ prepare data sets using the OECD DAC codes for mitigation projects. BMZ has the final responsibility to carry out quality assurance. All projects are assessed for their viability on their own basis	All KFW Development Bank projects, among them adaptation projects, are subjected to a systematic climate change assessment, using a two stage process. This assessment makes sure that the intended effects are not endangered by climate change and that any opportunities from climate proofing are not lost.	Uses OECD DAC Rio Marker 1 or 2 in combination with the new DAC adaptation definition.	The Tool for Calculating Greenhouse Gases in Solid Waste Management (SWM-GHG) was developed by the KFW Development Bank to calculate emissions from waste management strategies.

2.7 Reviewing approaches of dedicated climate funds and main international standards on climate and investment

In addition to FIs, the study briefly reviewed the main international standards on climate and investment and the approaches of dedicated climate funds for incorporating climate and development metrics into their investment screening/selection process.

2.7.1 Dedicated climate funds

The main climate funds reviewed were:

1. Climate Investment Funds (CIFs) which includes Clean Technology Fund (CTF), Scaling Up Renewable Energy Program in Low Income Countries (SREP), and Pilot Program for Climate Resilience (PPCR)
2. Global Environment Facility (GEF)
3. Special Climate Change Fund (SCCF)

While there are clear projects screening requirements for each fund, the funds/institutions do not specify the tools and methodologies that should be used by applicants in providing information to fulfil these requirements. Though it may match screening requirements, the majority of information provided in funding applications is primarily qualitative. When quantitative information is provided, no background is given on the tools/methodologies used to reach to these estimates. The main lessons are summarised below:

Fund	Lessons from tools and process used for screening projects
CIFs	• Clear requirements are in place, and there is consistency on type of information (both template used and qualitative information) provided across different IPs. • Although IPs provide an estimate of GHG emission reductions potential, there is a lack of transparency and common standards in terms of the methodologies used for GHG emission reduction forecasts. • Lack of information on metrics used to determine scalability/transformation potential, and though GHG emissions trajectories/scenarios are requested (to determine transformation potential) this quantitative information is not provided.
GEF	• GHG emission reduction tools/manuals currently in place for Energy Efficiency and Renewable Energy Project, Transport Projects, and Biofuels Projects. • Tracking Tool for Mitigation Projects (including manuals) are meant to be used across the lifetime of projects for each project (at approval, mid-term, and termination). • GEF project documentation is inconsistent across the projects reviewed (type and number of documents publicly available), and it is not clear from the project documentation that the tools/manuals have been used (or how).
SCCF	• The aim of the SCCF is financing the full cost of adaptation; however project proponents do not provide justification for the adaptation costs included in proposals, and technical guidelines for determining adaptation costs are not provided by the SCCF. • Within the SCCF there are examples of adaptation costs, so the SCCF project proposals could serve as a database of 'adaptation costs' against which the EC could benchmark submissions from project proponents of adaptation costs.
Adaptation Fund	• Proposals submission material is publicly available. • Adaptation is defined at qualitative level: in the San Salvador case a breakdown of the project components is provided which shows the full cost of adaptation (AF funding). • Lack of specific instructions on how to quantify adaptation outcomes and

	quantitative analysis only required 'where feasible' • The AF project proposals could serve as a database of 'adaptation costs' against which the EC could benchmark submissions from project proponents of 'adaptation costs'.

2.7.2 International standards and initiatives on investment and climate

International standards have increasingly incorporated the issue of climate change and also a set out specific requirements. However, most standards provide a very general framework for better mainstreaming climate change considerations into business practices. The issue of adaptation is not explicitly considered by any of the reviewed standards.

The reviewed standards do not provide a rigorous framework for mitigating CO_2 emissions of financed projects. None of the standards requires minimum criteria regarding carbon emission or prohibits the financing of utilities with the most intensive emissions. Even if an alternative analysis is requested, it is not actually required to implement the most climate-friendly solution.

Some institutions, such as the UNEP FI and, partly, the Climate and Carbon Principles, provide guidance material, publications or training sessions in order to support financial institutions in mainstreaming sustainability and climate change management into their practices.

The main lessons are summarised in below:

Standard	Lessons
Equator Principles (EPs) III	• The EPs contribute to improved transparency, as they require the borrower to disclose the assessment documentation and the Environmental and Social Management Plan online. Signatories also need to report annually on transactions screened and closed, as well as on the EP implementation process. The new GHG emission-reporting requirements further contribute to improved transparency. • The EPs are weak regarding the actual requirements of banks: they do not require minimum standards regarding CO_2 emissions, nor define exclusion criteria for projects with very high carbon emissions. • The alternative analysis does not automatically entail the implementation of a more climate-friendly alternative, as Equator Banks are not obliged to require their borrowers to actually implement the most climate-friendly solution. • The issue of adaptation is not considered.
UNEP FI	• UNEP FI is leading amongst the reviewed institutions in providing supporting materials for banks to implement good practice in sustainable management and mainstreaming climate change considerations in their business practice. • The Risk briefings provide general guidance for potential risks for different sectors and include climate change as a possible risk factor, where appropriate. • The UNEP FI Statement is very general and does not provide a stringent framework for sustainability management, nor for incorporating climate change considerations.
Carbon Principles	• Exclusion criteria or the aim of phasing out the most GHG-intensive projects are not part of the carbon principles. Rather, the need to provide reliable power at a reasonable cost to consumers and the aim to establish principles for meeting energy needs in the US that balance cost, reliability and greenhouse gas concerns is stressed. • The borrower is not required to actually implement the most climate-friendly solutions as identified in the alternative analysis.

	• The Carbon Principles provide a set of guiding questions for the financing of coal-fired power plants.
Climate Principles	• The Principles only set out very general framework that does not impose any binding commitments to signatory institutions. • The Guidance Note on Financing New Coal-Fired Power Plants features technical information that provides project managers with an overview of best available technologies and explains key terms. This could be especially helpful for non-technical staff. • There are no exclusion criteria or commitments to phase out the most CO_2 intensive forms of energy generation.

3 Analytical approaches to support decision-making in relation to climate change and related infrastructural investments

3.1 Overview

Three analytical approaches are commonly used to support decision-making in relation to climate change and related infrastructural investments. These approaches are: cost-benefit analysis; multi-criteria analysis; and cost-effectiveness analysis. Much of the literature on climate change and guidance for practitioners, in contrast, advocates for the use of some form of multi-criteria analysis. These approaches are not mutually exclusive: indeed, some central finance and planning agencies use a combination of these tools in the formal appraisal process (World Bank, 2012a).

CBA has been applied on a variety of occasions, notably in the Stern Review to assess the case for global intervention to mitigate greenhouse gas emissions by conducting estimations of GHG control costs weighed against the benefits of avoiding damages at a global or local level (Spash, 2007). The benefits have been quantified by estimating the values for environmental externalities such as global warming, local air pollution and noise. The results are increasingly applied in real-world project evaluation, reflected in current practitioners' guides to CBA or governmental recommendations on project appraisal. The value of carbon can potentially play a significant role in adjusting the economic rate of return estimated by the FI for a particular project – and thus influence project selection by:

- Screening out carbon-intensive technologies (i.e. where the net benefit of the project fails to outweigh the cost including greenhouse gas emissions e.g. in choosing between coal and gas-fired power generation).
- Screening in low-carbon technologies that, with a carbon value of zero, would not compete with high-carbon alternatives.
- Assisting in identifying relatively poor low-carbon investment decisions: if a mature renewable technology, perhaps due a poor location, cannot compete in economic terms with a conventional alternative even under a high value of carbon, it may not warrant support. The degree of impact depends on the value assumed for the carbon externality.

Box 3-1provides some examples on the benefits of applying CBA for appraising policy, programme or project.

Box 3-1 Application of CBA for programme or project evaluation

- Cost-Benefit Analysis assesses the value for society as a whole derived from a particular policy, programme or project. CBA affords policy makers an unambiguous decision criterion by requiring that the present value of benefits to society as a whole exceed the present value of the social costs incurred. Furthermore, the economic rate of return of interventions can be compared against a threshold value and ranked to guide the selection of the programmes and projects that are expected to generate the greatest benefit overall. Of all the analytical tools available, cost benefit analysis alone permits this comparison of adaptation measures with each other and with other policy interventions (World Bank, 2012a).
- CBA is first a method for project appraisal, i.e. for assessing the impact that a project is likely to have on social welfare. In principle CBA is equally applicable to private and public projects, but because of its focus on social welfare (instead of, e.g. profits) the method is most frequently used for public decision-making (Joint Transport Research Centre, 2011).
- CBA can be used for the appraisal of technical variants of a project, project of different lengths and clusters of projects. It can also be used for programming and hierarchizing a set of independent projects, for strategic policy choices (e.g. in the context of decarbonisation or broader sustainability policy) or for deciding the relative shares of the public budget to allocate across sectors (Joint Transport Research Centre, 2011).
- The purpose of CBA is to estimate and total up the equivalent money value of the benefits and

costs to the community of projects in order to establish whether they are worthwhile. The method imposes an accounting framework that prescribes classes of benefits and costs to consider, means to measure them, and approaches for aggregating them. When a project is analysed, there will be a need to compare costs and benefits appearing at different times. This is accounted for by discounting future monetary benefits and costs to a reference date (usually the time of decision to implement the project), using a given annual discounting rate (Naess, 2006).

- By conducting a proper appraisal, CBA can serve its role of supporting investment decisions and ensuring efficient resources allocation (Mairate & Angelini, 2006).
- Cost-benefit analysis is a set of generally accepted methodological rules about how to identify, analyse and present economic information to decision-makers as one basis to make choices between options to address a problem or opportunity. For instance, if a problem has been identified as a potentially serious public policy concern, cost benefit analysis requires the practitioner to:
    - Analyse that problem to determine how significant it is from an economic perspective; and
    - Comparatively analyse practical options for responding to the problem in terms of which of these options will provide the greatest benefits to problem solving at the lowest cost.

  Cost-benefit analysis, however, should not be seen as providing all information needed for a decision. It is only one source, albeit an important one, of information for decision-making and not the only source. For instance, in the absence of an economic cost-benefit analysis, decisions still need to be taken based on other criteria to protect human health and the environment, such as precaution (UNFCCC, 2009).
- The European Commission, DG REGIO has also developed a 'Guide to cost-benefit analysis of investment projects'.[24] EU Cohesion Policy can finance a wide variety of projects, from the point of view of both the sector involved and the financial size of the investment. While the Cohesion Fund (CF) mainly finances projects in the transport and environment sectors, the ERDF may also finance projects in the energy, industrial and service sectors. In this framework, CBA provides support for informed judgement and decision making. Article 40(e) of Regulation 1083/2006 states that the managing authorities are required to provide a CBA for major projects to be financed under their Operational Programmes for cohesion policy. This makes CBA an input, amongst others, for decision making on major project co-financing by the EU. CBA, (i.e. financial and economic project appraisal, including risk assessment) may be complemented by other studies, for example cost-effectiveness and multi-criteria analyses (par. 2.7.1-2), if the project is likely to have important non-monetary effects, or economic impact analysis, in the case of significant macroeconomic effects (par. 2.7.3).

3.2 Unique characteristics of 'climate' as a factor for consideration of economic impacts

The justification for including climate change when assessing the economic impacts of projects has been extensively covered in the literature. Views from the World Bank and the Stern report are given below.

Stern's justification for internationalising economic impacts of GHG emission is based on the fact that:

- GHG emissions are global in origin and impact
- Effects are very long term and governed by a flow-stock process
- There is a great deal of uncertainty in most steps of the scientific chain
- Effects are potentially very large and may be irreversible.

[24] http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf

The World Bank considerations for including climate change in economic valuation methods are:

- The development of climate-resilient projects or those that reduce GHG emissions (climate change projects) is bedevilled by a 'cascade of uncertainties' that preclude prediction of the precise nature, timing, frequency, intensity and location of climate change impacts. Estimates of climatic effects depend not only on the scenarios chosen but on the configuration of the climate model used and existing knowledge of biophysical responses. Typically, the longer the time frame concerned, the greater the uncertainty. Uncertainty is also compounded by geographical unit used to assess a project – 'downscaling' – with uncertainty increasing progressively as global models are used to identify regional, country and local impacts (World Bank, 2012a).
- The uncertain probability distribution of climate change risks often defies quantification. Also, the set of 'events' itself cannot be predicted because it has never been experienced and is therefore totally unknown, and possibly inconceivable. Human psychological mechanisms and social factors are likely to affect perceptions of threats and impacts associated with climate change. Even if each specific impact were known and predictable, interactions between them may not be, an aspect emphasised by the Royal Academy of Engineering (2011). (World Bank, 2012a).
- Assessing the costs and benefits of a climate change projects is extremely difficult, especially when the future is difficult to predict or even describe using probabilities. Uncertainty surrounding climate change projects stems from at least three sources:
    - Many factors of success are not controlled by investors and planners. Such factors include the availability of technologies from abroad; the price of internationally traded goods such as oil, minerals, and food; economic growth and imports and exports from other countries; and green or trade policies in other countries.
    - There are many implementation obstacles, and it is difficult to predict how efficient innovation policies will be or how quickly production costs will fall when production volumes increase.
    - Scientific uncertainty is high. No one can project future changes in local climates with certainty, complicating decisions about land-use planning, water management, and electricity production. (World Bank, 2012b)

3.3 Unique characteristics of large infrastructure projects as a factor of consideration

Public and private investment management good practice calls for projects to be fully costed up front. Project management focuses on implementation through to project completion. For infrastructure projects their completion will generally coincide with the end of construction at which point the project is handed over to the unit responsible for operation. Adjustments to programme and project design have cost implications and so are generally minimised (World Bank, 2012a).

Large infrastructure investment decisions will play an important role for economic growth and climate change objectives. Choices made today about types, features and location of new and renovated infrastructure will lock-in commitments to future levels of climate change and to vulnerability or climate-resilience. However, lock-in depends on asset life. In cases where asset life is short, hence waiting (and learning) may be a better strategy than investing in adaptation measures. Infrastructure vulnerability and risk to inevitable climate change is driven by long operational lifetimes of these investments, making them sensitive not only to the climate existing at the time of their construction, but also to climate variations over the upcoming decades (OECD, 2012).

3.4 Challenges and Solutions (general and climate specific)

Cost-benefit analysis is based on a certain set of assumptions that directly or indirectly lead to challenges when it is applied to assess investment projects. CBA of an individual project aims to estimate – in aggregate – if the benefits of the project outweigh the costs (including climate related

damage). On the other hand a number of economists have also stated that the application of CBA to the impacts and mitigation of climate change is severely limited and in some cases unacceptable. Concerns over the use of discounting[25], methods of non-market valuation, incommensurability, baselines, high uncertainty and subjectivity (among others) have been raised (Spash, 2007). Some of the main challenges and some possible solutions are outlined in Table 3-1.

Table 3-1 Summary of main challenges and solutions for undertaking CBA

	Challenges	Solutions
Quantification of costs and benefits	Valuations of intangibles and costs and benefits that do not have a market price can be particularly challenging (World Bank, 2012a). Environmental benefits are often problematic to quantify and value. But some economic benefits, such as innovation-related or adaptation/resilience-related ones, are also difficult to assess and are thus often left out of the analysis. CBA is well suited to pure investment projects, where future financial flows may be readily identified and predicted, but the approach has major limitations when applied to addressing climate change. The consequences of mitigation and adaptation measures are often not easily quantified in monetary terms and may, in any case, be extremely uncertain. Many of the tools, projects and policies that can be part of a green growth strategy involve significant uncertainties. This uncertainty arises from many sources, including technological change, climate change, and policy efficiency and enforcement. Public and private sector decision-making is poorly equipped to deal with uncertainty.	In conventional CBA, assigning monetary value to benefits always entails some measurement error. What is needed is policy that spells out which benefit streams entail sufficient difficulty in valuation that a cost-effectiveness analysis is warranted. It is also possible to calculate how large the un-quantified benefits would have to be to justify the costs of the project. If such a calculation were standardised (for example, non-quantified benefits per beneficiary), reasonable standards could be developed. The [infrastructure projects] for cost-benefit analysis needs to be defined in a way that recognises legitimate difficulties in quantifying benefits in some types of projects while preserving a high degree of rigor in justifying projects. A degree of uncertainty can be incorporated into CBA by taking into account the probabilities of future costs and benefits. In other words, CBA can capture uncertainty, and reconcile different stakeholders' world views only when it can be translated into probabilities for different outcomes.
Data and resource availability	There is an essential contradiction in the use of CBA, as CBA is the most useful when the list of projects is not yet decided; but unfortunately at this stage, the information on each project (cost, traffic, environmental effects) is sparse, and CBA is inaccurate, or even impossible to achieve (Quinet, 2006) The share of World Bank projects that are justified by CBA has been declining for several decades, owing in part to a decline in adherence to standards and to difficulty in applying cost-benefit analysis. CBA of completed projects is	CBA should limit itself to what it can do, and not try to meet requests to include ever more effects of which knowledge is lacking. This does not mean that CBA should ignore concerns about relatively vaguely defined concepts such as sustainability. Instead, analysts should ask planners to be explicit about what intermediate goals (e.g. urban form) promote sustainability. They might then use appraisal to help establish what policies work in the desired direction (Joint Transport Research Centre, 2011). The scope of the appraisal can be broadened and precision can be increased,

[25] In the theory of cost-benefit analysis, the discount rate represents the return on investment required to justify the expenditure of scarce social resources. 'Discounting' allows us to convert costs and benefits at different points in time into comparable costs and benefits at a single point in time. It is used as a tool for modelling optimal solutions for many long-term problems, including climate change. (Newell & Pizer, 2001) (Howarth, 2009).

