The Productivity of International Financial Institutions' Energy Interventions

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A CPI Report

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Climate Policy Initiative works to improve the most important energy and land use policies around the world, with a particular focus on finance. An independent organization supported in part by a grant from the Open Society Foundations, CPI works in places that provide the most potential for policy impact including Brazil, China, Europe, India, Indonesia, and the United States.

Our work helps nations grow while addressing increasingly scarce resources and climate risk. This is a complex challenge in which policy plays a crucial role.

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Executive Summary

Energy use is both the major contributor to global greenhouse gas emissions and a vital component of both sustainable development and economic growth. Inefficient and high-carbon energy may help address energy security in the short-term but, over the longer-term, its associated climate and health impacts may well reverse any gains and exacerbate the challenges that countries face in meeting their citizens' material needs at a reasonable cost (WBG, 2015).

This disconnection is particularly relevant for International Financial Institutions (IFIs). They play an important role in unlocking and scaling up investments in the energy sector (Bhattacharya, Oppenheim, and Stern 2015) and are tasked with supporting the implementation of the Paris Agreement and the achievement of the Sustainable Development Goals (SDGs).

For IFIs, balancing and integrating these different mandates will be challenging but essential. Energy interventions will be a critical component in achieving these goals.

IFIs are responding to these challenges and have committed to approximately double climate finance by 2020 (Trabacchi et al. 2016). However, maximizing the positive impacts of their energy commitments as countries shift towards more efficient and less carbon-intensive energy systems requires that they be able to accurately weigh the costs and benefits of different energy interventions.

This report develops an innovative approach to help IFIs deliver on their mandates to increase economic productivity and meet environmental and social objectives while lowering energy use from fossil fuel sources.

The approach integrates climate and development goals into an expanded concept of energy productivity to enable IFIs to more clearly assess the impacts of their actual and potential energy interventions. We call it an "assessment of integrated energy productivity impact". If adopted by IFIs, such assessments would allow IFIs to adjust their internal lending processes, strategies and targets to better meet international policy goals, such as those laid out in the SDGs, Sustainable Energy for All (SE4ALL) initiative and the Paris Agreement.

KEY FINDINGS AT A GLANCE

There is room for IFIs to reallocate investments to more effectively meet their climate and development goals:

- Energy efficiency projects improve energy productivity across the board, delivering economic, social, and environmental benefits while lowering energy use but represented only 14% of IFIs' energy portfolios from 2012 to 2014.
- Renewable projects deliver economic, social, and environmental benefits. They always improve energy productivity when compared to fossil fuel energy.
- Non-energy investments account for 80% of the total IFI interventions we captured, highlighting the huge potential gains from mainstreaming energy efficiency and IEP across IFIs' portfolios.
- Many existing IFI policies, targets and processes improve energy productivity and each IFI can learn from the best practices of its peers.
- A joint IFI initiative establishing a common framework to assess energy investments' productivity in economic, social, and environmental terms could show governments and donors how to most effectively direct resources to both reduce emissions and grow economies.

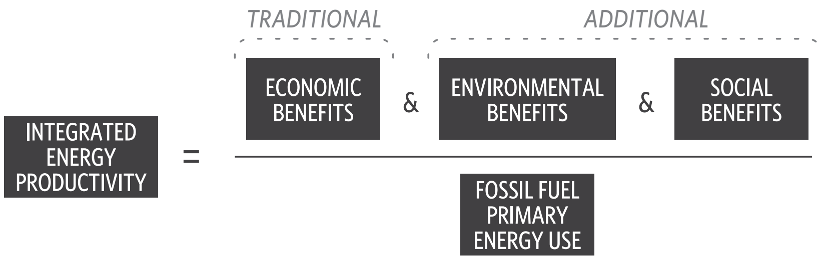
This report uses this approach to assess the operational principles, strategies, and investment portfolios of seven key bilateral and multilateral IFIs[1] to identify best practice on a qualitative basis. It also prepares the way for later quantitative analysis (see Section 6 for more on next steps).

1 Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Inter-American Development Bank (IDB), German Development Bank (KfW), the German Investment Cooperation (DEG), Overseas Private Investment Corporation (OPIC), and the World Bank (WB).

Redefining energy productivity

The traditional definition of energy productivity (EP) is the value of economic output obtained from one unit of energy input (CWF, 2015).[2] Improving performance under this traditional definition of EP reduces energy system costs and often increases energy security. **However, the traditional concept of EP only captures changes in economic output and not the social and environmental impacts that are core operational objectives for many IFIs.** Indeed, IFIs focus more on reducing carbon emissions and improving social development than limiting energy use and increasing economic output.

Figure ES1: The integrated energy productivity 'equation'



Notes: The 'equation' incorporates environmental and social benefits in addition to the economic benefits included in the traditional approach. These benefits are weighed against energy from fossil fuel sources. Table 1 in section 2.4 includes a list of indicators through which these benefits can be represented and impact can be tracked.

In this report, we, therefore, broaden the traditional definition to include these environmental and social benefits. We call this broader definition **integrated energy productivity (IEP)** (see Figure ES1). It weighs the identified benefits against energy inputs from high-carbon (fossil fuel) sources rather than those from low-carbon (renewable) sources because of the importance of low-carbon power generation in meeting IFI development and climate objectives.

Such an approach can bring together these key factors into a single, integrated indicator that can provide an overview of the impact of IFIs' energy interventions in the regions in which they operate and identify where their portfolios can be better aligned to their goals.

Our research revealed that the majority of IFIs already monitor and track some information on social, environmental and economic benefits through the indicators they use to appraise projects and measure performance. However, there is currently no standardized approach to measuring these indicators among the IFIs, preventing the aggregation of data and comparison of IFI impacts. By standardizing and expanding the range of indicators that can be applied to project interventions, we offer useful insight into the factors that are important for IEP.