	Challenges	Solutions
	hampered by the failure to collect relevant data, particularly for low-performing projects. One project document cites a lack of data but goes on to assert that the data would not be meaningful even if collected. A few documents refer to lack of time and competing priorities (IEG World Bank, 2010).	but this will increase costs and the time taken to produce appraisals; informational and methodological constraints do impose real limitations on how far the appraisal can be taken. What is possible varies between countries -- some countries have a strong tradition in regional economic data and modelling, others do not (Joint Transport Research Centre, 2011). An alternative approach incorporates uncertainty about future costs and benefits into cost benefit analysis by identifying 'Real Options'. Akin to financial options, 'real options' help decision makers minimise the cost of taking inappropriate action. In the case of building a dike, for instance, there is likely to be a high opportunity cost if community resources are used to build a substantial structure prematurely, well before any impact of climate change occurs. However, undue procrastination, on the other hand, will result in human and material costs from flood damage. If only preparatory work is undertaken (e.g. acquisition and preparation of land), this creates the option (but no obligation) of construction in the future. Real options approach integrated with cost benefit analysis can be particularly useful to guide the investment decision.
Discount rate	Choice of discount rate is a particularly contentious issue in the context of climate change. Discount rates are set by the central finance agency and are generally comparable to those used in the private sector. Discount rates in developing countries tend to be higher than those in industrialised countries, reflecting the higher opportunity cost of capital and higher prevailing interest rates. This will tend to discourage investment in mitigation and adaptation interventions, where costs are incurred in the short-term and benefits may only arise in the distant future. Lower discount rates, closer to those prevailing in industrialised countries, may be justified for the purposes of discounting carbon emission costs and benefits because these are a global public good (World Bank, 2012a). There are fundamental concerns about intergenerational equity and, therefore, the appropriate discount rate to use in CBA analysis. Current activities imposing large costs on future	On the basis of equity, some argue that lower discount rates should be used to compare the value of costs and benefits between generations. Other critics charge that the use of high (circa 6%) discount rates can support policy outcomes that are unfair to future generations. Stern (2007) argues that equal weight should be attached to the welfare of each present and future person, and is consistent with the use of a 1.4% discount rate in monetary cost-benefit analysis. This holds true because, in a world of economic growth, the welfare provided by an extra dollar of income should decline over time. Economists have long recognised that the use of low (c. 1%) discount rates supports aggressive steps to stabilise global climate. (Cline, 1992) (Stern, 2007) (Howarth, 2009) Clearly there is no professional consensus on what discount rate should be used. The appropriate response to the uncertainty about the appropriate discount rate is to conduct sensitivity analysis with it. If the sensitivity analysis reveals that the choice of

	Challenges	Solutions
	generations may appear insignificant in a cost-benefit analysis. Similarly, actions now that will benefit future generations may not be undertaken in light of a cost-benefit analysis (UNEP, 2011) and (Pearce, Atkinson, & Mourato, 2006).	discount rate is important (i.e. it changes the sign of the project's net present value or its ranking against alternative projects), then more consideration should be given to the choice of an appropriate rate. (Harrison, 2010) Against the uncertainty of global climate change in CBA, the social cost of carbon (SCC) is the discounted monetary value of the future climate change damages due to one additional metric ton of carbon dioxide (CO_2) emissions.

3.5 Use of CBA in European policy making

The European Commission has encouraged the development of national CBA frameworks, which are meant to provide common working rules to be used by national project promoters. All Member States (MS) in the EU applying for co-funding use CBA. However, The UK, France, the Netherlands, Sweden, Finland and Denmark are amongst those Member States with explicit CBA requirements even for national projects. CBA-related sector methodological documents are elaborated by:

- Czech Republic, Estonia and Ireland for water sector projects,
- Italy - a general framework plus two recent working documents which set methodologies for the evaluation of employment and environmental impacts of major projects, and
- Lithuania and Poland for transport projects.

Within an operational programme, EU member states are responsible for the selection and appraisal of the most suitable projects. However, in the case of 'major projects',[26] the EC has the last say by adopting a decision which sets the level of assistance from the Cohesion and Structural Funds. In this context, regulatory requirements for a CBA to accompany major projects' application forms have two main advantages:[27]

1. It has to be shown that the project is worth undertaking: a positive economic net present value signals the improvement in allocated efficiency, thereby conveying the key information about the economic desirability of the project.[28] This has to be evaluated also in the light of the project's contribution to the EU regional policy objectives.
2. The level of community financing has to be determined based on the financial analysis results so that the grant is modulated according to the project self-financing capacity and no over-financing occurs (Mairate & Angelini, 2006).

There is already some experience with integrating climate change mitigation at a project level, for example by incorporating carbon accounting into the cost-benefit analysis of large projects. The DG REGIO has published a common guide to CBA[29], which can aid public authorities to examine project ideas or pre-feasibility studies at an early stage of the project cycle. The guide explicitly stipulates that the 'economic analysis' should take into account externalities and assign monetary value. Externalities in this case could include social costs associated with adverse environmental impacts of the planned

[26] The thresholds for "major project" qualification are currently set at € 10 and €50 million respectively for Cohesion and Structural Funds. As from 2007 common thresholds will apply across Funds: € 25 million in the case of environmental projects and € 50 million in other fields.
[27] The current legal basis for the submission of a CBA is provided by article 26 of Regulation 1260/99 for the Structural Funds; for the Cohesion Fund see article 10 of Regulation 1164/94 and article 1 of Regulation 1265/99.
[28] Strictly speaking, a positive economic net present value only signals a *potential* Pareto (i.e., allocative efficiency) improvement, as some people may actually be worse-off because of the project. However, positive net benefits ensure that a set of transfer can potentially be organised so that at least one person is better-off without making anyone else worse-off.
[29] Guide to cost-benefit analysis of investment projects Published by DG Regional Policy in 2008 http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf

project. However, impacts of climate change, which could pose significant risk in terms of costs of damage repair in the case of infrastructure projects, are not currently included in the calculations (Institute for European Environmental Policy, 2012).

The European Commission released a handbook with estimates of external costs in the transport sector.[30] The handbook, jointly prepared by several transport research institutes, summarises the state of the art as regards the valuation of external costs. The Commission intends has make use of this handbook to prepare a communication on a strategy to internalise the external costs for all modes of transport that was adopted in July 2008 and a proposal to revise the directive on the charging of heavy goods vehicles.

The EC Joint Research Centre has also published guidelines for cost-benefit analysis by project type including biofuels, smart meters and smart grids.

Where available, the EC national CBA frameworks have indeed facilitated and sped up the appraisal of major projects, as project promoters do not have to define methodologies and parameters for each CBA study. Multiplication of unnecessary work is avoided and a greater consistency is ensured, at least between projects in the same state. Also, the guidelines can be used by the Commission geographical desks as a reference against which the quality of the applications can be checked. (Mairate & Angelini, 2006).

3.6 Use of CBA by the EIB for screening and appraising projects

Mainstreaming of climate change considerations in EIB operations is an on-going process that dates back to the late 1990s. The Bank focuses on low-carbon investments that mitigate greenhouse gas emissions and on climate-resilient projects that improve adaptation to climate change impacts. This is reflected in the EIB's approach to lending in various sectors, notably energy, transport, water, wastewater, solid waste and forestry, as well as research, development and innovation. Climate considerations are being factored into all of its operations, for instance by promoting the use of the best available technology in all projects.[31]

The analysis of the project is made from a technical, financial and economic perspective. The financial analysis is based on a discounted cash-flow approach considering costs and revenue streams of the project owner over a certain period of time. The economic appraisal follows the principles of CBA, or associated approaches such as cost effectiveness or multi-criteria analysis, to measure the net impacts of the project on economic welfare.

The CBA takes into consideration the cost for environmental externalities (e.g. carbon and local air pollutants). The value has been updated on several occasions subsequently, in light of new evidence, as well as applied more systematically across all relevant sectors of Bank operation. In particular the Bank systematically applies across all sectors a cost of carbon of approximately €30 per tonne today, rising to €50 per tonne by 2030 (all measured in constant 2012 euros). See Box 4-2 below for how environmental and climate change impacts are incorporated in the CBA for four main sectors.

Box 3-2 Incorporating environment and climate change impacts in economic appraisal of energy and transport projects

Fossil fuel power generation

In addition to standard capital, operation and maintenance and fuel costs, the economic appraisal considers greenhouse gas emission costs, residual airborne pollution costs, security of supply and supply diversification costs:

- **Greenhouse gas emission costs**: As noted above, the economic analysis is not based on the current market price of EU Allowances, but rather on the Bank's economic price scenario for CO_2 emissions. Annex 1 demonstrates the impact of assumption on the cost of carbon on choices between different fossil-fuel fired power plants.
- **Residual airborne pollution costs:** Sulphur dioxide (SO_2), nitrous oxides (NOx) and dust are

[30] http://ec.europa.eu/transport/themes/sustainable/doc/2008_costs_handbook.pdf
[31] EIB Activity report [2011] - http://www.eib.org/attachments/general/reports/ar2011en.pdf

airborne pollutants resulting from combustion of fossil fuels. Modern thermal power plants are equipped with scrubbers, filters and combustion control equipment that limit the release of these unhealthy pollutants within legally specified levels defined under EU law. The residual damage costs to human health are difficult to quantify. For modern power plants they are estimated in the range of 1 to 3 EUR/MWh for gas-fired CCGT and 4 to 8 EUR/MWh for coal-fired power plants (based on research done by ExternE[32]).

- **Security of supply and supply diversification costs**. The values for these economic costs are difficult to quantify. Historically, gas has the more volatile fuel price profile. The economic costs applied for lack of security of supply and supply diversification varies from country to country, but are on average, in Europe, approximately 5 EUR/$MWh_{-output}$ for coal and 10 EUR/$MWh_{-output}$ for gas.

In the EU, this approach often reveals that the most economic option for new-built generation plants to be a natural gas-fired CCGT, when a connection to the gas supply network is possible and sufficient gas supply is available. However, in some circumstances, coal- or lignite-fired plants may be the least costly option. Under the Bank's existing energy policy (Clean Energy for Europe, 2007), additional screening criteria beyond the economic test have been introduced. For instance, in the case of new capacity, projects are required to (i) use best available technology and be ''carbon capture ready'', and (ii) replace existing coal/lignite plants and involve a decrease in energy efficiency of at least 20% in the carbon intensity of power generation. Note, however, that the EIB energy lending policy is currently under revision.

Renewable Energy

For assessing the viability of mature renewable projects, the Bank's approach is based on the economic cost of fossil fuel alternatives. The Bank calculates the levelised cost of electricity (LCOE) for the proposed project, and compares it to an alternative conventional technology, such as CCGT. This calculation includes the environmental externalities associated with CO_2 and other pollutants, and an additional benefit related to security of supply. Environmental externalities include both CO_2 and other environmental costs. The EIB energy lending policy is currently under review.

Emerging renewable technologies are not currently competitive with fossil fuels. However, the costs of some renewable technologies are on a rapidly declining trajectory. Emerging technologies have a dual purpose – to improve the future design of the technology for the longer term and to produce electricity in the short term. Deducting the value of the electricity produced (including externalities) gives the amount of money being spent to develop the technology. Such investment can be considered as contributing to learning by doing and economies of scale. Technologies with significant promise, where the project in question plays an important development role, and where the amount being spent is justified by possible future cost reduction should receive support from the Bank. Solar PV, concentrated solar power and offshore wind projects are therefore deemed economic on this basis. Again, this policy is currently under review.

Road and rail transport

In line with standard CBA, investment decisions in road and rail projects should consider the proposed project, or a range of possible projects, against a baseline without the project, or with minimum actions to ensure the continued level of service provision. The economic analysis examines the project's impacts on economic welfare for society. The impacts can be grouped in three categories: consumer surplus, producer surplus and externalities. The externalities include impacts on noise, CO_2 and non CO_2 emissions. As with energy projects, the analysis uses the Bank's central scenario for carbon pricing, with sensitivity tests under a high price scenario.

In general, motorway projects often involve some degree of congestion relief, and higher average speeds compared to a scenario without the project. In some cases, this improvement in speed can lead to a reduction in average emissions for existing drivers. If so, this reduction in emissions is traded off in the model against new demand (and hence emissions) generated by the improvement in road capacity. The net effect depends on the relative balance between generated traffic and average performance improvement for existing traffic. In other cases, both effects may act to increase total emissions. In measuring the economic impact of the project, however, this net cost

[32] http://www.externe.info/externe_d7/?q=node/57

from increased emissions is aggregated alongside the time savings and other net benefits accruing to drivers. Rail and public transport projects, by contrast, are often justified primarily from shifting traffic away from roads – and thus reducing emissions. The degree of emissions savings, however, will vary strongly depending on the project circumstances.

3.7 Lessons on climate issues in CBA from workshop at the EIB

The importance of reviewing and understanding this wider range of tools which influence investment decisions was emphasised by participants at the informal session on '*Mainstreaming climate change into cost-benefit analysis (CBA), risk or multi criteria analysis (MCA) of large infrastructure projects*' hosted by the European Investment Bank (EIB) on Thursday, 13th of September, 2012. Attendees included representatives from DG CLIMA, DG REGIO, ECFIN, EIB and JASPERS. In particular, participants stressed that it was critical to look at tools both at the project selection/design stage and also at the programme selection/design stage – and the key actors, decision-makers at each of these stages.

Some of the main points (and questions) and issues raised at the workshop which informed the investment framework (see Section 4) included:

- For appraisal there are several tools. CBA is a key tool but not the only one. The EC has methodology and guidelines for the use of CBA. However, climate change impacts are not integrated in the DG REGIO 2008 guidelines even though it provides some guidance on risk analysis where issues of climate mitigation and adaptation can be incorporated.
- Proper CBA should provide options for decision making (including mitigation and adaptation projects). Questions include: What impact the option has? How economic is that option? And what is the role in meeting the development objectives? Some projects are more important in meeting development objectives than others and these need to be evaluated. When decisions are made cost need to be weighed against benefits.
- It is important not to overload the CBA tool. Other tools (e.g. EIA) are equally important, and complementarity between the two tools is important. However, it is important to clarify the role of each tool so that one tool is not overburdened or neglected and so that complementarity can develop over time. Important questions in this context were: Why is CBA required? Is it for investment decisions? Ensuring viability of projects? What is the best way to communicate the message?
- Decisions may be made at the European, Regional or Local planning level, while other decisions are project specific (and may determine project approval and/or design). There is therefore a different audience, type of actor, and level of expertise at each stage of the decision-making process. For this reason, it is important to acknowledge that there may be a need for different types of tools and/or guidance which match the stage and actor responsible within the decision-making process
    - The example of river basin management was given, where at a European Level there may be a general decision to undertake this type of programme; where at the regional/local level the specific section of river to be addressed will be decided; and, finally, there will be project level decisions on the size, design, and specific location once the appropriate management arrangement (e.g. a dam) has been decided upon.
- There needs to be differentiation between levels of decision and how these specific guidelines apply. This guidance need to be more practical in terms of matching the tool or guidance to both i) the decision stage, and ii) the decision-maker. Questions that arise are: When and which decision-maker should deal with the risk? Which tools are better suited for assessing options and which are better suited for project design?

- It is important to consider CBA as one of the tools in the toolbox to appraise projects. A key aspect is to better understand climate risk, and how CBA can help to evaluate options to mitigate this risk.
- CBA has to be practical, and preferably applied early in the design phase. Even though it can be applied at any stage of the project or programme cycle. It is a process which involves strong dialogue with project regulator, financier and project developer. CBA till date has had limited influence on regional and political authority to make these decisions. There needs to be a clear acknowledgment that decision-making and decision-making tools (including CBA) are used at different levels and stages in the investment planning process.

Key messages from the Acclimatize/Cowi, 2012 study "Guidelines for Project Managers: Making vulnerable investments climate resilient

- CBA should be used in synergy with other instruments used in project appraisal, such as SEI, EIA, and upstream planning.
- Focus on risk management under uncertainty and robustness. Currently, the focus is on economic efficiency and optimal value for money. How does one account for gradual vs. volatile climate change. There is a need to develop a hedging strategy based on this.
- Forecast period: Extend the forecast period in order to capture the economic lifespan of the project (it can be 50 years or more). Currently the reference period is below the economic lifespan of the project.
- Discount rate was identified as an important issue. The study recommends using the declining or lower discount rate. Currently single discount rates are set by EU and Member States and apply to all types of infrastructure projects.
- Baselines need to be more ambitious and prepared for the impacts of climate change. More baselines reflecting various scenarios will be needed where currently single baseline and sensitivity tests are used.
- Project boundary: Guidance available based on impact matrices on the way climate impacts outside the project. Need to capture uncertain impacts of adaptation.
- Valuation of economic benefits – have great difficulties in economic benefit valuation. For valuation of economic benefit avoided costs are the main benefit, evaluation easier than for classical environment projects.
- Decision making rule – standard tools can still be used, e.g. NPV, CEA. Scenario analysis includes risk willingness of promoter in decision making rules, and robustness of NPVs across sensitivity scenario instead of maximum NPV.

4 Developing an investment decision framework to incorporate climate change

4.1 Overview

A key objective of the study was to use the findings from MDBs and EFI and develop an investment framework to determine best practice methodologies for the Commission, financiers and EU Member States to screen climate change related impacts in large-scale infrastructure projects.

There are a range of traditional investment decision metrics available (e.g. incremental cost analysis, cost benefit analysis and multi-criteria analysis), and the aim was to understand how a combination of these different metrics and analysis tools can lead to different investment decisions. Initial evidence suggested that FIs focus on the benefit of carbon saved (within economic and financial evaluations).

This section provides guidance on the best methods to assess 'value for money' and incentivise climate change mitigation investments that can be implemented in synergy with other financial instruments under the next Multiannual Financial Framework (MFF). It also considers adaptation, in particular to see if there are new approaches emerging on how to integrate climate risk in project risk analysis.

Following the review European Financial Institutions (EFI), International Financial Institutions (IFIs), and other leading actors' (international standards and dedicated climate funds) approaches for incorporating climate change in investment decisions, it became clear that there were a broader range of tools that could be applied across all stages of the project or programme cycle.

4.2 Lessons from literature review for incorporating climate change in investment decisions

In addition to the lessons from the research and workshop under in the previous section, the review of tools for incorporating adaptation and resilience considerations in investment decision-making uncovered a very useful framework established by the OECD for categorising the variety of existing tools and methodologies (Table 4-1).

Table 4-1 OECD Typology of Adaptation Screening and Assessment Tools

Adaptation Tool Function	Step of CRM Approach	Description	Key Question
Communication	Awareness raising and engagement	Communicating and engaging with development actors with climate change issues in relation to their role and context.	How does climate change link with our work?
Screening	Pre-screening	A systematic examination of a development activity to select or eliminate it from further analysis, or to make a diagnosis. It tends to be relatively quicker to conduct and is broader in scope. As a very light touch process it is commonly referred to as pre-screening.	Is more assessment needed?
	Risk-screening		

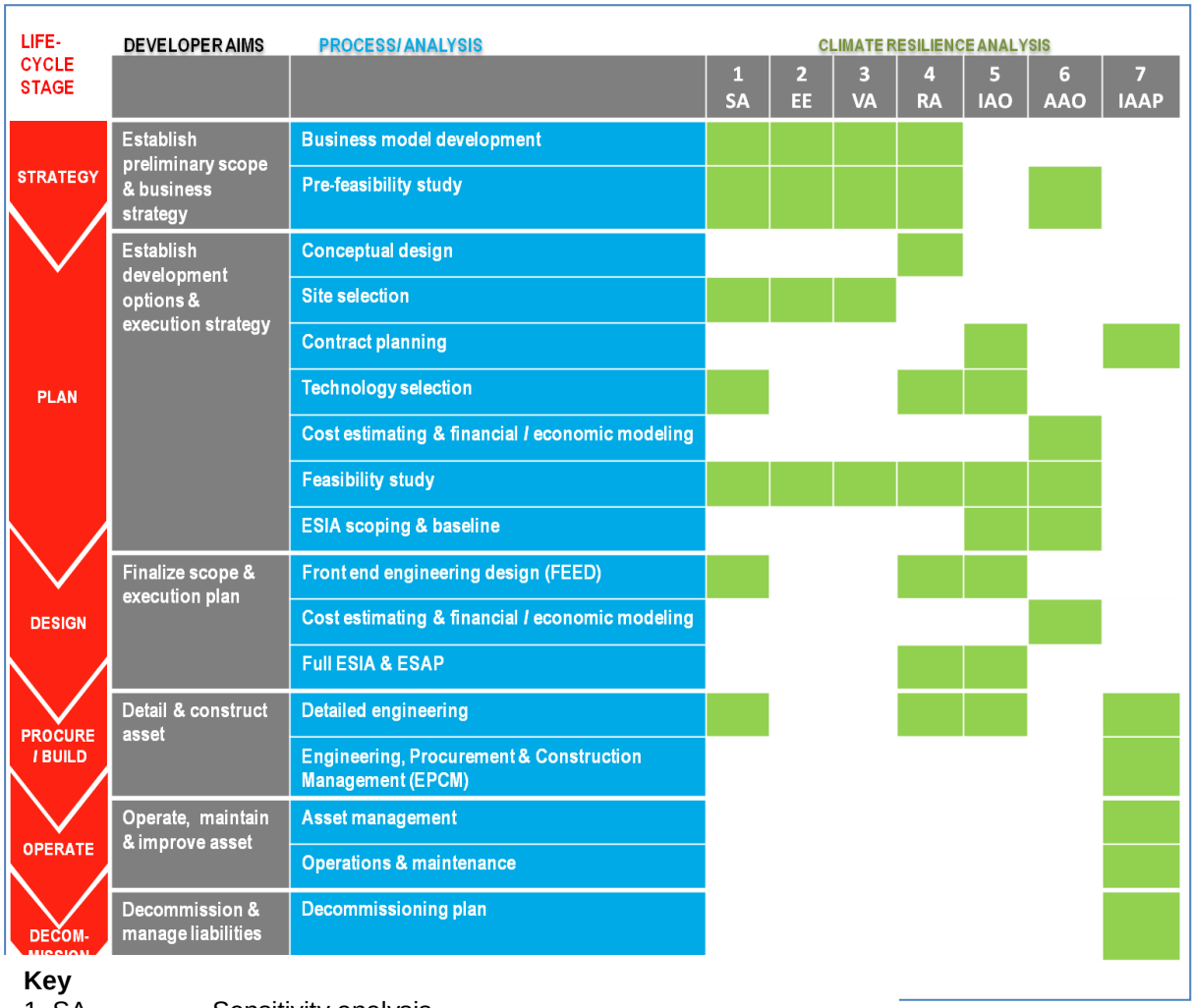
Adaptation Tool Function	Step of CRM Approach	Description	Key Question
Assessment	Risk Assessment	A methodology to determine the nature and extent of risk by analysing potential hazards (current and projected) and evaluating conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.	What is the problem?
	Risk Analysis	A process that considers management options to minimise negative impacts and take advantage of opportunities in light of the identified current and future risks.	What are the options?
	Options Evaluation	Evaluating both the adequacy of current risk management strategies and potential new activities to manage additional risk or to take advantage of opportunities.	What is the course of action?
Implementation	Implementation	Putting selected options into action either as part of a broader suite of development activities (integration) or as discrete climate risk management/adaptation initiatives.	How to undertake the course of action?
Monitoring and Evaluation	Monitoring and Evaluation	Tracking and assessing implemented activities or initiatives to see if they are delivering intended benefits.	What was achieved?

Source: O Hammill, A. and T. Tanner (2011), OECD

This framework is clearer than others for matching the tool/approach/methodology to the decision phase and decision-maker (a point that had been highlighted in the informal workshop at the EIB). As a result, an initial framework was developed to group the tools and methodologies uncovered in section 2. This framework was then applied to the case studies under in Sections 5 and 6.

The framework developed in the Acclimatize/Cowi study also provided important insights for developing a best practice framework (see Figure 4-1). The stages in the asset lifecycle are shown in the red boxes, and the main aims of the developer at each stage are shown in grey. The blue boxes indicate the processes and analyses routinely undertaken at each stage, and the green boxes show which climate resilience analyses are recommended.

Figure 4-1 Integration of climate resilience analyses into a conventional asset lifecycle process



Key

1. SA Sensitivity analysis
2. EE Evaluation of exposure
3. VA Vulnerability analysis
4. RA Risk assessment
5. IAO Identification of adaptation options
6. AAO Appraisal of adaptation options
7. IAAP Integration of adaptation action plan into the project

Overall, the OECD framework provides a more strategic overview of what steps could be followed under the project cycle, while the Acclimatize/COWI framework provides more details on the process requirements across the various project stages.

4.3 Feedback from participants to the workshop on IFIs policies and practises

Preliminary outcomes of the study were presented for discussion at a workshop organised by Ricardo-AEA and hosted in Brussels on the 23rd of October, 2012 by DG CLIMA on 'Multilateral and Bilateral Financial Institutions tools and practices to integrate climate consideration in investment processes for large-scale investment projects'.

Participants at the workshop included the EIB (European Investment Bank), EBRD (European Bank for Reconstruction and Development), KFW Development Bank (German Development Bank), AFD (Agence Français de Développment), IFC (International Finance Corporation), WB (World Bank) and

IDB (Inter-American Development Bank), the European Commission Directorate Generals – DEVCO, REGIO and DG CLIMA, and consultants currently assessing the blending facilities Neighbourhood Investment Facility (NIF) and West Balkan Investment Facility (WBIF).

General feedback at the workshop on the findings from section 2 and the draft framework included:

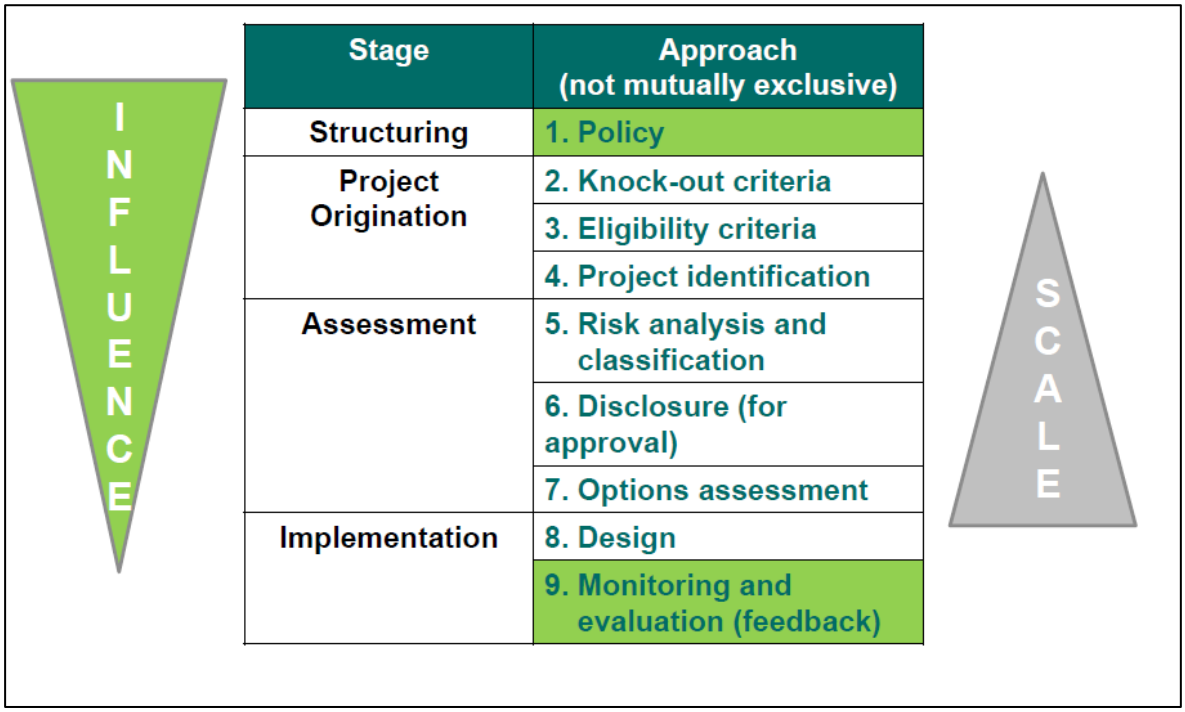
- Bilateral and multilateral institutions, in Europe and internationally, are currently incorporating climate change considerations (both adaptation and mitigation) in their safeguards policies, environmental assessments (EIA and SEA), economic (CBA) and financial analysis (risk credit policies). However, not all FIs have systematically developed tools and procedures for all the stages; most have focussed tools/procedures under one or two of these stages. The choice of tools depends on their mandates, institutional policy and investment priorities. For instance, the EBRD has an additional layer/methodology to assess transformational impacts.
- It was discussed that even though the joint MDB group is moving in the right direction to harmonise definitions for climate mitigation and adaptation activities, the MDBs are still using very different approaches. The mandates of the different organisations are also influencing their targets and what they consider to be climate finance.
- There was consensus that the AFD presentation illustrated with very useful examples how there is consensus on absolute GHG estimate across FIs, but that different baselines used by IFIs are leading to substantially different results on relative GHG and relative savings. A range of different definitions and methodologies, such as avoided emissions, saved emissions and net carbon footprint can lead to complicated comparison of relative emissions.
- Consistency in the approaches used by consultants and the occasional lack of technical expertise of consultants to integrate climate in existing investment tools was highlighted as a key issue. It was emphasised that there is a need to build capacity and understanding among consultancies and the community of project promoters.
- The EBRD stressed (and the group agreed on) the importance of market demand analysis (project origination processes) to build the pipeline of climate friendly investments, including on adaptation. On adaptation it was stressed that it is important to look at both safeguards to mitigate risks, and that the benefit of adaptation is the prevented adverse impact in the future instead of constant revenue streams for mitigation projects.
- The European Financing Institutions Working Group on Adaptation to Climate Change (EUFIWACC) discussions have highlighted some key challenges in incorporating adaptation, in that engineering and sector focussed staff need to realise that adaptation is a technical issue, and that businesses are treating adaptation as one-time events and do not consider structural and long term issues.

4.4 Investment decision framework

The proposed framework in Figure 4-2 indicates how an investment decision framework can be subdivided into a series of different approaches. The table below is organised from top to bottom, in terms of level of influence (from broad regional, national or sub-national policy) to narrow (design of individual projects or project sub-components), and from bottom to top in terms of scale of resources required for implementation by the project developer (i.e. options assessment processes are normally more complex than knock-out or eligibility criteria).

The proposed 10% increase of co-financing rates (CEF, Article 10, point 5) if projects reach climate mitigation/adaptation/resilience objectives can have a huge impact on the financial institution's investment policy as well as project design. More general grants provided in blending facilities can be linked with climate proofing. Finally, the new Financial Regulation for financial instruments clearly indicate that the use of financial instruments needs to be aligned with the EU budget instruments policy objectives.

Figure 4-2: Investment decision framework



We believe that the impact of climate criteria in the upper sections of the framework (1-5) may potentially have broader impact than at the Options Evaluation, Design and Monitoring phases (6-7). However, climate mainstreaming at this upstream level would imply clear policy orientations and political traction.

4.5 Investment decision tools

Table 4-2 outlines the specific tools which exist to be applied within each approach, in order to incorporate climate considerations within an investment decision process (to take into account both mitigation and adaptation considerations). Best-practice examples of tools are provided in bold italics. Examples for adaptation interventions are currently lacking for most stages.

Table 4-2 Examples of tools used under the different approaches for incorporating climate change in investment decisions

Approach	Description of main tools and methodologies	Mitigation	Resilience
Policy	This includes climate investment targets as a share of investment or lending portfolio. It can also cover the integration of climate considerations in the main sector (e.g. climate change policy, energy policy) or broader policy (e.g. EU environmental directives/laws) framework. Financial incentives (e.g. higher rate of co-financing) to support the projects financed can also provide high level signals for climate smart investments.	• Climate spending/GHG reduction/REs/EE targets (relative and absolute) • Emission threshold • Financial incentives for climate proofing ***EU 20-20-20 targets and EFIs/IFIs clean energy/climate lending targets – ADB, IFC, IDB, EIB, EBRD, KFW, AFD***	• Budget allocation (ring-fencing) for climate proofing • Targets for adaptation/climate resilience (beneficiaries) ***EU or national Adaptation strategy policy objectives or strategies***
Knock out criteria	This refers to any 'go' or 'no-go' criteria for excluding certain technologies or project types.	• E.g. excluding/safeguards for coal/lignite and unsustainable biofuel/biomass ***IDB does not fund any coal-fired power plants***	• E.g. excluding projects that didn't go through a proper climate risk/vulnerability assessment; or planning constraints in flood-prone areas
Eligibility criteria	This is a positive selection tool based on best available approaches. This can include compliance with regional and national standards and regulations (including EIAs) and specific sector/programme/fund criteria (i.e. limited to certain project types, sizes, locations).	• Positive screening based on best available technology, energy/CO_2 savings and transformational impact ***EIB eligibility criteria (in sector policies for water, transport and energy), IADB GHG guidelines on landfills, cement plants, and coal-fired powered, WB Criteria for Screening Coal Projects, AFD Project Selectivity Matrix***	• Tools to assist in selecting best available approaches given local context
Project identification/ origination	This covers the process by which projects are identified, procured and prepared. E.g. evidence in support of policy objectives, market demand studies, calls for proposals and development of investment plans.	• Linking investment plans to national policies and planning processes e.g. from domestic LEDS/NAMAs ***Lessons from CIF/CTF***	• Linking investment plans to national policies and planning processes e.g. from domestic NAPAs national adaptation strategies
Risk analysis and	This stage covers requirements and tools/methodologies for evaluation of climate related	• Thresholds by technology or sector (MWh or GHG emissions/year)	• Vulnerability assessments E.g. failing climate risk/vulnerability assessment

Approach	Description of main tools and methodologies	Mitigation	Resilience
classification	risk. These could include Performance Standards, Safeguards, toolkits and other risk classification tools e.g. Strategic Environmental Assessments and Societal CBA.	• GHG prevention and control technologies and practices ***Performance Standards of MDBs and BFIs, EBRD rating for the potential of the project to support transformation to low carbon economy***	• Including adaptation risk into project feasibility studies ***EBRD Toolkits for identifying and managing climate risks (integrated into FS, EIA)***
Disclosure	Evidence demonstrating potential to achieve GHG reductions and other and climate targets before project implementation.	• Ex-ante estimates of GHG emission reduction potential • Evidence for potential of low-carbon transformation ***GHG emission reduction potential - Global Environment Facility (GEF)*** ***Potential for low-carbon transformation etc. - Clean Technology Fund (CTF) and EBRD***	• Share of assets insured against natural disasters • Estimated cost of adaptation or climate proofing (incremental cost analysis) ***Adaptation Fund (AF) and Strategic Climate Change Fund (SCCF)***
Options evaluation	This stage looks at applying specific tools and methodologies for scoring, appraising or evaluating project for awarding or making final decision. It includes use of specialist economic, financial, socio and environmental analysis to account for climate change impacts.	• Shadow carbon price in Cost Benefit, Multi-Criteria and Cost Effectiveness Analysis • Marginal Abatement Cost Curves ***Carbon Price included in CBA or other financial analysis (EIB)*** ***Assess emissions of different project/policy options - IFC and AFD***	• Real-options analysis, min-max regret and robust decision theory, can be explored in specific sectors/cases • Climate resilience considerations, indicators and costs in CBA/MCA
Design	This stage comprises of specific measures or guidelines to ensure projects are climate smart once they are approved or selected. In addition to the design of the project it can also include financial incentives around performance.	• Mitigation measures – resulting from Stage 4 (Risk analysis and classification) • Climate relevant design manuals and procurement policies • Best available technology and sector performance guidelines	• Guidelines for climate proofing ***WB tools for Mainstreaming Adaptation*** ***ADB Guidelines for Climate Proofing*** ***EIB in-house guide – principles and methodologies to build resilience***

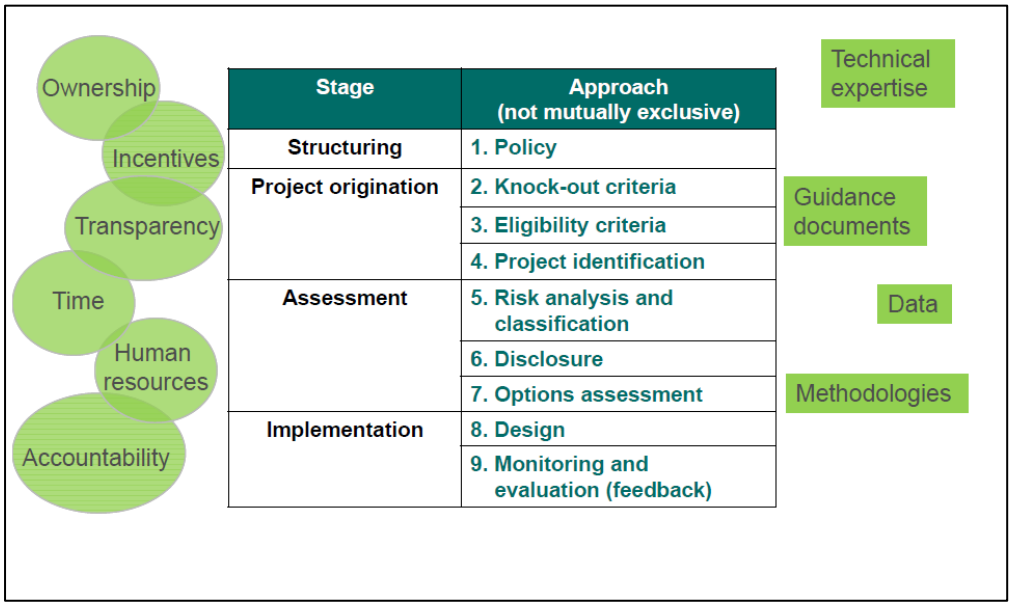
Approach	Description of main tools and methodologies	Mitigation	Resilience
		• Use of innovative financial instruments ***Design recommendations within Performance Standards of MDBs and EFIs***	
MRV framework	This includes system for ensuring that projects are implemented as planned, tracked and that their impacts are verified. The tools can include monitoring required under performance standards and safeguards, mid-term evaluations, and impact assessments	• At project level, reporting GHG footprint and/or annual emission reductions, and on low carbon transition/transformation. • At portfolio level - OECD DAC Mitigation Rio marker or joint MDB mitigation typology for tracking. ***IDB and IFC Safeguards*** ***AFD carbon footprint in project review***	• At portfolio level - OECD DAC Adaptation Rio marker and joint MDB adaptation typology. ***KFW Development Bank has a well-defined set of instruments to continuously monitor if projects are on track (both financially and with regards to implementation).***

4.6 Quality and reliability of the investment framework

The best-practice investment framework developed in this section is not an exhaustive and comprehensive framework. There are still a number of areas where more work is needed. The following points should be kept in mind when applying the best-practice investment framework:

- Gaps were identified in the study for adaptation across all stages of the framework, partly because projected impacts of adaptation measures are conceptually much harder to integrate in CBA. Gaps in disclosure and monitoring were identified for resilience as well. With a bit more research a working eligibility criteria can be identified for resilience (the COWI/Acclimatise study looked into this in more detail). This is an area DG REGIO's CBA guidelines could consider in more detail, as the resilience research is still very new. The joint MDB adaptation reporting methodology has not gone into the same level of detail as the mitigation methodology to establish a positive list. They have provided best practices/guidelines for adaptation reporting, however since adaption projects are very country and area specific, it is hard to establish a positive list. According to the MDB methodology it is more important to have a proper process of assessing future climate risks and design resilience measures.
- Although MDBs have different stakeholder pressures, they all realise the importance of improving common methodologies and increasing the sharing of best practices. Each of the eight FIs have developed, at varying degrees of comprehensiveness, some method or tool for the stages/approach in the investment framework. Each institution has luckily chosen a different area to 'specialise' or have the best method/tool and have built strong capacity in that area. New information is always being produced so it is important to share best practices and harmonise tools and methods.
- The next step is to determine what each FI can do to improve the methodologies that are not best practice examples. There is scope for institutions to share and learn from each other; however this is also dictated by their organisational mandate. Harmonising best practices and standards becomes very important when FIs are working with a wide range of partners/stakeholders.
- Lastly, the choice of methods is dependent on the availability of human and capital resources. The framework suggests that the choice is about having the right tools, and using them in the right place and at the right time. The suggested framework does not prescribe the use of every tool for every project, but rather, to use the most appropriate tool for the size and scope of the project. Figure 4-3 outlines the resources, both soft (in circles) and hard (in squares) which are required in order to implement/execute the different approaches within the investment decision process.