2 For example, if a country produces USD 100 million in goods and services in a year while consuming 100 million Joules of energy, then its productivity is USD 1 / J. In other words, each unit of economic output required one unit of energy.

Assessing the impact of IFIs' interventions on integrated energy productivity

We reviewed a database of tens of thousands of energy interventions from six IFIs in the three years from 2012 to 2014 in energy efficiency, renewable power generation, fossil fuel power generation, and energy infrastructure such as transmission or distribution networks.[3] We also tracked their investments in policy development and cross-sectoral energy projects where relevant.

IFIs can boost the level of energy efficiency in all sectors. Such projects deliver economic, social, and environmental benefits consistent with growth goals and cut energy use but represent only 14% of IFIs' projects.

We assessed the impact of each sector based on whether it increases energy use, reduces greenhouse gas (GHG) emissions, or delivers on socioeconomic goals. We then classified the most beneficial investments on a qualitative basis, revealing whether interventions clearly improve IEP (are IEP-positive),

3 We cover IFI lending to all energy sector projects and energy efficiency measures in non-energy sectors where the databases we used allowed us to track it. In other words, we do not comprehensively review the energy productivity lending in sectors outside the energy sector such as buildings, industry or others, unless projects are tagged in the databases as having energy efficiency as a core objective.

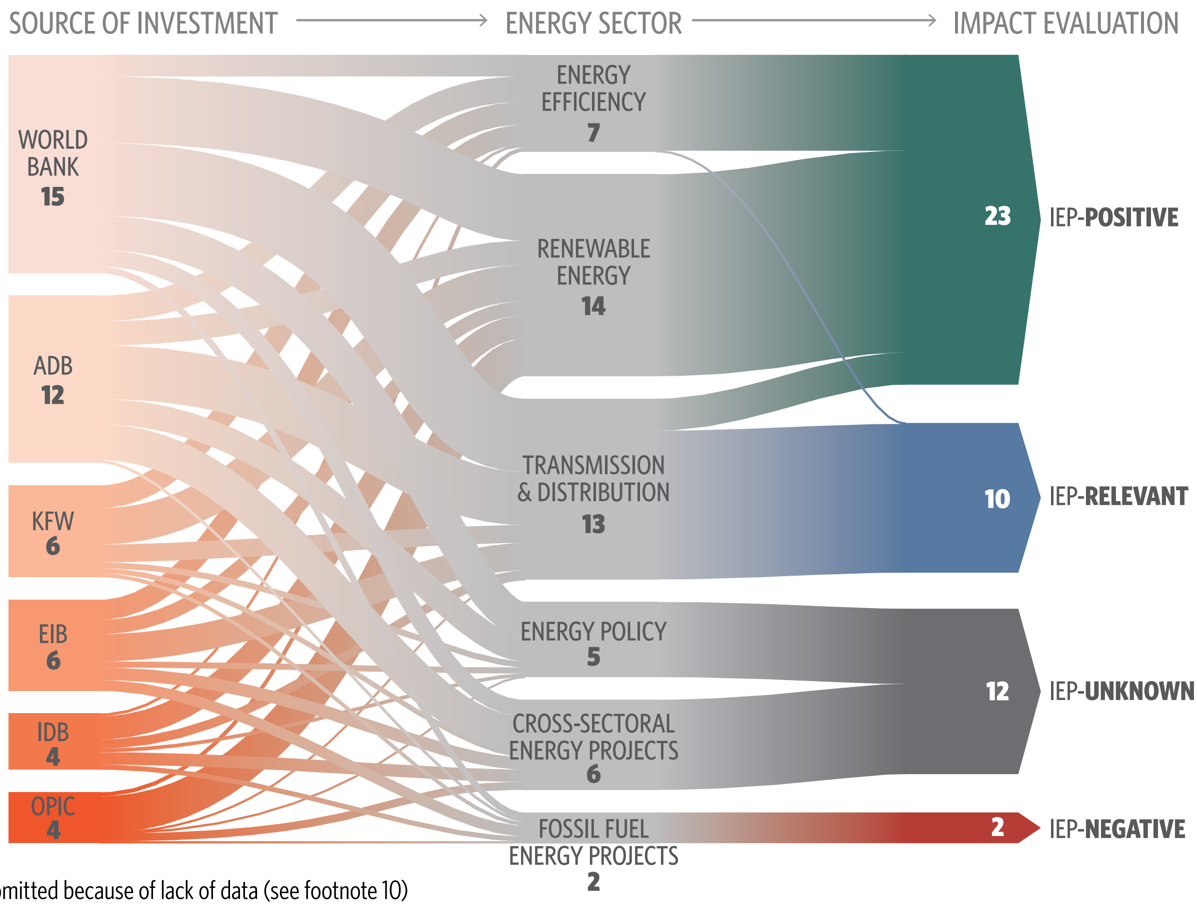
worsen IEP (are IEP-negative), or could have a positive, negative or neutral impact on IEP, depending on the case (are IEP-relevant). For instance:

- We classified energy efficiency projects[4] as IEP-positive because they deliver economic, social, and environmental benefits consistent with growth goals and cut the use of high-carbon, fossil fuel sources of energy more consistently than any other project type.[5] Likewise, because they reduce fossil fuel energy use and deliver numerous benefits, renewable energy projects are considered IEP-positive.
- All high-carbon energy projects are classed as IEP-negative apart from those that cut the emissions of existing plants by improving their efficiency, provided that they do not extend the plants' lives. The latter are classed as IEP-relevant interventions.

This classification reveals **there is room for IFIs to reallocate investments to more effectively meet their climate and development goals.**

- Around 71% (range: 62–84% among IFIs) of IFIs' energy investments are in IEP-positive or IEP-relevant projects (Figure ES2). There are still opportunities to divert resources away from IEP-negative projects with 5% (range: 2–12%) and to increase the share of IEP-positive projects in their portfolios since energy efficiency measures receive only half the volume of investment of renewable energy.
- Non-energy investments account for 80% of the total IFI interventions we captured, highlighting the huge potential gains from mainstreaming energy efficiency and IEP across IFIs' portfolios.