Figure 4-3 Resources required to implement different approaches for incorporating climate change in investment decisions



Stage	Approach (not mutually exclusive)
Structuring	1. Policy
Project origination	2. Knock-out criteria
	3. Eligibility criteria
	4. Project identification
Assessment	5. Risk analysis and classification
	6. Disclosure
	7. Options assessment
Implementation	8. Design
	9. Monitoring and evaluation (feedback)

5 Case Study 1: Connecting Europe Facility (CEF)

5.1 Overview

The European Union (EU) is seeking to establish Trans-European Networks (TENs) in the transport, energy and ICT sectors. The TENs are seen as key elements for fostering internal markets along with economic and social cohesion within the European Union. Investments by the EU in TENs are directed toward supporting interconnection, interoperability and access.

This section seeks to outline the decision process for the Trans-European transport and energy networks for both the multi-annual framework (MFF) periods; ultimately to understand how climate change is incorporated into the investment decision processes of the current MFF, and what the implications are for taking climate considerations into account under the forthcoming MFF.

Under the current Multiannual Financial Framework (MFF) 2007 – 2013, each of the TEN programmes are managed by different Directorate Generals (DG)s, thus have separate Commission decision procedures. The policy framework for the TEN-T (transport) programme is set by the DG for Mobility and Transport (MOVE) and the implementation and management of the programme is supported by the TEN-T Executive Agency. The TEN-E (energy) programme is managed and implemented by the DG for Energy (ENER).[33]

Within the MFF 2014 – 2020, all three TEN programmes will be managed under a common framework, the Connecting Europe Facility (CEF), with a set of rules that will apply to all budget lines. The management and implementation will continue to rest with the respective DGs, for transport projects with support from the TEN-T Executive Agency, and for energy projects a TEN-E Executive Agency will be established. The process will be harmonised regarding the use of external experts in the appraisal phase; however, there will continue to be differences in the project selection and appraisal processes.

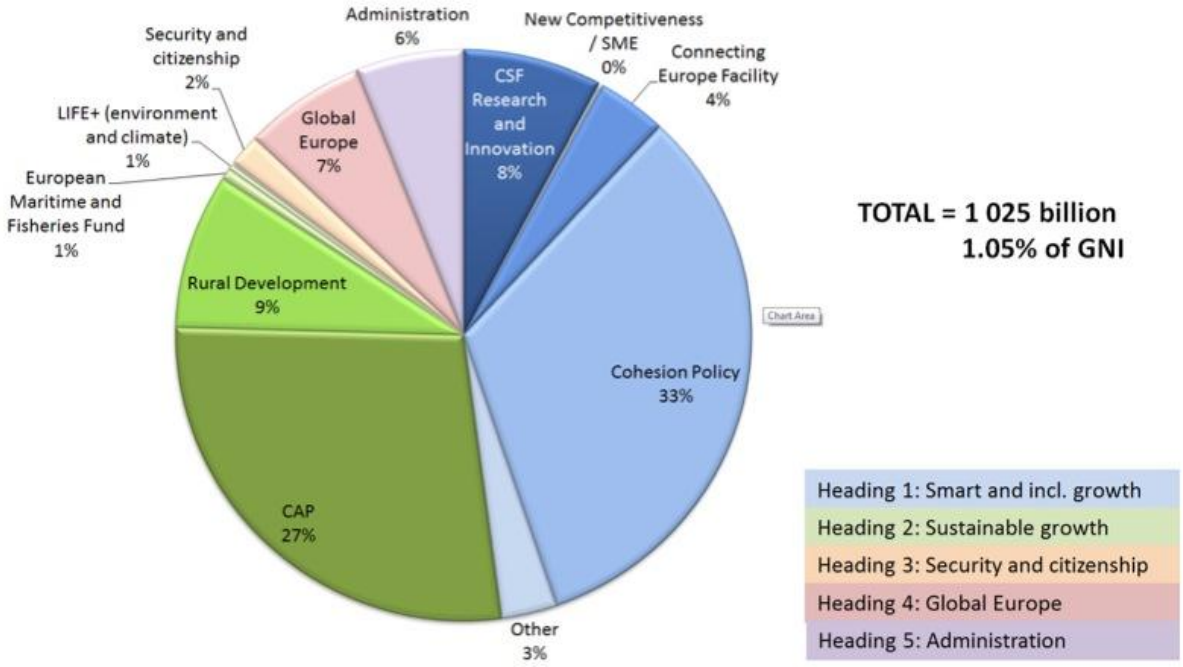
In terms of assessing the investment decision procedures for the TEN, it is important to note that in addition to EU funds under the TEN-T and E programmes, transport and energy projects in Europe may also be supported by: 1) resources from the Cohesion Funds (CF) and European Regional Development Funds (ERDF) that support economically weaker Member States in order to correct imbalances within the EU (see section 5.5). For these funds, the investment decision procedures of the DG for Regional Policy (REGIO) apply; additional resources may also be sourced from 2) European Investment Bank (EIB) in the form of loans and guarantees; and, 3) funding from national resources. It is important to take into account the investment procedures of these entities, in order to get a full picture of how climate considerations may be incorporated into decisions around European energy and transport infrastructure.

An overview of the EU budget for the MFF 2014 – 2020 is illustrated in Figure 5-1.

The European Union plans to spend 20 per cent of its budget for the period 2014 – 2020 on climate change related action[34].

[33] For the purpose of this report we have not reviewed the process relating to Information and Communications Technology (ICT) under the TENs.
[34] IEEP (2012): Practical Options for Climate Change Mainstreaming in the 2014 – 2020 EU Budget, p. 3.

Figure 5-1 Proposed allocations in 2014 – 2020 EU MFF



Source: IEEP (2012): Practical Options for Climate Change Mainstreaming in the 2014 – 2020 EU Budget, p. 2.

5.2 MFF 2007 – 2013 and MFF 2014 – 2020: Trans-European Transport Networks (TEN-T)

5.2.1 Objective and rationale for TEN-T

The trans-European transport network includes transport infrastructure, traffic management systems and navigation systems. Transport infrastructure includes road, rail, inland waterway networks, 'motorways of the sea', seaports, inland waterway ports, airports and other interconnection points between modal networks. In the field of transport, the EU aims to establish a single, multimodal network that integrates land, sea and air transport networks throughout the Union.

The **priorities** for the trans-European transport network as outlined in Article 5 of the TEN-T Guidelines are as follows:

- Establishment of key links and interconnections needed to eliminate bottlenecks, fill in missing section and complete main routes
- Promotion of the interconnection of national networks to facilitate the linkage of islands, areas similar to islands, landlocked, peripheral and outermost regions to the central regions of the Union
- Measures to achieve an interoperable rail network, including routes adapted to freight transport
- Promotion of long-distance and short sea and inland shipping
- Integration of rail and air transport
- Improving the capacity and efficiency of existing and new infrastructure, promotion of inter-modality and improvement of the safety and reliability of the network
- Integration of safety and environmental concerns in the design and implementation of the network
- Development of sustainable mobility of persons and goods

5.2.2 Overview of instruments for TEN-T funding

Under the current and future MFF's, the investment decision process and procedures will largely remain the same for TEN-T; and so are reviewed as a single process in the sections below. The policy and future changes (where applicable) under CEF are covered in section 7.3.

Investments in TEN-T networks and priority projects are supported by several instruments:

- Grants from the **Trans-European Transport Programme**
- Grants from the **Cohesion Fund**
- Grants from the **European Regional Development Fund**
- Loans and guarantees from the **European Investment Bank**
- **National resources** of the respective Member State (which provides the majority of funding)

Table 5-1 below outlines the managing agencies for the instruments listed above, along with the volume of funding dedicated in the 2007-2013 budget.

Table 5-1 Overview of TEN-T financial instruments

Instrument	Responsible Agency	Type of support	Budget 2007 – 2013 Network + Priority	Budget 2007-2013 Priority Projects only
TEN-T Programme	DG MOVE and TEN-T Executive Agency	Grant	€8 billion	€5.4 billion
Cohesion Fund	DG REGIO	Grant	€44.2 billion	€12.3 billion
ERDF				€4.7 billion
EIB Loans and guarantees	EIB	Loan/ guarantees	€53 billion	€25 billion
(National Resources)			€285 billion	€106.6 billion
Total Allocation			€390 billion	€154 billion

Source:http://ec.europa.eu/transport/themes/infrastructure/ten-t-funding-and-financing/doc/funding_figs.pdf

5.2.3 Overview of actors and institutions

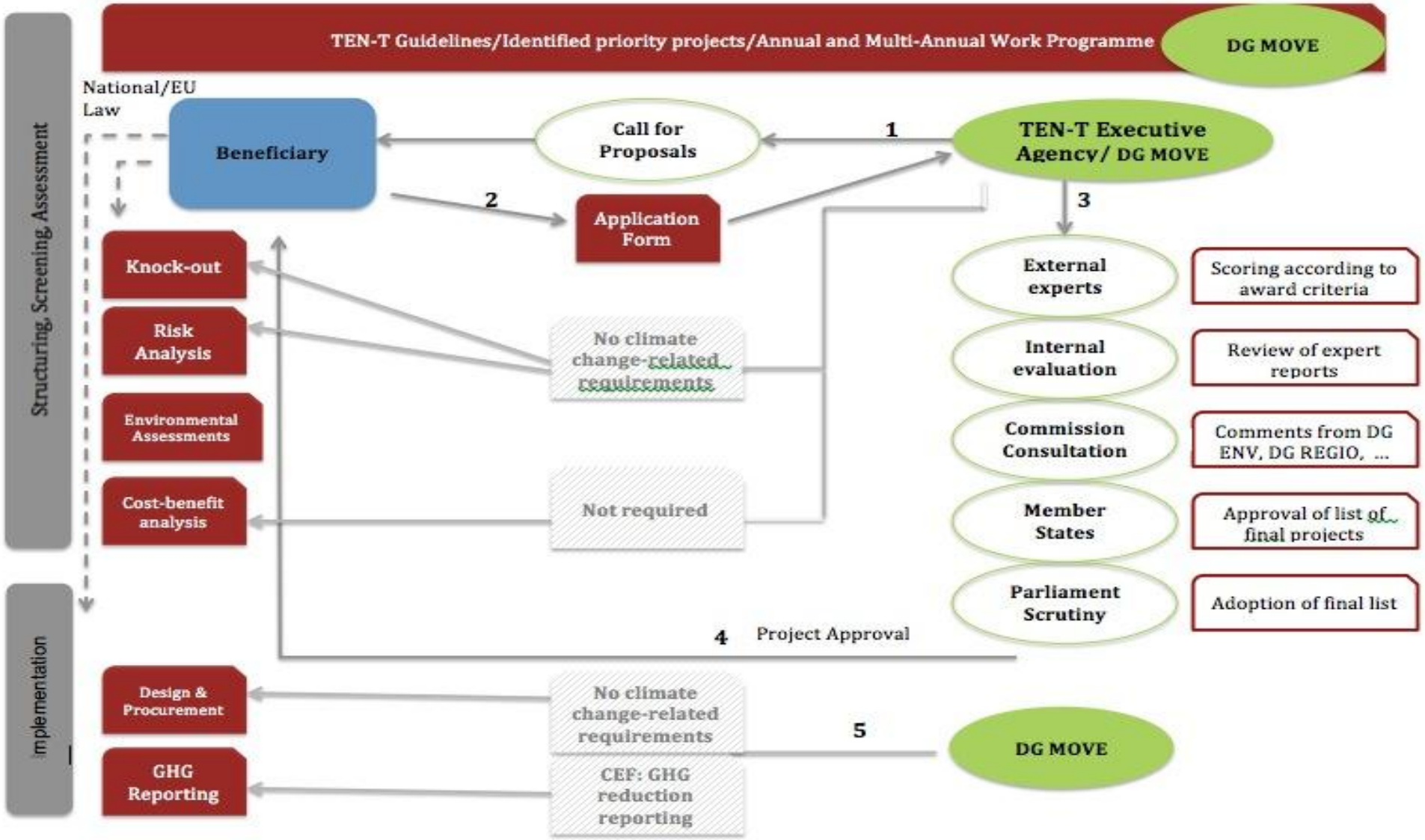
The TEN-T decision making process is complex. Table 5-2 and Figure 4-2 highlight the main institutions involved in the programme, and also provides a brief summary of the decision making process for each party involved.

Table 5-2 TEN-T managing institutions and a brief summary of the decision making process

DG MOVE	DG MOVE makes political decisions for the TEN-T programme. It is responsible for the overall strategy and defines objectives and priority areas. It is also responsible for monitoring and supervising the TEN-T Executive Agency (EA).[35]
TEN-T EA	The TEN-T EA implements the TEN-T programme on behalf of the European Commission. It manages the entire project lifecycle, including organising calls for proposals, evaluations and providing support to Member States. Furthermore, it prepares the text on the financing decisions and key feedback to the European Commission.[36]
Independent experts	Independent transport experts from different Member States are consulted to provide a first assessment of project proposals (received from Member States). The experts are selected by the TEN-T EA from a Commission database with DG MOVE approval. Experts are chosen on the basis of their skills, experience and knowledge along with ensuring an appropriate balance between academic and industrial expertise, gender and geographical origin, along with a regular rotation of experts.[37]
Internal Evaluation Panel	The internal evaluation panel is composed of a chair, project officers from the relevant operational Directorates in DG MOVE, TEN-T EA Head of Units and senior project managers. The background of the participants also depends on the transport mode under assessment. DG ENV participates in the panel and other DGs participate if the project falls into their area of responsibility.[38]
Financial Assistance Committee (FAC)	The Financial Assistance Committee includes representatives from the relevant ministries of the Member States.

[35] http://tentea.ec.europa.eu/en/about_us/mission__introduction/mission__introduction.htm
[36] http://tentea.ec.europa.eu/en/about_us/mission__introduction/mission__introduction.htm
[37] Interview Ignacio Ramallo, TEN-T EA; Interview Judit Bertrand, DG MOVE.
[38] Interview Ignacio Ramallo, TEN-T EA.

Figure 5-2 TEN-T decision making process



5.3 MFF 2014 – 2020: Policy and regulatory changes under Connecting Europe Facility (CEF)

Under the CEF, the TEN-T and TEN-E projects will be managed under a common framework, with some specific features for each programme remaining; the exact processes for investment decisions are still to be decided. It is expected that the overall decision procedure for transport projects will not change significantly, apart from the potential methodological changes concerning the socio-economic CBA and climate impact. In contrast, the process for TEN-E projects will undergo some procedural changes, particularly in terms of the establishment of a TEN-E Executive Agency; similar to the existing TEN-T EA.[39] Moreover, an energy-wide CBA will be introduced. In addition, the process for energy projects differs from transport projects particularly in terms of the role of the European Network of Transmission System Operators for Electricity and Gas (ENTSOs) in the process of energy project identification.

The following section outlines the overall changes under CEF, which are applicable both for transport and energy projects. Please refer to Annex 3 for the general appraisal projects of transport projects. An overview of the appraisal process for energy projects under CEF is given in Annex 4.

5.3.1 Objective and rationale for the Connecting Europe Facility

As mentioned previously, for the next MFF (2014 – 2020) the TEN-T, TEN-E along with the ICT Programme will be managed under a common CEF, resulting in a more streamlined appraisal process. The common framework and decision procedure will simplify the rules, and allow for the identification of synergies across the three sectors.

The main aims of the CEF include:

- *Establishing a single framework for investment in EU infrastructure projects:* simplify the EU legal framework concerning TEN infrastructure funding and ensure a coherent approach to EU project financing across the sectors
- *Simplification measures and coherence with existing rules:* establish centralised management of the three sectors, common funding instruments, common award criteria, common conditions for financial assistance
- *Stronger emphasis on blended finance:* complement direct EU support and build an environment conducive to private investment
- *Ensure CEF is an essential element of the next MFF and the EU growth agenda*

The CEF 2014-2020 will have an implementation budget of EUR 29,299 million (including EUR 10 000 million that will be transferred from the Cohesion Fund as provided in (a) below). That total amount will be distributed among the sectors as follows:

a) ***Transport***: EUR 23,174 million, out of which EUR 10,000 million will be transferred from the Cohesion Fund to be spent in line with the CEF Regulation in Member States eligible for funding from the Cohesion Fund;
b) ***Energy***: EUR 5,126 million;
c) ***Telecommunications***: EUR 1,000 million.

The transfer of finance from the Cohesion Fund for transport infrastructure under the CEF will co-finance pre-identified projects listed in the annex to the CEF Regulation. Until 31 December 2016, the selection of projects eligible for financing should be carried out respecting the national allocations transferred from the Cohesion Fund to the Connecting Europe Facility. Thereafter, any unused funds could be redeployed to new projects through new competitive calls for proposals.

[39] Proposal for establishing the Connecting Europe Facility, COM (2011) 665, 19.10.2011. p. 9.

Table 5-3 CEF in figures (according to the EC proposal of 29 June 2011)

€29.3 billion (Total)			
€5.1 billion (energy infrastructure)	€1 billion (broadband infrastructure)	€23.1 billion (transport infrastructure)	
		€13.2 billion	€10 billion (earmarked from the Cohesion Fund)*

*For investments exclusively in the Member States eligible to Cohesion Fund support (see section CEF Transport)

Source: 8 February EU Summit on the MFF (page 8): http://www.european-council.europa.eu/council-meetings/conclusions?lang=en

5.3.1.1 Management

DG MOVE (for transport) and DG ENER (for energy) will have the overall responsibility for the respective programmes; as currently the case for the MFF 2007 – 2013. The most relevant change in terms of the decision process is the establishment of a **TEN-E Executive Agency**, which will have similar tasks as the TEN-T Executive Agency.

Table 5-4 CEF Repartition of tasks

Repartition of tasks	
European Commission	Executive Agency
Defines the policy	Turns policy into action
• Makes all CEF programming decisions • Defines strategy, objectives and priority areas of action • Selects the projects for co-financing and adopts the financing decisions • Evaluates the CEF programme and the Agency's performance	• Follows up the technical and financial implementation of the projects • Manages the entire project life cycle • Executes the CEF budget • Gives feed-back, assistance and reports to the Commission • Provides administrative support to the beneficiaries of the CEF financing • Coordinates with other Commission services, programmes, institutions and financial instruments

Source: European Commission (2012): Connecting Europe Facility. Investing in Europe's growth, pg. 10.