Figure ES2: IFI interventions by energy sector (2012-2014; USD billions) and the impact of these interventions on integrated energy productivity (IEP).



EBRD omitted because of lack of data (see footnote 10)

4 We define 'energy efficiency projects' as all projects in the OECD database that mention 'energy efficiency' in the title or in the short or long description column. See Annex section 2 for details on this method.

5 Investments in energy efficiency will also free up capital that IFIs can utilize to achieve other development objectives.

Assessing whether IFIs' targets and processes deliver integrated energy productivity

IFIs improve IEP through investment in 'hard' infrastructure such as energy projects or 'soft' infrastructure such as policy interventions and capacity building. An IFI's selection of energy projects depends on the policies and targets they have, and the internal processes they use to assess projects at the project selection stage and to monitor, report and verify (MRV) the results after implementation.

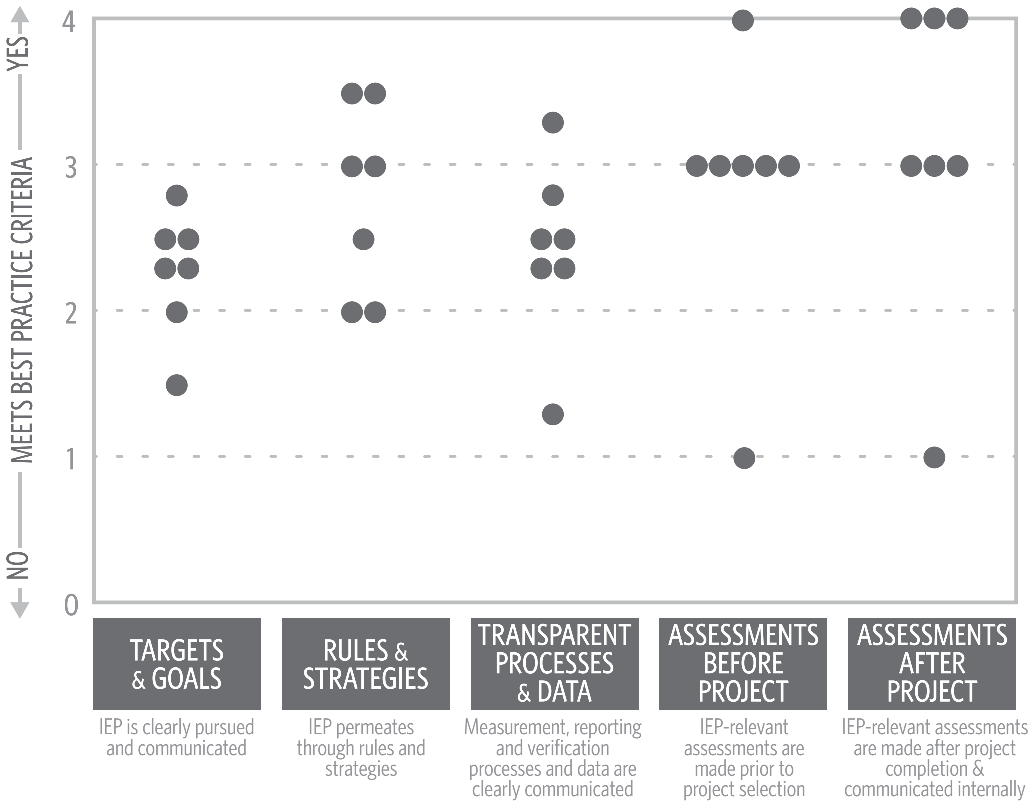
We reviewed procedures, strategy documents, and internal processes for each of the seven IFIs and developed an analytically consistent framework to assess each. We assessed targets and processes for both renewable energy and energy efficiency as IEP-positive interventions but primarily focused on energy efficiency measures because the more substantial differences we saw among IFIs for the latter suggested they receive less attention.

Many IFI policies, targets, and processes improve integrated energy productivity (IEP) and each IFI can learn from the best practices of its peers

The analysis shows that all IFIs have mostly well-defined operational rules, strategies and MRV processes for energy efficiency and renewable energy, which should lead to improved IEP (see Figure ES3). However, no IFI is currently applying direct EP or IEP analysis to its target setting and investment decisions, and no IFI conforms to all identified best practices. All institutions in this group can learn from the best practices of their peers (see Box ES1).

For instance, there are clear differences in how these IFIs carry out internal assessments before projects are financed. Most IFIs in this group only assess energy efficiency for specific projects, and only a few (e.g. EBRD and EIB) try to mainstream energy efficiency across all sectors.

Figure ES3: Qualitative assessment of IFI policies and strategies



We offer an aggregated picture of how the IFIs currently perform because of difficulties in accurately and objectively comparing one IFI to another given their different mandates and areas of operation.

BOX ES1: BEST PRACTICE STRATEGIES AND PROCESSES OF INDIVIDUAL IFIS

All IFIs can learn from the best practices of their peers. Some approaches that could be more widely employed include in no particular order:

- ADB has an internal Energy Advisory Board to assess every energy-related project
- EBRD used an External Expert Group to advise on its newest energy strategy
- IDB uses CO2 per unit of GDP as an indicator to track development in their region of operation
- World Bank, IDB, and ADB publish all public sector project documents on their websites, allowing easy assessment of projects' energy, environmental and, economic goals
- KfW uses a German government guideline document for the energy sector that sets specific requirements, e.g. on the minimal efficiency of electricity transmission
- OPIC has publically available standards and guidelines on renewable energy projects, including recommendations on dealing with common issues, mitigation measures, and monitoring projects
- EBRD and EIB mainstream energy efficiency in project approval processes across sectors

Recommendations for IFIs to increase the integrated energy productivity impact of their energy sector interventions

Mainstream energy efficiency considerations within operations. From 2012 to 2014, investments promoting energy efficiency represented 14% of IFIs' energy portfolio[6] and only 3% of IFIs' total investment portfolios.[7] This is half the amount that went to renewable energy. Interventions promoting energy efficiency have the potential to deliver significant economic, social, and environmental benefits across all sectors of the economy. Therefore it makes sense for IFIs to ensure energy efficiency measures are mainstreamed across their operations in a standardized and systematic way whenever they contribute more to social, economic and environmental goals than other measures or a "business-as-usual" project approach. This will require IFIs to address numerous investment barriers to energy efficiency.