5.4 Application of investment framework

The last step of the case study was to apply the best-practice investment framework developed in section 5 to the TEN-T programme under the MFF 2007 – 2013 and under CEF (MFF 2014 – 2020). Table 5-5 summarises the climate change considerations based on the best-practice investment framework developed in the section above.

Table 5-5 Summary Table on Climate Change Consideration based on the best-practice investment framework

	TEN-T Programme MFF 2007 – 2013	**TEN-T and E Programme under CEF MFF 2014 – 2020**
Policy	• Climate change is not particularly mentioned as a goal within the TEN-T Guidelines, a general reference to the "Development of sustainable mobility of persons and goods" is made • No formal lending targets are in place to encourage consideration of climate	• The Europe 2020 strategy and the 2020 energy and climate targets are referenced as the general framework for the CEF 1) greenhouse gas emissions 20% lower than 1990 (or even 30%, if the conditions are right) 2) 20% of energy from renewables 3) 20% increase in energy efficiency The EU plans to spend 20% of the budget for the MFF 2014 – 2020 on climate change objectives. It is not specified which funding instruments will

	TEN-T Programme MFF 2007 – 2013	TEN-T and E Programme under CEF MFF 2014 – 2020
	change	contribute to this commitment. Transport • TEN-T projects play an explicit role in supporting the goal of reducing GHG emissions in the transport sector by 60% by 2050 Energy • TEN-E projects should support the EU's target to reduce GHG emissions by 20%, increase energy efficiency by 20% and produce 20% of final energy consumption with renewable sources by 2020 Climate change proven infrastructure and disaster resilience must receive due consideration by project developers (TEN-E and TEN-T draft guidelines)
Project Origination	• Work Programme within the TEN-T Guidelines does not contain formal knock-out criteria • Projects need to be part of the list of projects of common interest and in line with the objective of the work programme • 30 priority projects to be accomplished by 2020 are already defined • The priorities have already shifted lower carbon options with an increased emphasis on rail projects in the priority projects and work programmes • Projects are identified via calls for proposals, along with the support of an Executive Agency • The Annual Work Programme in 2011 included a specific climate change related priority "Promote infrastructure development contributing to mitigation and adaptation to climate change and reducing the impact of transport on the environment"	Transport and Energy • CEF will finance as a matter of priority the projects and areas identified as environmentally-friendly (rail and inland waterways) • Projects need to be part of the list of projects of common interest in order to be eligible for funding. Projects that receive funding in a given period will be identified via calls for proposals. This action will be carried out with the support of an Executive Agency (covering TEN-T and TEN-E) • Projects have to be in line with the policy objectives, eligibility criteria and priorities as outlined in the CEF Regulation and the work programmes established by the responsible DGs Energy • TEN-T projects are selected from a list of 'common interests' identified and developed by the Commission in cooperation with the Parliament and the Member States. In contrast, TEN-E undergoes an in-depth appraisal procedure for the identification of projects for the Ten-Year Network Development Plan (TYNDP). This procedure is carried out by the "European network of transmission system operators" (ENTSOs) for gas and electricity
Risk Analysis	• Risk analysis is conducted by the Beneficiary (Member State or other applicant under calls for proposals) according to national / internal standards • No reference to climate change considerations is included in the application form • Applicants need to provide information on expected overall impact on	A draft application form for CEF projects is not yet available Transport • The risk analysis is prepared by the Beneficiary (Member State or other applicant under calls for proposals) and depends on national / internal requirements and methodologies • The reviewed information did not indicate that climate proofing of transport infrastructure will be compulsory under CEF

	TEN-T Programme MFF 2007 – 2013	TEN-T and E Programme under CEF MFF 2014 – 2020
	environment, but it is not compulsory to report on climate change related implications • Compliance is required with EU environmental law required (EIA, SEA, Habitats, Birds and Water Framework Directive)	<u>Energy</u> • Risk analysis is part of the project identification for the TYNDP conducted by the ENTSOs and may also depend on external experts as is the case with TEN-T projects. • Projects need to comply with EU environmental law
EIA Directive	• Climate change issues are not considered in the EIA and SEA • Guidance is due to be published shortly on how to incorporate climate change and biodiversity issues in EIA and SEA DG ENV is not assessing climate change issues in the consultation process of infrastructure projects • The EIA Directive is currently under revision. DG ENV has made a proposal to improve climate change considerations as part of the EIA. Thus far, no methodologies have been developed.	
Disclosure	• No requirement to disclose adaptation cost or estimated GHG emissions • Beneficiary is recommended to provide data on GHG emission reduction for sustainable transport modes, however no methodology for GHG reporting is available at EU level	• The GHG reduction potential of sustainable transport and energy projects will have to be disclosed to the Commission. Methodologies for GHG emissions reduction estimation have not yet been developed. • For other project types, i.e. that have not GHG reduction potential, project beneficiaries are not required to estimate, measure or disclose the overall GHG emissions of the projects

Options Assessment	• External experts evaluate project proposals according to 4 award criteria: relevance, maturity, impact and quality
	• No climate change related criteria are in place for the evaluation
	• A CBA is not required thus far, as mainly studies and smaller projects were supported (below the threshold for CBA)
		Art 10 of the CEF Regulation foresees a cost-benefit analysis for each project, though there is no mention of climate change considerations.
		
		<u>Transport</u>
		• The overall procedure for options assessment of transport projects will largely remain the same under CEF
		• The revised TEN-T Guidelines requires the consideration of climate and disaster resilience for projects although no methodology is provided.
		• However, the European Parliament suggested to
		  ○ develop a methodology for a socio-economic cost-benefit analysis
		  ○ and a climate impact assessment for TEN-T projects
		The proposal has not undergone Council approval yet.
		<u>Energy</u>
		• A CBA is conducted by the ENTSOs for the identification of projects for the TYNDP together with a multi-criteria analysis
		• There is no common methodology in place how to include climate change issues in the CBA, however, adaptation is considered on a case-by-case basis
		• The revised TEN-E Guidelines require the development of a harmonised methodology for a system-wide energy cost-benefit analysis that takes into account:

	TEN-T Programme MFF 2007 – 2013	TEN-T and E Programme under CEF MFF 2014 – 2020
		○ GHG emissions over the technical lifecycle of the project ○ System resilience, including climate resilience for electricity transmission projects and ○ Climate resilience for gas transmission projects • The MCA required for energy projects takes into account GHG emissions • The internal procedures within the Commission (post call for proposals stage) for TEN-E under the CEF have not been confirmed. It is likely to include the use of external experts.
Design	• No climate proofing of investments is required • No climate relevant design manuals or procurement policies are in place	• The inclusion of climate change requirements for the design phase of projects and the procurement manuals is currently not planned.
Monitoring and Evaluation	• Beneficiaries are not required to report on GHG emissions, however they are asked to report on GHG emissions, if this was established as an indicator for project success. • No methodology for the reporting is provided / required for use by DG MOVE	The reporting requirements for TEN-T and TEN-E projects under CEF will be strengthened to be able to measure project success regarding reaching the EU 20-20-20 targets. The following indicators will be established to measure CEF impact: • Reduction of greenhouse gas emissions • Increase in energy efficiency • Share of renewable energy <u>Transport</u> In the field of transport, the methodology for all three criteria remains to be developed. <u>Energy</u> In the field of energy, the methodology for measuring the GHG emission reductions still needs to be developed.

5.5 Cohesion Fund (CF) and European Regional Development Fund (ERDF)

5.5.1 Background to the CF and the ERDF

5.5.1.1 Objective and Rationale

The aim of the Cohesion Fund is to reduce the economic and social shortfall of Member States who's GNI per inhabitant is less than 90 % of the Community average. Funds are directed to the ten new Member States along with Spain, Greece and Portugal.

The European Regional Development Fund (ERDF) aims to strengthen economic and social cohesion within the European Union by correcting imbalances between its regions.

5.5.1.2 Management

DG REGIO is managing the Cohesion Fund and the ERDF.

5.5.1.3 Volume

During the 2007-2013 MFF period, the two funds will provide €44.2 billion to TEN-T projects, of which €18 billion will be for rail projects, €19 billion for road projects and €7.2 billion to other transport modes.[40]

A total of € 11.8 billion was allocated to energy projects in the MFF 2007 – 2013.[41]

5.5.1.4 Funding instruments

Financial assistance is provided through grants and special support instruments (e.g. JASPERS).

5.5.2 Overview of actors and methodologies

The main institutions involved in the process are:

Member States	The management, implementation and monitoring of projects is completed at the Member States level.
DG REGIO	DG REGIO is involved in the review of major projects, including projects forming part of TEN-T networks, with investments of over € 50 million. Projects under € 50 million have to be in line with the Operational Programme and are then financed without further Commission scrutiny.
JASPERS	The "Joint Assistance to Support Projects in European Regions" (Jaspers) supports the 12 Central and Eastern EU Member States during project preparation in order to improve the quality of submitted projects for financing under the Structural and Cohesion Funds. JASPERS has developed informal procedures for including climate considerations into their CBA, based on the DG REGIO CBA Guide.

[40] Steer Davies Gleave (2011): Mid-term evaluation of the TEN-T Programme (2007-2013) p. 12.
[41] E-Mail Communication with Mateusz Kujawa, DG REGIO.

Figure 5-3 Cohesion Fund and ERDF decision process

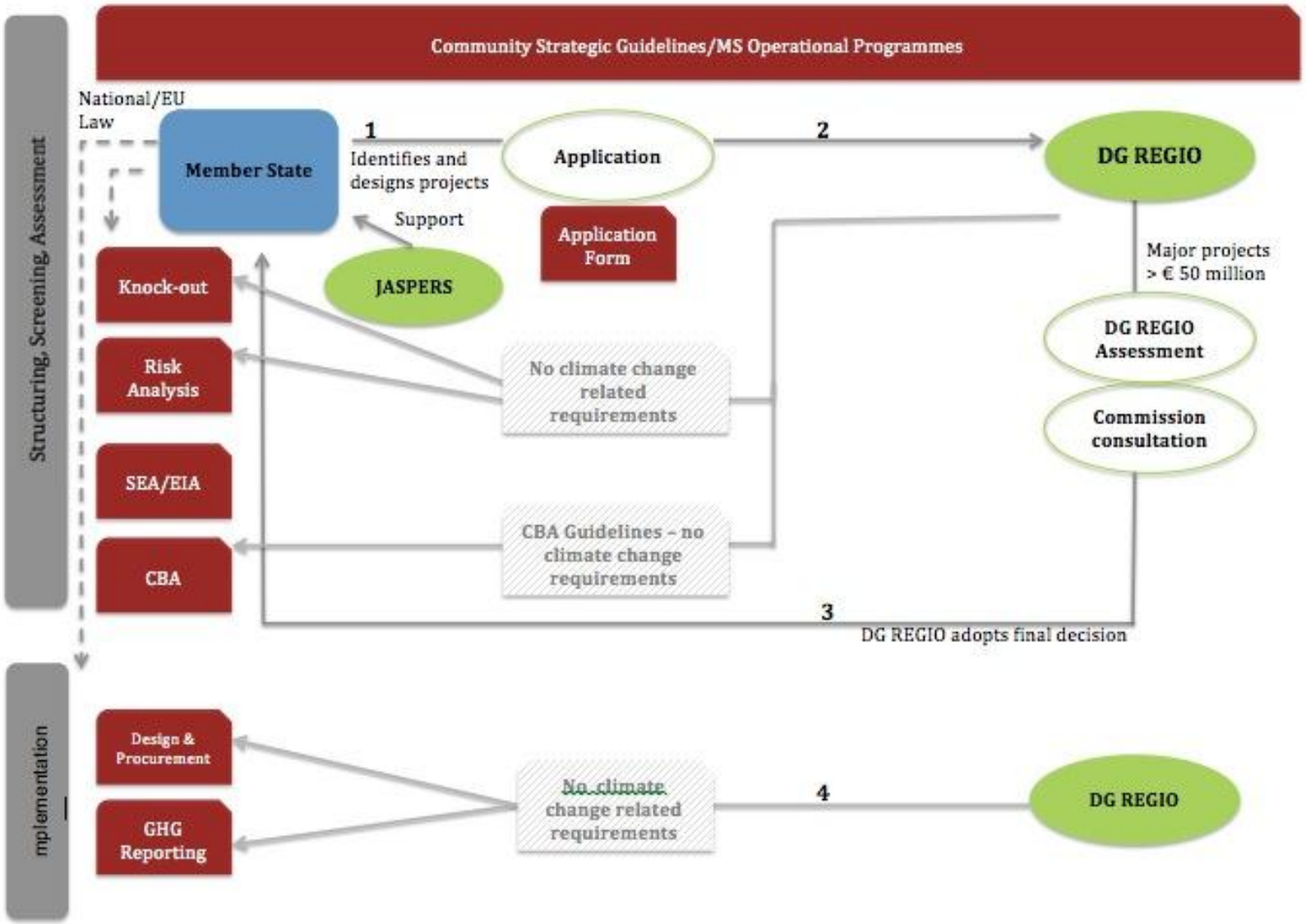


Table 5-6 Summary Table on Climate Change in the CF and ERDF

	Cohesion Fund and ERDF
Policy	• The funds should support projects that are in line with European climate change goals by: ○ supporting the shift towards a low-carbon economy in all sectors; ○ promoting climate change adaptation, risk prevention and management; ○ protecting the environment and promoting resource efficiency; promoting sustainable transport and removing bottlenecks in key network infrastructures; • The inclusion of particular climate change related goals in the National Strategic Reference Frameworks and the Operational Programme depends on the agreement between the eligible country and the Commission
Project Origination	• The principle of shared management is applied: Projects are identified at a Member State level – if applicable with JASPERS support; Member States can apply for additional funding under the CF/ERDF if the project complies with the country's operational programme • TEN-T and TEN-E projects as well as renewable energy and energy efficiency measures are eligible for funding ,amongst others
Risk Analysis	• The risk analysis is conducted at a national level • DG REGIO does not require binding climate vulnerability assessments; however, if climate change is considered a major risk to the project it has to be evaluated and managed accordingly • Applicants need to provide information on the environmental impact of the project, e.g. compliance with European climate change policy
EIA Directive	• Climate change issues are not considered in the EIA and SEA • There is no methodology available to incorporate climate change into assessments • DG ENV does not assess climate change issues in the consultation process of infrastructure projects • The EIA Directive is currently under revision. DG ENV has put forward a proposal to improve and incorporate climate change considerations as part of the EIA. To date, no methodologies have been developed.
Disclosure	• Project beneficiaries are not required to estimate, measure and/or disclose the GHG emissions of the project.
Options Assessment	• Major projects over € 50 million (€ 25 million for environment projects) are checked by DG REGIO to determine whether they are feasible and there is value in co-financing. The main decision tool is the cost benefit analysis, which needs to comply with the DG REGIO 2008 CBA Guidelines.
Design	• Climate change is mentioned in the CBA guidelines, along with a recommended value for carbon price. However, there is no systematic methodology to assess GHG and baselines for projects.
Monitoring and Evaluation	• No climate change related design and procurement manuals are in place. Beneficiaries need to comply with EU Procurement rules, which do not include requirements regarding climate change.

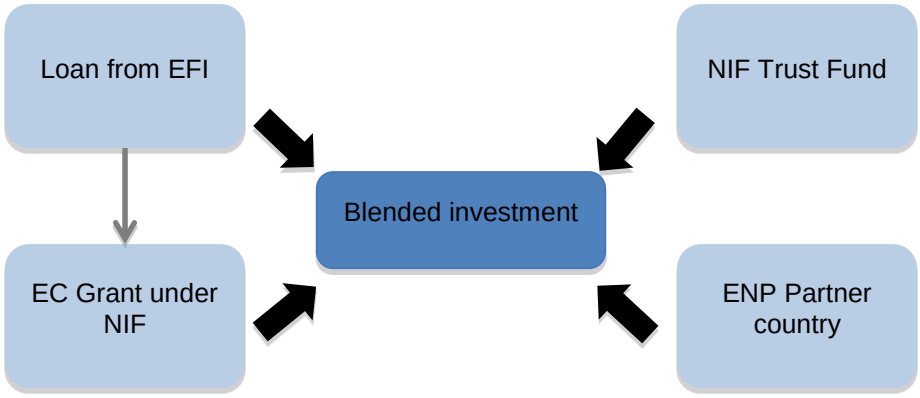
6 Case study 2: Neighbourhood Investment Facility (NIF)

6.1 Background to the Neighbourhood Investment Facility (NIF)

The NIF has been set up to finance **capital-intensive infrastructure projects** and to support the **private sector** in partner countries (see below), which are part of the **European Neighbourhood Policy (ENP).** The facility was officially launched in 2008.

The NIF plays a key role in donor coordination and increasing aid effectiveness in line with the Paris Declaration and the Accra Agenda for Action: It is aimed at pooling grant resources form the EU budget and the EU Member States and using them to leverage loans from European Finance Institutions and with resources from the ENP partner countries. **In order to receive a grant contribution from the NIF, a project must obtain finance from an eligible European Finance Institution** in the first place**.**[42]

Figure 6-1 NIF Blending Mechanism



6.1.1 Management

The facility is managed by the DG for Development and Cooperation – EuropeAid (DG DEVCO). The NIF secretariat is part of the "Financial Instruments"[43] unit in DG DEVCO, which is responsible for coordinating all of DEVCO's regional investment facilities in Latin America, Caribbean, Central Asia, Asia, Pacific and Sub-Saharan Africa.[44] The decision processes are largely the same for all facilities.[45]

6.1.2 Volume

For the MFF 2007 – 2013, the total commitments by the European Commission to the NIF were €766.9 million; complemented by direct contributions from Member States (the NIF Trust Fund). At the end of 2011, total contributions paid into the NIF Trust Fund by the MS amounted to € 70 million (pledged contributions).[46] [47]

[42] NIF 2012, p. 3; http://ec.europa.eu/europeaid/where/neighbourhood/regional-cooperation/irc/investment_en.htm
[43] Please note that as part of this study we did not have the opportunity/scope to assess and look into other objectives of the instruments
[44] NIF 2012, p. 34.
[45] Interview Eleftherios Tsiavos, DG DEVCO.
46 Feedback from Johanna Peyredieu-di-Charlat
[47] NIF 2012, p. 10.

Table 6-1 NIF allocation

Type of contribution	Responsible Agency	Type of support	Commitments 2007 – 2013	Actual allocated 2007 - 2011
NIF EC funds	ENPI INTER-REGIONAL PROGRAMME (managed by DG EuropeAid)	Grant	€ 766.9 million	€ 417.7 million
NIF Trust Fund (MS pledge contribution)	EIB	Grant	€ 70 million	€ 64.4 million
EFI Loans	EIB, EBRD, AFD, KFW Development Bank	Loan	N/A	€ 6.3 billion
Resources from ENP Partner countries, MDBs, commercial banks and other donors	National agencies		N/A	€ 7.2 billion
Total Allocation				€ 14 billion

Source: NIF Annual Report 2011. Note: There is no predefined allocation per country or sector, but the NIF consists of two budgetary lines (Southern and Eastern Neighbourhood).