Develop a set of operational 'safeguards' in project appraisals for key sectors to ensure only the most energy efficient projects are included in IFI portfolios of energy and non-energy investments. Identifying the energy efficiency potential in each sector and applying these insights at the project design stage would increase the impact of IFI actions and help disseminate best practices. A checklist for different sectors could help guarantee that interventions improve energy efficiency in each focus area (see Box 6 in section 4.1 for an illustrative list of safeguard questions for the building sector).

Promote knowledge sharing and dissemination of best practices. Many existing policies, targets, and processes used by IFIs improve energy productivity but no IFI currently applies all best practices. It should be relatively easy for IFIs to agree on a set of best practices with regards to energy efficiency measures and renewable energy projects and to implement them. By changing project design and sharing best practice with project developers, IFIs can improve energy and carbon savings within their energy investment portfolio.

Build a coalition of willing IFIs to harmonize approaches to tracking energy efficiency interventions and quantifying projects' impact. By establishing a common framework for tracking and assessing energy investment across their portfolios, IFIs could also demonstrate to governments and donors how to most effectively direct resources to both reduce emissions and grow economies. Section 6 offers some suggestions on how to proceed.

6 Ranging from 5-25% for individual IFIs

7 Ranging from 0-9% for individual IFIs

Contents

Glossary

ADB	Asian Development Bank
CRS	Creditor Reporting System
DAC	Development Assistance Committee
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ESCO	Energy Service Company
GDP	Gross Domestic Product
GHG	Greenhouse Gas
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDB	Inter-American Development Bank
IEA	International Energy Agency
(I)EP	(Integrated) Energy Productivity
IFC	International Finance Corporation
IFI	International Finance Institution
MDB	Multilateral Development Bank
NDC	Nationally Determined Contributions
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OPIC	Overseas Private Investment Corporation
SE4All	Sustainable Energy for All
SDGs	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank (including IBRD and IDA)
WBG	World Bank Group (including IBRD, IDA, and IFC)

1. Introduction

The *Paris Agreement,* reached in the international negotiations of the United Nations Framework Convention on Climate Change (UNFCCC) in 2015, sends a clear signal to governments and businesses on the necessity for coordinated action to decarbonize economies, supply chains, and business models. While the country plans (so-called nationally determined contributions or NDCs) submitted as part of the negotiations fall short of limiting global temperature increases to well below 2°C (UNEP, 2016), they lay the foundations for strong action whereby economic growth and falling emissions need not be a trade-off.

A growing body of research indicates not only that the benefits of a transition in line with limiting temperature rise to 2°C will far outweigh the costs, but also that the efficient and productive use of energy is a necessary element in this transition.

International Finance Institutions (IFIs), specifically multilateral and bilateral Development Financial Institutions (DFIs), have played and will continue to play a critical role in unlocking and scaling up support for low-carbon energy systems in almost all countries by reducing investment risks and supporting the development of strong policy frameworks. In addition, the Sustainable Development Goals (SDGs) offer a guide to ensure IFI actions have a systems-wide perspective, where inclusive growth and sustainable development can be tackled together.

IFIs can drive investment in low-carbon actions forward and, through their energy projects, operational guidelines, principles, and strategies, can greatly influence the energy productivity of economies. But, what is energy productivity, how applicable is it to institutions like IFIs, and what has been the impact of IFI interventions on it? This report aims to answer these questions and presents a tangible way for IFIs to consider how their activities and project selection impact these issues.

The need to broaden the definition of energy productivity in line with IFI objectives

Energy productivity (EP) is traditionally a measure of economic value added (in USD, typically gross domestic product GDP) per unit of primary energy used or consumed (Joules or equivalent). In other words, EP is a technical measure of how to do more (e.g. increase the value of goods and services) with less energy.[8]

Improving EP can reduce energy system costs, can help to improve countries' energy security, and support avoiding or reducing greenhouse gas (GHG) emissions. Indeed, the International Energy Agency states that targeting EP measures could unlock energy savings through energy efficiency on the demand side, and decarbonize the supply side through renewable energy. Ideally, therefore, EP and climate objectives should be aligned (OECD/IEA, 2016).

Recent international discussions—such as the UN Sustainable Energy for All (SE4ALL) initiative, the SDGs, and the Paris Agreement—have increasingly prioritized supporting low-carbon growth, and the productive and efficient use of energy remains a crucial component to achieving these goals. However, the traditional EP definition fails to account for the more long-term environmental and social goals that are at the core of these international agreements.

This is important. Since a great deal of the investment to meet climate and development goals will take place in the energy sector, it needs to be spent wisely and effectively.

The IEA, for instance, suggests that to implement the full climate pledges within the Paris Agreement, USD 13.5 trillion will have to be invested in the energy sector, with USD 8.3 trillion of this needed for energy efficiency and USD 4 trillion for renewable energy (OECD/IEA, 2015). The IEA suggests also that energy efficiency could deliver just over one-third of the reduction effort between a possible 'business-as-usual' emissions

8 The advantage of approaching EP as an economic concept with GDP per unit of energy cost rather than energy consumed is that countries' differing fuel prices can be factored into the assessment. This is important since a country with high fuel prices will appear more energy productive than one with lower prices because the former will use less energy to achieve the same level of GDP of the latter. The disadvantage of this approach is that setting higher energy prices through policy changes (e.g. to incentivize efficient use of energy) is not rewarded.

pathway and one in line with 2°C (IEA, 2016). Likewise, renewable energy could also account for just under one-third of the effort.