Sector distribution of projects (2008 – 2011)
Since 2008, projects in the following sectors were supported:

- 34 % transport infrastructure projects
- 26 % energy sector
- 17 % water & sanitation sector
- 4 % social sector
- 17 % private sector[48]

The eligible projects per sector are defined in section 7.3.3

Country distribution of approved projects - East (2008-2011)
Armenia – 3
Georgia – 6
Rep of Moldova – 9
Ukraine – 6
Regional – 5

Country distribution of approved projects - South (2008-2011)
Egypt – 8
Jordan – 1
Lebanon – 1
Morocco – 6
Tunisia – 4
Regional – 3

Type of NIF Support (2008 – 2011)

- 56 % project investment cost
- 36.5 % technical assistance
- 7.5 % risk capital[49]

Partner countries
Partner countries of the European Neighbourhood Policy (ENP) that have signed an ENP Action Plan are in principle eligible for NIF grants.[50] Currently, they comprise of Armenia, Azerbaijan, Egypt,

[48] NIF 2012, p. 6.
[49] NIF 2012, p. 26.

Georgia, Israel, Jordan, Lebanon, Moldova, Morocco, Occupied Palestinian Territory, Tunisia, and Ukraine.[51] On a case-by-case basis projects in other countries can also be financed taking into account regional or specific circumstances.

Table 6-2 Categorisation of ENP Partner countries according to World Bank Classification

	Low-income	Lower-middle income	Upper-middle income	High-Income	High-Income OECD
Armenia		X			
Azerbaijan			X		
Egypt		X			
Georgia		X			
Israel				X	
Jordan			X		
Lebanon			X		
Moldova		X			
Morocco		X			
Occupied Palestinian Territory	N/A	N/A	N/A	N/A	N/A
Tunisia			X		
Ukraine		X			

Source: Own presentation according to World Bank Classification: http://data.worldbank.org/about/country-classifications

6.1.3 Eligible European Finance institutions

Projects can be identified and suggested by the following European Finance Institutions (see list of abbreviations below):

- Multilateral European Finance Institutions: EIB, EBRD, CEB, NIB
- European bilateral development finance institutions: AFD, AECID, KFW Development Bank, OeEB, SIMEST, SOFID.

In 2011, most projects in the Eastern Neighbourhood were financed by EBRD, whereas KFW Development Bank, AFD and EIB financed the majority of projects in the Southern Neighbourhood.[52]

6.1.3.1 Climate Change Windows

Within the EU blending mechanisms specific "Climate Change Windows" (CCW) have been created in order to enable **tracking** of all climate change related projects funded by EU institutions. An additional budget of € 17 million was allocated by the Commission to be *shared* between the CCW of NIF and the Latin America Investment Facility for Rio Marker 2 projects only. However, the additional budget was solely used for the Latin America Facility and no resources were allocated to NIF.[53]

The opening of the CCW in the EU Regional Blending Facilities has also positively contributed to the process of mainstreaming Climate Change debate, establishing mechanisms to support visibility and accounting of blended finance for Climate Change action.

Comparing information provided by the different financial institutions is an incentive to improve definitions, methodologies and benchmarks to track climate actions, assess their impact and improve climate proofing of investments. A common language would allow for an easier comparison of

[50] Apart from Algeria, Belarus, Libya and Syria, all ENP partner countries have signed an Action Plan. http://ec.europa.eu/world/enp/documents_en.htm#7
[51] http://ec.europa.eu/world/enp/partners/index_en.htm
[52] NIF 2012.
[53] Interview Eleftherios Tsiavos, DG DEVCO.

information across different financial institutions, as well as reducing the risk of duplicate/ double counting of climate change related investments.
Of the 52 projects supported by NIF to date, more than half were low-carbon and climate resilience projects. These projects received approximately € 219.6 million of NIF contributions. According to the Rio Markers accounting systems, € 126.78 million was reported as climate action support.[54]

The range of projects tracked under the CCW is quite diverse, it can range from large renewable demonstration plants, to financial schemes to support energy efficiency, sustainable and climate resilient transport and water infrastructures. Innovative approaches, such as carbon-linked performance based mechanisms, aiming at supporting the implementation of Nationally Appropriate Mitigation Actions (NAMAs) have also been explored under the Latin America and Asia Investment facilities LAIF and AIF; these currently being considered as future categories under the NIF.

6.2 Basic decision process of the NIF

Partner countries submit project proposals to an eligible European Finance Institution (EFI). Alternatively, the EFI identifies a suitable project in close collaboration with the beneficiary country and/or a project promoter (building on previous preparatory work conducted). A Lead Finance Institution is chosen amongst the EFIs, which presents the project to the Finance Institutions Group (FIG) where projects are discussed on a technical level. The project pipeline is agreed by the EFIs, and then submitted to the FIG (which only notes indicative totals, does not "approve" or "agree" with the pipeline). The common practice has been that EBRD co-ordinates the pipeline for the East, and EIB does that for the South. The FIG recommends provisional/final approval for specific projects to be submitted to the Operational Board. Table 6-3 and Figure 6-2 describe the main actors involved in the decision process for the NIF.

Table 6-3 NIF decision making institutions

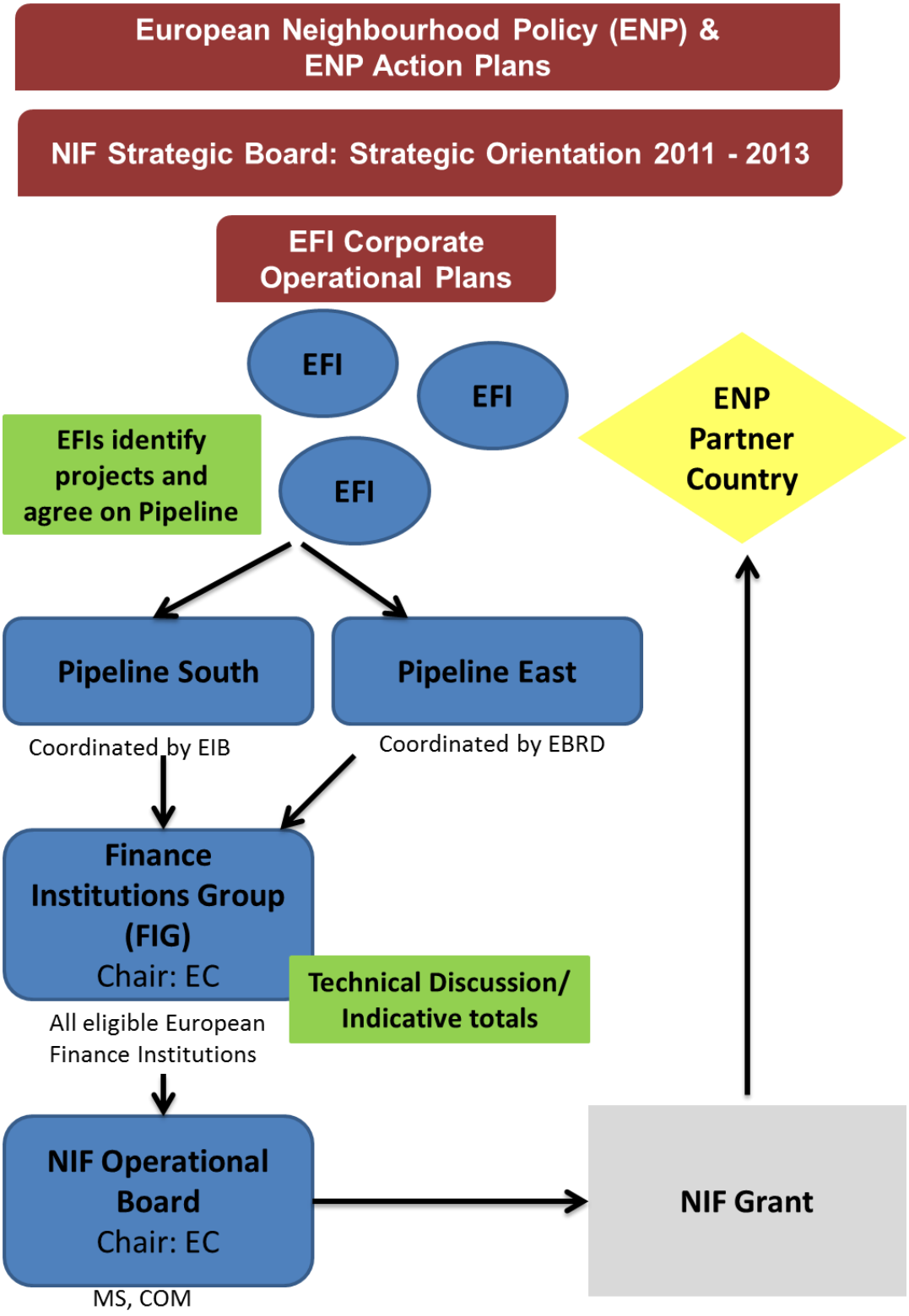
Partner countries	Beneficiaries are ENP Partner countries, either directly or indirectly through their central, regional and local administrations or semi-public institutions, e.g. transport or energy ministries.[55]
Lead Finance Institution	Among the FIs a Lead Finance Institution is designated who is responsible for the appraisal, overall implementation and monitoring/reporting of the project. The Commission relies on external independent audits and evaluation by the Lead Finance Institution whenever appropriate.
Finance Institutions Group	The Finance Institutions Group (FIG) is an informal technical group composed of all eligible European Finance Institutions, chaired by the European Commission represented by DG DEVCO. The FIG met three times in 2011 to prepare the meetings of the NIF Operational Board. DG CLIMA is also represented in the Finance Institutions Group. The Finance Institutions Group assesses the conformity of the projects with the objectives of the Neighbourhood policy and with the strategic orientations and eligibility criteria of the NIF.
NIF Operational Board	The NIF Operational Board is composed of representatives of the Commission, including DG CLIMA and EU Member States. The NIF Operational Board is chaired by the European Commission, DG DEVCO. The EFIs attend as observers. In 2011, the Operational Board met three times. The NIF Operational Board approves the proposed project pipelines.
NIF Trust Fund contribution	If the NIF Trust Fund is involved in the financing, the NIF Operational Board meets in a restricted configuration. The “Trust Fund Executive Committee” (Member States contributing to the NIF Trust Fund and the European Commission) approves contributions of the fund.[56]
NIF Strategic	The NIF Strategic Board meets once a year to discuss the strategy and sector priorities (“Strategic Orientations”) for the NIF and verifies the consistency with the

[54] NIF 2012, p. 29.
[55] European Commission 2009, p. 3.
[56] NIF 2012, p. 34.

Board	ENP, the Action Plans, the Strategy Papers and the National ENP Indicative Programmes.[57] The Strategic Board is chaired by the European Commission, DG DEVCO and the European External Action Service. It comprises of representatives from the Commission, Member States and other donors. Eligible partner countries and finance institutions attend as observers. Strategic Orientations are updated whenever required.

[57] European Commission 2009, p. 3. Country strategy papers provide the overall strategic objectives, National Indicative Programs define the focus of the operations in greater detail, whereas Action Plans specify the areas of action to implement the objectives as set out in the strategy papers.

Figure 6-2 Overview of the NIF Decision process



Source: adelphi interpretation

6.3 Decision Process: Methodologies and Tools

Figure 6-3 and Table 6-4 below provides an illustrative overview of the key actors, and the methodologies used within the NIF.

Figure 6-3 Overview of actors and methodologies

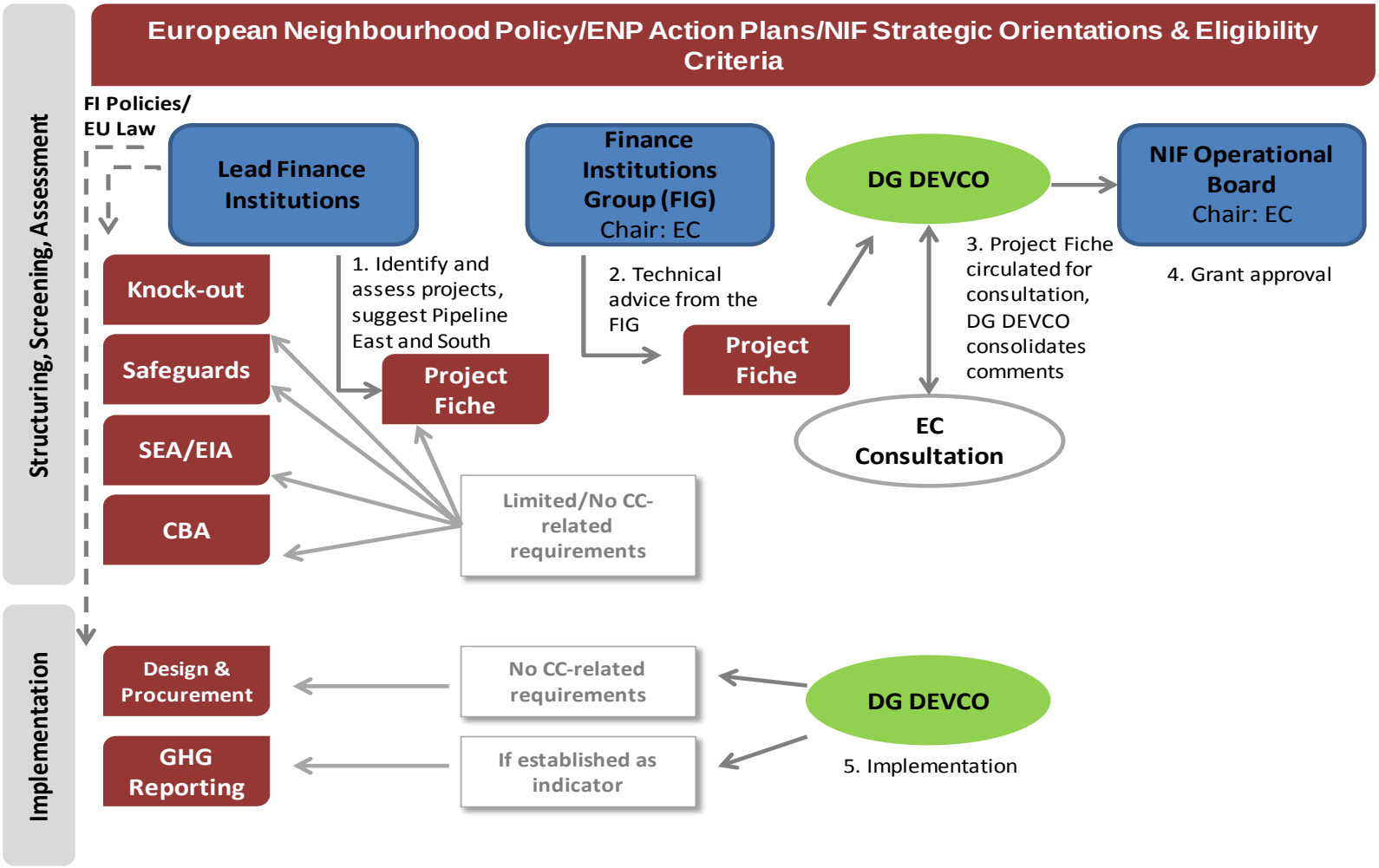


Table 6-4Summary of climate change consideration in NIF procedures

Approach	Description
Policy	• Climate change falls under the environmental objective of NIF • Projects on climate change mitigation and adaptation and projects enhancing climate change resilience are one of the priority areas of the environmental objective • No explicit climate change related financing goal is established
Project Origination	• No explicit climate change related knock-out criteria, apart from EFI requirements, are in place • Projects need to fulfil NIF eligibility criteria and be in line with the EFIs objectives and priorities
Risk Analysis	• A section on climate change risks is in place on the project fiche, but it is not compulsory to assess the climate change resilience of a project, not the carbon risk (e.g. impact on future regulation related to carbon price)
Disclosure	• Tracking by use of OECD Rio Markers methodology, adapted to assess the volume of finance (100% for RM2 and 40% for RM1 is DEVCO methodology • Projects with Rio Marker 1 and 2 are displayed under the “Climate Change Window”
Options Assessment	• A section on climate change related *opportunities* is available in the project fiche • EFIs prepare a CBA and submit the results, but no requirements from DG DEVCO regarding CO2 pricing are in place, nor actual guideline to perform the CBA or benchmarks • EFIs are requested to indicate if a renewable or less carbon intensive alternative option has been considered in the project fiche;
Design	• No information on climate change related provisions for the design and procurement of projects could be obtained
Monitoring and Evaluation	• Volume of finance is reported in annual reports, and as well Rio marker tracking at project by project level • The projects have to report their impact on soil, air, water. There may be aspects that already exists that are climate related, but these need to be redefined to make sure the reporting is clear. • There is a requirement for all projects to undertake an environmental impact assessment procedure. • GHG emissions are only reported to the Commission if emission reduction was established as an indicator for project success • GHG emission savings of Climate Change Window projects are not aggregate and publicly reported • GHG emissions are measured and reported depending on the respective internal policies of the EFIs

7 Policy recommendations

7.1 Overview

The European Union budget has a strong influence on the direction of investments and related policies in EU Member States, despite its relatively small size compared to aggregate public budgets of the individual Member States. As a result, spending under the future EU budget will play a critical role in driving necessary investments in the transition to a low carbon, resource-efficient economy and will have a major impact on progress towards the EU's long-term climate change and smart growth objectives well beyond 2020.

A number of roadmaps have been developed to ensure economic growth is achieved without compromising the environment. The Europe 2020 process calls for decarbonising Europe's economy in order to reduce emissions by 80-95 per cent by 2050, increase competitiveness, and encourage innovation.[58] The EC Communication on 'A resource-efficient Europe'[59] (one of seven flagship initiatives as part of the Europe 2020 strategy[60] aiming to deliver smart, sustainable and inclusive growth) also calls for capturing the economic opportunities by boosting investment in resource efficiency. In addition, the last five years have seen climate change becoming an increasingly important factor in EU strategic processes including:

- EU Climate and Energy Package (20/20/20 objectives and targets), 2008
- EU White paper on climate change adaptation, 2009
- Europe 2020 Strategy and Flagship initiatives, 2010/11
- 2050 low-carbon roadmaps (including transport and energy),
- EU Budget Review process, 2010.

The roadmaps and strategic processes mentioned above call for the reform of key sectoral EU policies in the context of the post-2013 EU Multi-annual Financial Framework and highlight the need to align spending priorities and objectives with the requirements of a low carbon and resource-efficient economy.

Against the backdrop of the increasingly urgent need to take account of climate change considerations in Government and private sector decision making, the 2014-2020 Multiannual Financial Framework provides the European Commission with a unique opportunity to:

- Set out a clear framework for mainstreaming climate into EU funding decisions, and
- Influence the approach taken by financial institutions, Member States, countries outside of Europe and private sector actors.

It is highly appropriate that the Commission should take stock of experience to date, both within and outside the EU, and use this to inform how its ambitious climate objectives can be delivered through improvements in how the climate impact of EU funding is assessed.