An increased use of energy efficiency could not only make the transition a great deal easier, it could also make the decarbonization of economies considerably cheaper.

A recent analysis commissioned by Climate Works Foundation suggests that energy efficiency measures could reduce the global cost of limiting warming to 2°C by up to USD 2.8 trillion between now and 2030 (Fraunhofer ISI, 2015). This work highlights that energy efficiency can help free resources from IFIs and other actors to achieve other pressing development objectives. It also helps frame the discussion beyond the energy sector and into areas of economies that use energy such as buildings, industry, transport, and even services.

Improving the energy productiveness of our economies requires us to consider how to make the most productive and efficient use of the energy we consume across all sectors and can help us rethink also of the value of economic activities and outputs that we achieve with the energy we use.

1.1 Report objective and overview

To fully capture the benefits of energy interventions and better align them with IFIs' wider goals, assessments must go beyond a narrow evaluation of economic value-added and reduced energy use to integrate social and environmental benefits.[9]

For the first time, this report assesses integrated energy productivity (IEP) efforts by IFIs, in order to highlight their current best practices so they can learn from each other.

Furthermore, the report also suggests tangible approaches for IFIs to better incorporate higher energy productivity within their existing operations and the projects they invest in.

Through this report and follow-on research, we hope to support IFIs to:

- Ensure that internal lending processes, strategies, and targets lead to funding only to projects with the most impact on international initiatives and policy targets, such as SE4All, SDG and the Paris Agreement.
- Ensure that specific social and economic goals are met with the lowest amount of fossil fuel use possible, in order to reduce energy system costs to consumers and nations, and promote sustainable socioeconomic development.

The report has the following structure:

- **Section 2:** Describes the IEP definition and methodology used to estimate the IEP impact of different project types/sectors
- **Section 3:** Assessing IEP-relevant targets, strategies, and processes within the seven selected IFIs
- **Section 4:** Assessing 2012-2014 energy portfolios of selected IFIs, with the exception of EBRD[10]
- **Section 5:** Project-level interventions: We apply the IEP definition to one case study, and highlight key findings of potential best practices, and a short analysis of several innovative projects
- **Section 6:** Next steps to aligning IFI interventions with IEP. Based on the report findings, we discuss possible future work and next steps, which could be used to start a discussion with IFIs of identifying best practices to incorporate IEP within their existing operations.
- **Annex:** More detail on the interview questionnaires, research processes, and data used for the portfolio assessment.

9 Though some IFIs use a more traditional definition of energy productivity at a country-level to make high level-assessments of countries' productive use of energy (KfW, 2015), it is not well suited to IFIs given their mandates go beyond increasing GDP or delivering economic goods and services to include socio-economic development, such as ensuring that economic growth is inclusive and equitable, that their interventions help decarbonize economies, and that they limit negative environmental impacts of projects.

10 Due to lack of data availability in our dataset, it was not possible to accurately represent the EBRD energy investments in this report. Compared to the annual reports, the OECD Creditor Reporting System dataset only captured 54% of EBRD investments over the period 2012–2014. Therefore, we qualitatively assessed its targets, strategies and processes in section 3, but did not conduct any quantitative assessment in section 4 and in the factsheet. See Annex section 2 for a discussion on the data sources and limitations.

2. Overview of methodology

This report offers an integrated approach to tracking the economic, environmental, and social productivity of IFI energy sector interventions for the first time.

This section provides an overview of the approach applied in this study to make an initial assessment of IFIs' energy-related processes, and investment portfolio of projects against a broadened definition of energy productivity that is more in line with IFI operations than the traditional definition.

The definition and methodology described in this section were verified through expert interviews and discussions with an Advisory Group of IFI representatives as well as energy and energy efficiency experts.

To generate a picture on how our definition of IEP (outlined below) applies to energy sector investments, and how to establish the economic, social and environmental impact of IFI investments, we considered both the qualitative and quantitative aspects of IFI interventions.

Firstly, we classified various energy sector related interventions employed by IFIs according to our definition and then we determined the possible impact 'value' of the overall energy investment portfolios of IFI for the three years between 2012 and 2014.

Secondly, we assessed how well-placed IFIs are to improve IEP through their current processes, procedures, strategies, and targets.

Finally, in addition to these structured assessments, we described ways in which IFIs can move beyond supporting projects that simply improve IEP or are business-as-usual to help deliver innovative projects that unlock many economic, technical and social benefits by drawing examples from their own portfolios.

Further details on the indicators and metrics used to assess IFI's investment portfolios and the criteria and scoring of their processes can be found in Annex 1.

2.1 Definition of energy projects

This report looks at energy projects in the primary energy sector and the power sector. It also examines energy efficiency projects in non-energy sectors.

Primary energy projects such as investments in drilling and gas pipelines are included as they impact energy prices, emissions pathways, and the energy productivity of a country long-term.

Energy efficiency projects in non-energy sectors reveal the level of IFIs' efforts on energy efficiency on the demand side.

Other sectors, such as industry, also indirectly impact IEP. However, the scope of the project did not allow for detailed exploration of other sectoral impacts or sectoral shifts that could positively or negatively affect IEP.

2.2 Scope of assessed projects

Data accuracy and availability would be improved by enabling the standardized reporting of project-level information by IFIs and better tagging of mainstreamed energy efficiency measures

We used the OECD Creditor Reporting System (CRS) database to analyze project-level data. It covers public finance flows to countries receiving overseas development aid (ODA). We used commitment amounts to establish funding allocations by calendar year.

We selected projects from the following seven IFIs for in-depth assessment because they are among the largest IFIs in the field of international energy finance, are among the best performers in this area, and provide enough public information to enable their interventions to assessed using the IEP approach;

- Asian Development Bank (ADB)
- European Bank for Reconstruction and Development (EBRD)
- European Investment Bank (EIB)
- Inter-American Development Bank (IDB)
- German Development Bank (KfW) and the subsidiary German Investment Cooperation (DEG, Deutsche Investitions- und Entwicklungsgesellschaft)
- Overseas Private Investment Corporation, United States (OPIC)

- World Bank (WB) (comprised of the International Bank for Reconstruction and Development, International Development Association).

2.3 Redefining energy productivity

To assess IFI programs and project investment portfolios, we expanded the traditional definition of energy productivity beyond simple economic benefits (e.g. GDP in US dollars) to include the environmental and social benefits that are so central to IFIs' work.

Further, to ensure that the benefits of low- or zero-carbon energy investments are properly accounted for, we only account for energy from high-carbon (fossil fuel) sources. That is to say, we assess energy that results in emissions of greenhouse gases differently than energy that results in no emissions because of the former's importance to IFI development and climate objectives.

We named this **Integrated Energy Productivity (IEP).** See Figure 1 below and the accompanying table of indicators (Table 1) for more.

Figure 1: The integrated energy productivity 'equation', incorporating environmental and social benefits, energy from fossil fuel sources only, in addition to the traditional approach with economic benefits. Numbers correspond to Table 1 below.

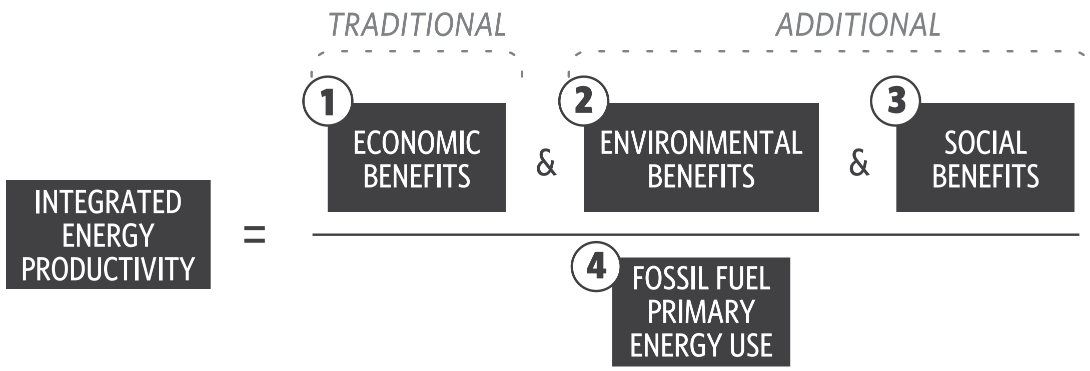


Table 1: IEP indicators for the different outputs and inputs of the IEP 'equation'

NUMBER OF IEP OUTPUT OR INPUT (CORRESPONDS TO FIGURE 1 ABOVE)	IEP OUTPUTS & INPUTS	INDICATORS
1	Project Output: Economic Benefit	• GDP (local value added) • Energy cost savings* • Energy imports avoided
2	Project Output: Environmental Benefit***	• GHG emissions avoided/reduced • Freshwater use • Land use*
3	Project Output: Social Benefit***	• First-time access to electricity • Quality of access to electricity • Jobs created* • Local high-skill jobs created • Local long-term jobs created* • Health benefits through avoidance/ reduction of pollution*
4	Project Input: Primary Energy Use (accounting for fossil fuel energy sources)	• Energy supply added from fossil fuel sources • Energy savings • T&D lines constructed or rehabilitated**

*Indicators that are not yet tracked by all IFIs for energy projects but fill in gaps in project assessments regarding our IEP-definition, the SDGs, and SE4All. **If applicable, not a "direct" energy input indicator like for increased fossil fuel energy but T&D is an important investment type used to report IFI progress on energy investments, and can have a large impact IEP. ***For the purposes of this report, there is no need to express these benefits in US dollar terms, which may be challenging or impossible to do with certainty (see text for details).

2.4 Selecting indicators for integrated energy productivity analysis

To estimate IEP in detail, we generate a list of energy-related indicators that IFIs use to assess and justify their investments, and then group them to the according to the factor they relate to within the IEP equation (e.g. economic, social and environmental outputs/benefits and fossil fuel energy input, see Table 1 for more).

To ensure that the IFI indicators for IEP align to wider development goals, we checked them against indicators proposed by the UN's SDGs and SE4All initiatives.[11] This process allows us to determine the most widely used energy-related indicators, and also identify any gaps as summarized below.

The indicators here are typically used by IFIs, although often to different extents, to justify investment or describe possible impacts of project investments in, for instance, project appraisal documents that the IFIs prepare at an early stage of project funding discussions.

These indicators are also used, to some extent,[12] to track or determine the ultimate economic benefits of interventions (e.g. GDP or net local added value of goods and services following project delivery), environmental benefits (e.g. reducing emissions of greenhouse gases), and social benefits (e.g. improved health through reduced local air pollution, increased jobs, or increasing number of households with energy access or access to other services). This is in addition to indicators to track progress on energy use (e.g. reducing energy use/using energy more efficiently).

Many IFI indicators, such as 'GHG avoided or emitted', 'First-time access to electricity', 'Jobs created',[13] are already widely used across IFIs, reducing the need to develop new methodologies and to track new indicators. They are also broadly in line with SDGs and SE4All indicators.

The aggregate set of indicators provides a simple high-level assessment of how a project impacts the economic, environmental and social productivity of a particular jurisdiction.[14] We use aggregate indicator results to generate an IEP-impact profile by sector. Then we apply this to IFI investment portfolios. We place no weighting on the indicators so as to avoid unnecessary bias (see table 3).