The main tasks of the study helped to provide specific policy recommendations (see Section 7.3) for mainstreaming climate change in EU financing instruments based on the two case studies in the previous chapter. In addition, the overall study findings also provided broader policy recommendations summarised in section 7.4.

7.2 Scope of the recommendations

The EU Budget and Multiannual Financial Framework have been subject to extensive reviews and recommendations. The programmes under the framework are massive in scope and operate across a range of administrative levels (EU, Member State level and down to community) and diverse socio-economic systems.

[58] EC (2011) A Roadmap for moving to a competitive low carbon economy 2050, Communication from the Commission, COM(2011)112, 8.3.2011, Brussels.
[59] A resource-efficient Europe – Flagship Initiative under the Europe 2020. Communication from the Commission, COM(2011)21, 26.1.2011, Brussels.
[60] COM(2010) 2020, EUROPE 2020 A strategy for smart, sustainable and inclusive growth.

It has not been possible for this study to conduct exhaustive research to derive consistent and formal (in a statistical sense) assessments of the effectiveness and efficiency of the recommendations. The findings from our interviews and workshops highlighted considerable differences in the mandate, objectives, and business models of financial institutions and Commission services, which suggests a need for caution in generalising from our results.

Therefore we also draw insights from existing reviews and recommendations to provide the backdrop to our recommendations which concentrate on adding the 'climate mitigation', 'climate resilience' and 'climate change adaptation' dimensions to investment projects and programmes.

Where relevant we note specific requirements for improvements to existing systems and practices, or the need for capacity building. Across all the recommendations **we assume that known problems and recent recommendations to address these problems should underpin all of the additional recommendations.**

Further caveats regarding the recommendations are given below:

- The recommendations are based on achieving the best-practice framework developed in Section 4.
- The recommendations are based on what EU and international FIs are currently undertaking at various stages of the project/programme cycle. No new or radical options have been suggested.
- However, scalability and replicability of the options may be an issue. Thus, a recommendation may sound good in theory but difficult to apply in practice due to market or technical barriers.
- The recommendations should be treated as a bouquet of options to reach the target. Selection of options should take into consideration scale of impact and costs of implementation. The suggested best-practice framework is not advocating the use of every tool for each stage of the project, but to use the most appropriate tool for the size, influence and scope of the project.

7.3 Specific policy recommendations based on the two case studies

Application of the best-practice framework in Sections 5 and 6 on the CEF and NIF indicated that these two EU investment facilities are already quite climate friendly. However, a number of improvements can be considered to develop the transparency, consistency and effectiveness of the tools and processes used to mainstream climate change.

Detailed discussion of the recommendations for each stage and approach based on the best-practice investment framework for CEF is given in Table 7-1 and for NIF in Table 7-2. Under each recommendation a set of sub-recommendations or activities required to implement the recommendation are also given. The shadings reflect the relative strength of climate mainstreaming across the various stages of the project cycle (green – high; orange – medium; and red – low).

Table 7-1 Main recommendations based on the CEF TEN-T case study

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
Structuring/ Policy	• The EU has strong policy guidance in the form of the 20-20-20 targets, including that at least 20% of the EU budget support climate change activities. • The proposed 10% increase of co-financing rates (CEF, Article 10, point 5) if projects reach climate mitigation/adaptation/resilience objectives can have an impact on the FI's investment policy as well as project design. • Under CEF overall policy goals around climate change have been strengthened. • However, the Commission proposals on the EU MFF do not specify how and to what extent each funding instrument will contribute to this 20% commitment.	**Recommendation 1:** **Consider ambitious climate change spending targets increasing over time directly to the CEF (under each sector – energy, transport and ICT).** *Policy for each sector is already quite strong, so it is important to identify funding priorities for each area.* *Policy for climate resilience needs to be more explicit.* **Recommendation 2:** **Consider the possibility of greater proportion of grants provided in blending facilities to be linked with climate mainstreaming.** *Provided requirements to do so is compatible between EC and FIs decision structures and does not lead to perverse incentives.* *Provided it does not crowd out projects which are economic and socially more justifiable in some situations.*	*ADB, IFC, IDB, EIB, EBRD, KFW, AFD all have clean energy/climate lending targets across their investment portfolios.* *IDB, EBRD and WB have specific renewable or low-carbon energy generation targets.* *OPIC also has a portfolio GHG emission reduction target and IFC is considering setting a GHG target by 2014.* *The EIB benefited for the period 2010-2013 to a political guarantee from the EU budget for climate change operations outside the EU of up to 2 billion Euros.*
Project origination/ Knock-out criteria (exclusion)	• Transport and energy projects are currently identified by Beneficiaries based on the list of projects of common interest • Transport projects under CEF include: railway transport, inland waterways, road transport, maritime transport, air transport, infrastructure for multimodal transport and the equipment and intelligent transport	**Recommendation 3:** **Consider stringent safeguards for new road projects with the exception of projects with strong economic justifications and broader objectives.** *(E.g. revision of the TEN-T definition of 'sustainable transport projects').*	*West LB/Portigon: Knock-out criteria for high-risk investments such as offshore drilling, coal, nuclear.* *IDB: GHG guidelines on landfills, cement plants, and coal-fired powered.* *EIB/WB: Criteria for screening coal projects.*

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
	systems associated with the transport infrastructure. • CEF will finance as a matter of priority the projects and areas identified in the CEF Annex: horizontal priorities, core network corridors, and other important cross-border sections, which focus largely on environmentally-friendly modes of transport (rail and inland waterways). Also, the EU funding rates are adapted so as to benefit such modes. • Energy projects under CEF include: electricity transmission lines, gas, CO_2 and oil pipelines, Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG) reception facilities and electricity and gas storage.	*Expand eligibility rules under CF/project bonds to cover Renewable generation projects.*	
Project origination/ Eligibility criteria (inclusion)	• See current eligible project types above.	**Recommendation 4:** **Criteria whereby projects must contribute to the 20-20-20 target.** *Use best available technology (BAT) and/or provide deep energy savings.*	*EIB: Prospective projects for EE must demonstrate a 20% energy saving to be provided funding. EIB eligibility criteria (in sector policies for water, transport and energy)* *EBRD: Rating on potential for project to support transition to low carbon economy*
Project origination/ Project identification	• DG MOVE and DG ENER facilitate information days following calls for proposals (annual and multi-annual) to support project identification and design process.	**Recommendation 5:** **Provide capacity building for project promoters and local authorities.** *Provide capacity building for project promoters and local authorities by providing the following:*	*IFC: Carbon Emissions Estimator Tool (CEET) used by project managers and investment staff for estimating project GHG emissions (as part of due diligence process).* *EIB: Methodology to assess carbon footprint and in-house guide on*

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
		• *Information material and training session following calls for proposals.* • *Information/tools for climate proofing to project promoters and local authorities that can be used in project identification and design process. This would assist them in determining which projects type /designs have the greatest potential for mitigation/resilience/avoiding technological lock-in.*	*principles and methodologies to build resilience.* *EBRD: Toolkits for managing climate change risks to investments.* *MDBs and BFI: Performance Standards.* *WB: Tools for Mainstreaming Adaptation.* *ADB: Sectorial Guidelines for Climate Proofing.*
Assessment /Risk analysis (influences Design)	• For transport projects the risk analysis is prepared by the beneficiary/applicant of the respective project and therefore depends on national/applicant requirements and tools/methodologies for a specific evaluation of climate related risk. Transport and energy projects also require compliance with relevant Union Law regarding the Environmental Impact Assessment Directive and the Strategic Environmental Assessment Directive. • Several Member States have developed adaptation strategies with focus on planning and design of large infrastructures.	**Recommendation 6:** **Develop methodologies to assess climate risk and vulnerability.** *The EIA Directive is currently under revision. DG Environment has made a proposal to improve climate change considerations as part of the EIA; however, thus far, no specific approaches/tools have been developed.* *DG CLIMA is expected to issue an Adaptation Strategy in 2013 that should include recommendations for climate resilience of infrastructure.* *DG Environment is publishing new guidelines on integrating climate and biodiversity aspects into project assessments.*	*EBRD: Toolkit for identifying climate change risks to investments with guidelines for climate change screening and risk-profiling.* *EBRD Guidance on integrating risk assessment and adaptation into project feasibility studies, environmental and social impact assessments, environmental action plans and water audits.* *KFW: Screening for relevant climate, impacts and assessment of identified consequences and/or risks.* *ADB: Sectoral Guidelines for Climate Proofing.* *EIB: In-house guide, principles and methodologies to build resilience.* *WB: Tools for Mainstreaming Adaptation.*
Assessment	• Channels for disclosure include EIA, SEA,	**Recommendation 7**	*EIB: Definitions for climate action under*

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
/ Disclosure (for approval)	and Beneficiary Application Forms. • OECD is working with Bilateral FIs and MDB to find synergies between the Rio Markers and the MDBs methodologies for tracking.	**Operationalize the Rio Marker methodology for tracking expenditure at project level.** **Recommendation 8:** **Commission should develop performance indicators on climate change (e.g. 20-20-20 target, GHG foot printing, etc.) to be included on application forms for calls for proposals (see Recommendation 12).** **Recommendation 9:** **Commission should support additional work on Scope 3 emissions, in particular for transport projects. Developing a greater understanding of the indirect (life-cycle) emissions associated with transport and corridors, and transmission and distribution networks.** *Indicator development should track developments around the Rio Markers (and use of indicators by EFIs) – as Rio Markers are not yet seen as the definitive metrics for climate consideration within investments by FIs.*	*the corporate target.* *MDB 2012 reports on tracking financing adaptation and mitigation.* *UNDP-BFI joint reports on climate financing.* *AFD: Simplified version of the Bilan Carbone emissions assessment tool.* *EIB: Methodologies for the Assessment of Project GHG Emissions and Emission Variations assess the scope 1 and 2 GHG emissions.* *GEF: GHG emission reduction potential.* *GHG Protocol: Corporate Value Chain (Scope 3) and Product Life Cycle Guidance.*
Assessment /Options assessment	• For Transport Projects: The European Parliament has voted on a draft proposal for a regulation establishing the Connecting Europe Facility, which requests the Commission to develop a methodology for a socio-economic cost-benefit analysis and a climate impact assessment for Transport projects. The proposal has not yet	**Recommendation 10:** **Support coordination of CBA/MCA tool development between CEF and major projects under Structural Funds in terms of inclusion of climate considerations, in coordination with DG REGIO, EIB, ENTSOs and JASPERS.**	*EIB shadow price in economic CBA.* *Carbon Price included in CBA or financial analysis (EIB, EBRD and AFD).* *CTF: Potential for low-carbon transformation, etc.* *EBRD: MCA/matrix to assess*

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
	undergone Council approval. • For Energy Projects: CBA and MCA are conducted by the ENTSOs as part of project identification for the TYNDP, which also take climate considerations into account. The revised TEN-E Guidelines require the development of a harmonised methodology for a system-wide energy CBA that takes into account: 1) GHG emissions over the technical lifecycle of the project, 2) system resilience, 3) climate resilience for electricity transmission projects and, 4) climate resilience for gas transmission projects. • External experts are involved in the options assessment after the call for proposals. • For all EU infrastructure projects under the Cohesion Fund and the ERDF the main decision tool is the CBA, which needs to comply with the DG REGIO 2008 Guidelines, (currently under revision). JASPERS has developed informal procedures for including climate considerations into CBA, and is being asked to input into the DG REGIO CBA Guidelines.	*Article 10 of the CEF Regulation foresees a cost-benefit analysis for each project, but there is no mention of climate change considerations. There is substantial scope to improve this approach in investment decisions.* *The EU Low Carbon Roadmap 2050 model exists which provides a cost of carbon that allows EU to meet its targets.*[61] *More efforts are required on quantifying projected impacts of adaptation projects. The technical capability is less advanced.* **Recommendation 11:** **External or IFIs Experts on climate change, should be included in the review process of Energy and Transport projects.**	*transformation impacts.*
Implementation/Design (influenced by Risk Analysis)	• EU Procurement policies do not include climate specific measures or guidelines to ensure projects are climate smart once they are approved or selected. In addition to the design of the project it can also include the design of the project finance structure.	**Recommendation 12:** **The Commission should propose inclusion of clear climate change considerations in EU procurement policies for design of the project (including project finance structure).**	*Performance Standards of MDBs and BFIs.* Guidelines for climate proofing: *KFW have developed international guidance for this; project design will look*

[61] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:EN:PDF

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
		Recommendation 13: **Develop operational guidelines and methodologies to better take into account issues of climate resilience – linked to risk assessment Recommendation 6.** *(e.g. Climate relevant design manuals and procurement policies and best available technology and sector performance guidelines)*	*at the system boundaries.* *ADB has developed climate proofing guidelines for the transport sector, to incorporate adaptation considerations into the design of projects.* *EBRD: Toolkits for managing climate change risks to investments.* *EIB: in-house guide, principles and methodologies to build resilience.* *MDBs and BFI: Performance Standards.* *WB: Tools for Mainstreaming Adaptation.* *ADB: Guidelines for Climate Proofing.*
Monitoring and evaluation (feedback)	• Beneficiaries have to provide reports on a regular basis on the action implemented under CEF. The Commission can also request specific evaluations of actions and linked projects under the CEF regulation. • The reporting requirements under CEF will be strengthened to be able to measure project success towards reaching the EU 20-20-20 targets. The following indicators will be established to measure CEF impact: reduction of greenhouse gas emissions, increase in energy efficiency, and share of renewable energy.	**Recommendation 14:** **The Commission should support development of monitoring and evaluation systems for climate change indicators (See recommendation 7).** *Use best practice experience from FIs to develop the methodology for all three indicators to measure CEF impact.* *Measuring tools for absolute emissions are widely accepted, with common methodology. More effort is required to harmonise methods to measure relative emissions.* *There is a difference in the methodologies between the 'players'; however there is a commonality in the language. They may be monitoring in different ways, but all reporting similar things. See IFIs initiative under the 'International Financial Institution Framework for a Harmonised Approach to*	*Since 2007, AFD has been progressively developing robust criteria and tools to classify 'climate' projects. Uses footprint based tool to classify 'climate' projects. AFD tracks Rio Markers for all of its projects but does not use it for tracking climate related investments.* *KFW has a well-defined set of instruments to continuously monitor if projects are on track (both financially and with regards to implementation). Uses OECD DAC Rio-Marker 1 or 2 in combination with the new DAC adaptation definition.*

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
		Greenhouse Gas Accounting'.	

Table 7-2 Main recommendations based on the NIF case study

Stage/ Approach	Potential Areas of Influence Within EC Processes	Recommendations	Existing Examples/Tools From Fi Reviews
Structuring/ Policy	• The EU has strong policy guidance in the form of the 20-20-20 targets, including that at least 20% of the EU budget support climate change activities. • However, the Commission proposals on the EU MFF do not specify how and to what extent each funding instrument will contribute to this 20% commitment. • Climate change (mitigation, adaptation and resilience) falls under the environmental strategic objective of the NIF, but there is no concrete financing goal. • Additional budget (€17 million) was provided for the Climate Change Window (CCW) of the blending facilities to Rio Marker 2 projects only (NIF and the Latin America Investment Facility), but all went to LAIF. • In 2011 more than 50% of the projects have been tracked as Rio Marker 1 or 2, and a significant portion of these (about 30%) are marked Rio Marker 2.	**Recommendation 1:** **Apply ambitious binding climate change related spending target to specific sectors or technologies under NIF and under each region – East and South (and directly to each of the other blending instruments).** *Policy on carbon targets for each sector is already quite strong. Volume of climate finance under NIF is already above the 20% target. So it is essential to identify funding priorities for each area.* *Policy for climate resilience needs to be more explicit.* **Recommendation 2:** **Earmark a proportion of grants provided in blending facilities to be linked with climate mainstreaming under the CCW.** *Earmarking may not be an adequate tool if it leads to moral hazard; adequate measures should be in place to check for perverse incentives.* *Ring-fencing money for 'climate proofing' should be for extreme cases with very high climate risks, otherwise it could undermine the robustness of the investment framework.* *Provided requirements to do so is compatible between EC, other countries and FIs decision structures.* *Provided does not crowd out projects which are economic and socially more justifiable in some situations.* **Recommendation 3:** **Increase the attractiveness of CC windows for**	*ADB, IFC, IDB, EIB, EBRD, KFW, AFD all have clean energy/climate lending targets across their investment portfolios. OPIC also has a portfolio GHG emission reduction target. IFC is considering setting a GHG target by 2014. The EIB benefited for the period 2010-2013 from a political guarantee from the EU budget for climate change operations outside the EU of up to €2 billion.*

		Member States to pool resources. *CC windows can be used for more than just tracking finance by demonstration clear and sector specific targets. This could encourage MS to contribute more funds to CCWs or they might be encouraged to develop country level CC windows.*	
Project origination/ Knock-out criteria (exclusion)	• Projects are identified and suggested by eligible European Finance Institutions (EFIs) (multi-lateral and bilateral) in collaboration with the partner country. • Beyond environment (including climate change), the priorities for the NIF include transport and energy infrastructure, improved social services, and creation and growth of SMEs.	**Not required, as criteria for priority projects are already quite strong on climate resilience and mitigation measures.**	
Project origination/ Eligibility criteria (inclusion)	• See current eligible project types above. • NIF projects need to comply with the objectives of the respective Corporate Operational Plans of the relevant EFIs. • EFIs (and MDBs) have a number of eligibility and guidelines for project selection, taking into account climate change considerations, however these are not harmonised. (See details in Section 2).	**Recommendation 4:** **Develop criteria whereby projects must contribute to 20-20-20 target.** *Use best available technology (BAT), building on existing criteria of EFIs and MDBs and/or provide deep energy savings*	*EIB: Prospective projects for EE must demonstrate a 20% energy saving to be provided funding. EIB eligibility criteria (in sector policies for water, transport and energy).* *EBRD: Rating on potential for project to support transition to low carbon economy.*
Project origination/	• Project identification and preparation is driven by the EFIs	**Recommendation 5:** **Develop investments plans (IPs) built on**	*CTF Investment Plans are country led plans and illustrate how CTF resources will be used*

Project identification	and their respective country offices in close collaboration with the partner country (central, regional, local administration or semi-public institutions).	**beneficiary countries' sectoral analysis and domestic climate related policies and plans (LEDS/NAMA/NAPAs).** *Since country coverage of IPs are not uniform, scalability and replicability should be done cautiously.* **Recommendation 6:** **Develop a set of project types/designs with the greatest potential for mitigation/adaptation/resilience/avoiding technological lock-in. This could build on case studies from existing experience/portfolio of EFIs and NIF, allowing for replication of pioneer projects leadership models (including blending examples).** *EFIs should encourage transfer of lessons to country offices.* **Recommendation 7** **Capacity building for Commission staff and Member State/country Delegations should be offered to better inform them about climate change issues and strengthen their influence in the decision process.** *Encourage enhanced consultation of the IFIs with EC Delegations at an early stage of project development.*	*in major sectors of the economy through a joint MDB program. Projects are prioritised based on: potential GHG emission savings, demonstration potential, development impact and implementation potential.* *EBRD: Sustainable Energy Financing Facilities (SEFF).* *KFW: pilot performance based NAMAs (LAIF/AIF).* *KFW/AFD: Water efficiency Morocco.* *EIB: CSP Morocco.*