2.5 Qualitative assessment of whether IFI targets, processes, and strategies can deliver increased integrated energy productivity (IEP)

We reviewed publically available IFI documents and conducted interviews with all seven IFIs in order to assess the readiness of their frameworks/their practices towards the adoption of IEP-positive projects. We considered the following components of IFI targets, processes, and strategies that are likely to determine whether IFIs select IEP-positive projects and achieve productive results:

- Targets
- Rules and strategies
- Transparent processes and data
- Assessments before project approval
- Assessments after project completion

In general, we only looked at processes for the energy sector and energy-relevant projects in other sectors, though some of the energy-related targets have been set at an IFI level.

For each of these dimensions, we defined a list of non-weighted qualitative and quantitative criteria to evaluate the IFIs (see Table 2). Each criterion was assessed by a series of sub-criteria where IFIs could score from 0 to 1 point, depending on the extent to which the criteria was met. Scores were determined through semi- structured interviews with IFI representatives and in-depth analyses of publicly available information. Individual scores from sub-criteria were aggregated together resulting in a final mark from 0 to 4 for each criterion where 4 represented best practice.

11 See www.un.org/sustainabledevelopment and www.se4all.org for more information.

12 There are clear difficulties in estimating the benefits are associated with these indicators: the lack of available information, the significant costs of obtaining such information (if it can be obtained), and the intrinsic weaknesses of quantifying non-financial benefits.

13 Also 'Total energy capacity installed or rehabilitated', 'Total lifetime energy savings', and 'T&D lines constructed or rehabilitated'.

14 This does not mean it is a straightforward process and certainly these indicators should not be used to determine the relative performance of IFIs in the energy sector. Nor would such an assessment provide an adequate systems- or economy-wide view of interventions. Using indicators as proxies for impact will result in gaps so overly simple comparisons of organizations should be resisted.

Please refer to Annex section 1 for more information on sub-criteria, the rationale for scoring, the template used for the semi-structured interviews, and a list of public documents consulted.

Table 2: Overview of criteria to assess IFI processes and strategies for IEP impact

TARGETS	DEFINITION OF IEP TARGETS
	COMMUNICATION OF IEP TARGETS
RULES AND STRATEGIES	SHARE OF SECTORS WHERE ENERGY ELEMENTS ARE CONSIDERED
	ENERGY SECTOR STRATEGY
TRANSPARENT PROCESSES OR DATA	COMMUNICATION OF MONITORING, REPORTING, AND VERIFICATION PROCESSES
	PUBLICATION OF IEP INVESTMENTS AND ACHIEVEMENTS
ASSESSMENTS BEFORE PROJECT APPROVAL	INTERNAL GUIDELINES AND/OR PERFORMANCE REQUIREMENTS
ASSESSMENTS AFTER PROJECT COMPLETION	MONITORING, REPORTING, AND VERIFICATION PROCESSES

2.6 Categorizing IEP impact per type of IFI intervention

Among IFI interventions analyzed for our quantitative assessment, we distinguish between those that improve overall IEP (IEP-positive), those interventions where the net impact is unclear (IEP-relevant), and those that worsen IEP (IEP-negative). These three types are defined in detail as follows:[15]

- **IEP-positive**. Where all changes in the input and output variables improve IEP on a net basis (an increase of economic, environmental and social output, and a decrease of fossil fuel energy input), or at least one improves IEP while all others do not change.
- **IEP-relevant**. Where either the input or one of the output variables in the IEP equation change and result in an overall improvement of IEP, while the other side of the equation (input or outputs) has a negative impact on IEP, so the overall result of IEP is unclear.
- **IEP-negative**. Where both the input and at least one output variable in the IEP equation lead to worsening EP.

Clearly, it is important to acknowledge that this is a rough classification and assessment of projects that does not provide or need any quantitative measurement of sub-indicators.

Depending on the actual value of sub-indicators, or inherent gaps in applying a limited number of sub-indicators, some projects that are IEP-positive according to the high-level assessment may turn out to be IEP-negative and vice versa. The number of IEP categories does not necessarily need to be limited to three, but it is sufficient for our purposes here.

Box 3 summarizes the difficulties of categorizing sectoral interventions in this way. Indeed, these three types also do not imply that IEP-positive projects are the 'best' interventions possible, only that all input and output variables from our definition change in a way that improves IEP overall as we have defined it above.

Among IEP-positive interventions, we distinguish between projects that are close to business-as-usual (e.g. those projects that employ commercially available and widely used technologies) and those that are particularly innovative in terms of their contribution to energy productivity and with high socio-economic impacts (**IEP-innovative**). For a discussion of which projects can be described as IEP-innovative, see Box 7 in section 5.

15 A fourth type is used where the impact on IEP is unknown (IEP-unknown) because either the intervention covers several sectors, or impact cannot be clearly attributed to the intervention.

Table 3: Energy sector mapping against IEP indicators

INDICATOR		STRATEGY AREAS			
		EE	RE	T&D	HIGH CARBON
ECONOMIC	GDP (LOCAL VALUE ADDED)				
	ENERGY COST SAVINGS*				
	ENERGY IMPORTS AVOIDED				
ENVIRONMENTAL	GHG EMISSIONS AVOIDED / REDUCED				
	FRESHWATER USE				
	LAND USE*				
SOCIAL	FIRST-TIME ACCESS TO ELECTRICITY				
	QUALITY OF ACCESS TO ELECTRICITY*				
	JOBS CREATED				
	LOCAL HIGH-SKILL JOBS CREATED				
	LOCAL LONG-TERM JOBS CREATED*				
	POLLUTION AVOIDED / REDUCED*				
FOSSIL FUEL ENERGY INPUT	ENERGY SUPPLY ADDED FROM FOSSIL FUEL SOURCES				
	ENERGY SAVINGS				
	T&D LINES CONSTRUCTED / REHABILITATED				
OVERALL IMPACT					

*Indicator not currently used by IFIs

Key: EE (energy efficiency), RE (renewable energy generation), T&D (transmission and distribution energy network infrastructure). Explanation: color coding corresponds to the impact that each sector has on IEP (green is IEP-positive/ improves IEP, blue IEP-relevant/neutral or unclear impact, red IEP-negative/ worsens IEP; gray means that this indicator is not applicable). The qualitative aggregation of indicators by each sector gives an overall sector impact on IEP. Policy interventions are not included here because their impact is difficult to measure against these indicators. See text for explanation. EE for Fossil Fuel Energy is IEP-relevant