Assessment/ Risk analysis (influences Design)	• The risk analysis is prepared by the Lead Finance Institution of the respective project and therefore depends on national/applicant requirements and tools/methodologies for a specific evaluation of climate related risk. • DG DEVCO requires that all relevant European Union Law regarding the Environmental Impact Assessment Directive and the Strategic Environmental Assessment Directive is fulfilled (e.g. the EIA/SEA is conducted) by the EFIs. **It remains to be discussed how exactly EIA/SEA provisions are implemented outside the European Union.** • The EIA Directive is currently under revision. DG ENV has made a proposal to improve climate change considerations as part of the EIA; however, thus far no specific approaches/tools have been developed.	**Recommendation 8:** **Develop methodologies to assess climate risk and vulnerability.** **Recommendation 9:** **Encourage development and harmonisation of Performance Standards across the EFIs regarding GHG assessment.** *Since NIF have only offered relatively small sized grants in relation to the overall project size, it is very hard to request lots of information from the project. Hence, harmonising the best practices and standards becomes very important when FIs are working with a wide range of partners/stakeholders.* *DG Environment is publishing new guidelines on integrating climate and biodiversity aspects into project assessments.*	*EBRD: Toolkit for identifying climate change risks to investments with guidelines for climate change screening and risk-profiling.* *EBRD: Guidance on integrating risk assessment and adaptation into project feasibility studies, environmental and social impact assessments (ESIAs), environmental action plans and water audits.* *KFW: Screening for relevant climate impacts and assessment of identified consequences and/or risks.* *AF and SCCF: Cost of adaptation (incremental cost analysis).* *ADB: Sectoral Guidelines for Climate Proofing.* *EIB: In-house guide, principles and methodologies to build resilience.* *WB: Tools for Mainstreaming Adaptation.* *IFC: Carbon Emissions Estimator Tool used by project managers and investment staff for estimating project GHG emissions (as part of due diligence process).* *EIB: Methodology to assess carbon foot print.* *EBRD: Methodology to assess carbon foot print.* *AFD: Simplified version of the Bilan Carbone emissions assessment tool.*

Disclosure (for approval)	• Channels for disclosure include EIA, SEA, and NIF Project Fiche. • All proposed projects disclose Rio Markers at the time of completing the Project Fiche, and projects with Rio Marker 1 and 2 are included within the 'Climate Change Window'. • A number of EFIs are using the Rio Markers but there is no consensus on their utility (see details in Section 2). • OECD is working with Bilateral FIs and MDB to find synergies between the Rio Markers and the MDBs' methodologies for tracking climate finance.	**Recommendation 10** **Operationalize the Rio Marker methodology for tracking expenditure. This can build on work of the joint MDB group on climate finance and the UNDP/BFI joint reporting exercise.** **Recommendation 11:** **Support aggregate indicator development on climate change (20-20-20 target and use of BAT, GHG footprinting etc.) for inclusion in the Project Fiche and annual reporting (see Recommendation 14).** *Indicator development should track developments around the Rio Markers (and use of indicators by EFIs) as Rio Markers are not yet seen as the definitive metrics for climate consideration within investments by FIs.*	*MDB 2012 reports on tracking financing adaptation and mitigation.* *UNDP-BFI: Joint reports on climate financing.* *EIB: Methodologies for the Assessment of Project GHG Emissions and Emission Variations.* *GEF: GHG emission reduction potential.* *CTF: Potential for low-carbon transformation, etc.* *EBRD: MCA/matrix to assess transformation impacts.* *Equator/Carbon/Climate Principles: Alternative analysis.*
Options assessment	• Many EFIs are already including carbon prices/climate considerations within their CBA/financial analysis, but they are all using different tools and approaches (See details in Section 2). • DG REGIO is revising its Guidelines for CBA for infrastructure projects and is looking to better include climate considerations (the recommendation to integrate carbon price as an externality in	**Recommendation 12:** **Support the harmonisation of CBA/MCA tools across EFIs** *Mainly in terms of their incorporation of climate considerations, this can also be harmonised with the recommendations for the DG REGIO CBA tool for infrastructure.* *Recognise challenges for harmonising CBA tool across FIs outside the EU. However, some generic criteria to compare results and assess outcomes from CBA that has already been implemented can be considered. It is important to ensure that CBA is integrated into climate*	*Carbon Price included in CBA or financial analysis (EIB, EBRD).* *EIB shadow price of carbon in economic CBA.* *EBRD: MCA/matrix to assess transformation impacts.*

	CBA was already provided in the 2008 Guideline).	*assessments can be achieved based on existing FI practices.*	
Implementation/Design (influenced by Risk Analysis)	• No climate change related provisions were found to be required for the design of projects under the NIF. • DG CLIMA has commissioned a study in 2012 on Guidelines for Project Managers: Making vulnerable investments climate resilient.	**Recommendation 13:** **Develop operational guidelines and methodologies to better take into account issues of climate resilience – linked to risk assessment Recommendations 8 and 9.** *(e.g. Climate relevant design manuals and procurement policies and best available technology and sector performance guidelines)*	*EBRD: Toolkits for managing climate change risks to investments.* *EIB: In-house guide, principles and methodologies to build resilience.* *MDBs and BFI: Performance Standards.* *WB: Tools for Mainstreaming Adaptation.* *ADB: Guidelines for Climate Proofing.*
Monitoring and Evaluation (feedback)	• GHG emissions are only reported to DG DEVCO for projects under the NIF if emission reduction was established as an indicator for project success. • GHG emission savings of CCW projects are not publicly reported in the NIF Annual Report. • GHG emissions are measured and reported depending on the respective internal policies of the EFIs, who are all using different tools and approaches (see details in Section 2).	**Recommendation 14:** **The Commission should consider developing monitoring, evaluation and *reporting* systems for climate change indicators (20-20-20 target and use of BAT, GHG foot printing, number of project assessed toward climate risk etc.) for all projects under the NIF. These should be harmonised with best practice of the EFIs/MDBs (see Recommendation 10 and 11).** *Measuring tools for absolute emissions are widely accepted, with common methodology, yet more effort is required to harmonise methods to measure relative emissions.* *There is a difference in the methodologies between FIs; however there is a commonality in the language. They may be monitoring in different ways, but all reporting on similar indicators. See IFIs initiative under the 'International Financial Institution Framework for a Harmonised Approach to Greenhouse Gas Accounting'.*	*Since 2007, AFD has been progressively developing robust criteria and tools to classify 'climate' projects. Uses footprint based tool to classify 'climate' projects. AFD tracks Rio Markers for all of its projects but does not use it for tracking climate related investments.* *KFW has a well-defined set of instruments to continuously monitor if projects are on track (both financially and with regards to implementation). Uses OECD DAC Rio-Marker 1 or 2 in combination with the new DAC adaptation definition.*

7.4 Wider policy recommendations

The policy recommendations summarised in this section have been developed based on the review of European and International Financial Institutions best-practice investment frameworks and on insights from the two case studies on CEF and NIF.

These recommendations cover five distinct areas (see Table 7-4 for brief summary):

1. **Recommendations on the design and operation of financial mechanisms supported through the EU budget (e.g. EU major projects under Structural Funds, TEN-T/E, NIF and other EU blending facilities)**

   The EC can have direct influence on the design and operation of EU financial mechanisms, such as DG REGIO major Infrastructure projects and the Neighbourhood Investment Facility, by incorporating best practice into legislation and into its activities. Where these EU mechanisms are used to co-finance projects with other funds, the indictors for eligibility criteria and project identification can also be used to impose climate change conditions in return for financial support.

2. **Recommendations on how the EU might influence policy, procedures and tools adopted by FIs**

   The EC can exert influence via its membership on FI boards for the adoption and sharing of best practice methodologies, such as the tracking of indicators, options valuation, risk analysis, and GHG foot printing. Harmonising the best practices and standards becomes very important as most FIs work with a wide range of partners/stakeholders and, subsequently, implementing projects under the financial mechanism requires cooperation with a number of FIs. There is already a strong precedence with the joint MDB reporting on adaptation and mitigation which can be replicated in other tools as well.

   The areas which it might seek to improve include the following stages from the best-practice investment framework:

Stage	Approach	Recommendation
Assessment	Risk analysis	Develop methodologies to assess climate risk/ vulnerability and integrate climate considerations and safeguards in sector strategies.
	Disclosure	Indicator development should track developments around the Rio Markers (and use of indicators by EFIs) as Rio Markers are not yet seen as the definitive metrics for climate consideration within investments by FIs. The Commission should develop performance indicators on climate change (e.g. 20-20-20 target, GHG foot printing, etc.) to be included on application forms for calls for proposals
	Options assessment	The EC should support the coordination of CBA/MCA tool development between CEF and major projects under Structural Funds in terms of inclusion of climate considerations, in coordination with DG REGIO, EIB, ENTSOs and JASPERS. Shadow price and carbon price are already included in CBA or financial analysis (e.g. at the EIB).
Implementation	Design	Develop operational guidelines and methodologies for climate proofing in EU procurement policies.
	MRV framework	Support the development of monitoring and evaluation systems for climate change indicators

The assessment stage of the investment framework seems to be where most efforts are required. Some of the inputs required to develop the approaches are summarised in Table 7-3.

Table 7-3 Key inputs to improve risk assessment, disclosure and options evaluation

Stage	Approach	Key inputs
Assessment	Risk analysis and classification	• Engineering expertise • Data on climate scenarios • GHG emissions data and methodologies • Carbon price (for societal CBA)
	Disclosure	• GHG emission reduction methodologies • GHG emissions data • GHG baseline data • Costs of climate impacts • Adaptation costs
	Options evaluation	• Carbon price and other externalities (for programme/project CBA) • Marginal abatement cost curves • Cost of ecosystem services • Levelised cost of electricity • Energy prices • Long-run energy supply costs

3. Recommendations for revisions to EU legislation and guidance governing project development

The EC can also influence legislation and policies by influencing design and procurement requirements (e.g. revisions to the EIA Directive and EU Adaptation Strategy). The best practice approaches can be used to develop guidelines for project development for undertaking risk assessment, disclosure and use of CBA, for example in the DG REGIO CBA guidelines. CBA is a powerful tool in Europe, where there not only is a shadow price of carbon, but also a real price. The key question is to understand the link between the tool and the decision making process.

Mainstreaming climate change in investment to deploy green infrastructure is important, but what is also needed is the shift away from brown investment. Revisions to EU legislation and guidance for major projects should not only be about the increase in overall green investment, but should encourage the shift in all types of investment.

Review of the Environmental Impact Assessment Directive – The EIA Directive does not currently address climate change issues or take into consideration future scenarios to look at cost efficiency of projects. As a result of a review process, on 26 October 2012 the Commission adopted a proposal for a new, amended Directive. Nine of the twelve amendments analysed are expected to provide significant environmental and socio-economic benefits without additional administrative costs. Moderate savings are also expected. Two amendments (assessment of alternatives and monitoring) are expected to provide high environmental and socio-economic benefits at moderate costs for developers, with limited or negligible costs for public authorities; one amendment (adaptation of the EIA to new challenges) is expected to provide high benefits at moderate to high costs for developers and public authorities. In the long term, the significant environmental and socio-economic benefits and the moderate savings associated with the proposed amendments are likely to exceed the administrative costs. Any modification to the Articles and Annexes for improving the assessments should take into consideration findings on the best practice tools and approaches from this Report.

Guide to cost-benefit analysis of investment projects DG Regional Policy – The DG REGIO CBA guide was last published in 2008[62] and included recommended values for the external costs of

[62] http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf

climate change based on the IMPACT study.[63] However, it does not include sector specific guidelines for climate related impacts in the cost-benefit analysis. The use of the EIB's shadow pricing approach can be considered for any subsequent update of the handbook. Also, projected impacts of adaptation measures are conceptually much harder to integrate in CBA. This is an area where DG REGIO's CBA guidelines could consider in more detail as the resilience research is still very new.

4. Capacity building and training activities for EC and MS staff working on major projects

The study found that awareness of existing practices was low among the main stakeholders involved, especially policymakers. The EC should endeavour to build the capacity and knowledge of Commission staff and of policymakers in Member States (especially new Member States) so that they are better informed of the options for incorporating climate change into investment decisions.

The EC should provide training courses and workshops for relevant stakeholders, and encourage enhanced consultation of the IFIs with EC Delegations at an early stage of project development. Capacity building for project promoters and local authorities can be enhanced by providing the following:

- Information materials and training sessions following a call for proposals, and
- Information/tools for climate proofing to project promoters and local authorities that can be used in project identification and design process. This would assist them in determining which projects types/designs have the greatest potential for mitigation/resilience/avoiding technological 'lock-in'.

5. Further research to address knowledge gaps identified in this Report and to build the evidence base on best practice in particular in the private sector

During this project, we have identified a number of gaps in knowledge and areas for further research which were beyond the scope of this project. These include the following:

a) The study provided a practical framework to assess investment decision across the project cycle. However, more work is needed to assess the relative pros and cons of each approach. Each of the eight FIs have developed, in varying degrees of comprehensiveness, some method or tool for the stages/approach in the investment framework. The next step is to determine what each FI can do to improve the methodologies that are not best practice examples. There is no 'one size fits all' approach; the choice depends on individual FI experience and circumstances. Although MDBs have different stakeholder pressures, they all realise the importance of improving common methodologies and increasing the sharing of best practices. There is scope for institutions to share and learn from each other; however this is also dictated by their organisational mandate. Harmonising best practices and standards becomes very important when FIs are working with a wide range of partners/stakeholders. The recent joint MDB initiatives on tracking mitigation and adaptation spend and framework for harmonising to Greenhouse Gas Accounting should provide more evidence on the benefit of these harmonising measures. In particular, more research is needed to contrast approaches and tools for mainstreaming climate change in new projects with measures to upgrade or optimise existing projects. Therefore, in the long term, the aim should be to have a green investment policy framework broad enough to encompass climate issues, but also flexible enough to be adapted to different countries experiences and FI mandates.

b) Addressing gaps in framework on best practice for resilience and climate adaptation is a key requirement. Gaps were identified in the study for adaptation across all stages of the framework. With more research, some kind of draft eligibility criteria can be identified for resilience (COWI/Acclimatise study looked into this in more detail). Gaps in disclosure and monitoring were identified for resilience as well. The joint MDB adaptation reporting methodology has not gone into the same level of detail as the mitigation methodology to establish a positive list of activities. They have provided best practices/guidelines for adaptation reporting. Adaption projects are very country and area specific, so it is hard to establish positive list. Accordingly to the MDB methodology it is more important to have proper process of assessing future climate risks and design resilience measures.

[63] Handbook of Estimation of External Costs in the Transport Sector, within the study IMPACT,2008.

c) Engagement at Member State level is essential. The strategic priorities and processes to mainstream climate change can be made at the EC level, however the implementation, including project selection, design and reporting will be done at the Member State level. The European Commission will have less direct influence on major investment projects[64] in the next MFF. Independent experts (e.g. JASPER) and Member State systems will take over appraisal and Guidelines for CBA including climate objectives (CLIMA involved). In this context more support and engagement with Member States will be required, especially for climate resilience issues. DG REGIO has developed a new and simple tool (CO2MPARE) to help Member States to assess emission impact of Operational programmes.

d) A review of other influential institutions (e.g. National Development Banks(NDBs)), climate funds and private finance sector activities to include climate considerations in infrastructure investment decisions (e.g. links with Equator Principles and incorporating climate risk into corporate bond ratings) could also provide new evidence for mainstreaming climate change in investment decisions. Lessons can also be learnt and shared by looking at dedicated climate funds and processes, such as the Green Climate Fund. Further research can look at the role of the ability of NDBs to help bridge donors and project applicants in developing countries. Access to cheap debt finance is a big problem in developing countries, and NDBs potentially have an important role to play here. For instance, they can cover the extra cost of climate proofing and take on the 'early mover' risk and they are in an ideal position to play a coordinating role between government, business and finance sector players.

[64] Major projects are defined as €50 million and above. In the next MMF there is expected to be a total of around 850 major projects worth €115 billion.

Table 7-4 Wider recommendations for EU policy making

Type	Intervention options	Examples	Contribution of study findings (inc. framework stage/approach)	Comments
1. Financial mechanisms using EU Budget	(a) Mechanism design & legislative framework	• TEN-T & CEF • NIF • DG REGIO major infrastructure projects • EU Platform for External Cooperation and Development	Incorporate best practice into legislation. ***(Structuring/Policy)***	Subject to Council approval and only possible at early stage.
	(b) Technical implementation		EC takes findings into account in day to day operational practices and decisions. ***(Implementation/ Design and M&E)***	EC able to take into account at any time provided that it is consistent with legislation.
	(c) Financial leverage on EFIs and recipient governments		EC imposes conditions in return for financial support. ***(Structuring/Policy) (Project origination/ eligibility criteria & project identification)***	Subject to EC powers to do so.
2. FI policy, procedures and tools	EC influences via FI board the adoption of best practices and key methodologies (e.g. tracking indicators, options valuation, risk analysis, GHG foot printing)	• EIB • EBRD • Others (WB, IFC, ADB)	Encourage adoption and sharing of best practice. ***(Structuring/Policy)*** ***(Assessment/ Risk analysis, disclosure & options assessment)*** ***(Implementation/Design & M&E)***	Power and influence determined by scope of EU role.
3. EU legislation governing project development	(a) Influence legislation and policies	• Revisions to EIA Directive • Revision to SEA Directive • EU Adaptation Strategy	Incorporate best practice into legislation and policies	Subject to Council approval (legislation) and only possible at early stage.
	(b) Influence guidance	• SEA/EIA guidance on climate • DG REGIO CBA guidance • Guidelines for project	Ensure study findings taken into account in guidelines. ***(Assessment/ Risk analysis,***	Non-binding but influential.

Type	Intervention options	Examples	Contribution of study findings (inc. framework stage/approach)	Comments
		developers • DG Environment guidelines integrating climate and biodiversity aspects into climate assessments.	***disclosure & options assessment)***	
4. Capacity building	Training courses for officials and practitioners	• Training for EC staff • Regional training for MS and project developers	Serves as basis for training courses and workshops.	Softer impact but necessary to ensure sustainability of implementation.
5. Further research	(a) Options analysis on specific policy approaches	• Pros and cons of different types of policy targets (GHG reduction, financing, EE etc.) • Approach for mainstreaming existing projects/networks vs. climate proofing new projects.	Study provides investment framework but more work needed on: • Harmonising standards and tools • Relative impacts/benefits of each approach	Potential for deeper dive than possible during study.
	(b) Filling gaps in framework on best practice for resilience	• Additional research and development of appropriate guidance for disclosure and monitoring and evaluation of resilience interventions. • Developing selection tool and indicators on knock-out and eligibility criteria.	Build on framework by developing detailed approaches. More examples of best practices from other institutions or countries.	Potential for deeper dive than possible during study
	(c) Learning from private sector	• Review of private finance sector activities to include climate considerations in infrastructure investment decisions (links with Equator Principles).	Outside the scope of the study to look in detail at private sector practices.	

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