2.7 Categorizing IFIs energy investments according to their performance against an integrated definition of energy productivity

For this report, we are investigating four main types of IFI interventions that should have an impact on IEP:

- Energy efficiency investments in buildings, transport, and industry[16]
- Renewable energy generation
- Fossil fuel energy generation
- Energy infrastructure such as transmission or distribution networks

The above generalization of sectors was useful because of the limited information available for all 78,590 project lines[17] in the three years 2012 to 2014 in our database (covering six IFIs) in addition to another 200 OPIC projects (see section 4). While we can generally identify the above four sectors in the database, the lack of standardized data tracking of projects (including the type of investment, scale or size, IFI commitment in USD, the primary or secondary purpose of intervention, and others) mean simplifications were often necessary.

The 'heat map' below (table 3) shows the aggregated impact of each sector intervention on IEP, against the indicators introduced above. 'Green' means the sector improves the IEP indicator in a positive direction (IEP-positive), 'red' worsens it (IEP-negative), and 'blue' is unclear (IEP-relevant). In some cases, we have to make a qualitative assessment of the importance or scale of certain sectors against the indicators used by IFIs. As mentioned above, the different indicators here have an equal weighting to avoid subjectivity of scoring.

16 Energy efficiency related projects in the energy sector, such as T&D, and new energy projects that incorporate energy efficiency, and demand-side energy efficiency measures in non-energy sectors such as buildings and other sectors.

17 One line entry does not necessarily respond to one project, rather relates to one line of financing. Of course, one project or program of projects could need several lines of financing. It was not possible to track individual projects.

Table 4: Overview of sectoral impact on IEP

SECTOR	HIGH-LEVEL DEGREE OF INTEGRATED ENERGY PRODUCTIVITY (IEP)
ENERGY EFFICIENCY[1]	IEP-POSITIVE
RENEWABLE ENERGY[2]	IEP-POSITIVE
TRANSMISSION & DISTRIBUTION[3]	IEP-RELEVANT[5]
ENERGY EFFICIENCY WITHIN HIGH-CARBON ENERGY	IEP-RELEVANT
HIGH-CARBON GREENFIELD[5]	IEP-NEGATIVE
POLICY INTERVENTIONS	IEP-UNKNOWN
OTHER ENERGY PROJECTS[6]	IEP-UNKNOWN

1 Projects whose primary aim is energy efficiency and projects that contain energy efficiency as a secondary element (EE in renewable energy and EE in transmission and distribution).
2 Wind, solar, hydro, geothermal, biogas, biofuel, biomass
3 Includes T&D for gas and oil
4 Transmission and distribution for renewable energy, when applicable, is classed as IEP-positive.
5 Includes investments in oil, gas, coal, diesel, refineries. See Box 3 and text for details.
6 Multisector projects (e.g. credit lines for energy projects with undetermined technology)

Overall, therefore, the sector interventions receive the following 'degrees of IEP within our data analysis (Table 4).

This generalization is not without its limitations given that each project intervention will typically have its own unique drivers and justifications, particularly from an IFI perspective. Indeed, it is very unlikely that one sectoral intervention will always only be associated to one degree of IEP impact.

In addition, policy interventions remain an important part of IFI portfolios, but their impact is difficult to estimate. From 2012 to 2014, the OECD database provides information on 169 policy interventions[18] for energy for the six institutions we reviewed. These represent USD 5.2 billion of commitments. Of these, about USD 3.4 billion are policy loans (mainly fiscal support for the recipient, i.e., the local government) based on a high-level review of flows.

As we cannot determine the exact use of these flows (with purpose *Energy Policy and Administrative Management* in the OECD CRS database) we categorized them as an 'unknown IEP' impact. Nevertheless, well-designed technical assistance support for policy interventions can have a significant positive impact on IEP.

For more details on this issue, see the Box 3 for a discussion of each sector intervention.

18 OECD DAC CRS Purpose code: Energy Policy and Administrative Management

BOX 3: DIFFICULTIES OF CATEGORISING SECTORAL IMPACTS ON IEP

It is difficult to categorize the impact that entire sectors have on IEP. We make simplifications to ensure a straightforward application of the approach but, for this reason, sometimes cannot portray the full picture of IEP impacts. Based on our definition above and the indicators that IFIs use to evaluate investments, we found that:

1. Energy efficiency investments deliver an IEP-positive outcome given that they reduce energy use, increase economic value, generate jobs, and reduce emissions of GHGs. In this respect, energy efficiency measures 'tick all the boxes' in our IEP definition. An exception to this would be energy efficiency investments within high-carbon power plants, given that they are likely to extend the lifetime of the plant and so lock-in associated GHG emissions.

2. Renewable energy investments' impact is largely dependent on what definition we use for IEP. The definition presented in the text assumes IEP will be worsened if energy is from fossil fuel sources, and that energy from low- or zero-carbon sources improves IEP. This is in line with how the IFIs in our group (and others) approach renewable energy investments. They value greatly the economic, social, and environmental benefits of renewable energy projects in terms of increased energy access, improved security of supply, and replacement of high-carbon sources of energy. These factors all outweigh any worsening of traditional energy productivity (e.g. the added use of energy as a whole).

For this sector, we make no judgment on the impacts of particular 'types' of renewable energy. For instance, although the economic, social, and environmental impacts of a particular hydropower plant and onshore wind farm are likely to be very different, this section groups renewable energy technologies together. The strengths and weaknesses of using particular types of renewable energy are more easily determined on a case-by-case basis as IFIs assess the options available to them in the given national/regional context.

3. 'Soft' infrastructure investments such as technical assistance and capacity building are an important part of IFI interventions, and potentially highly important in improving energy productivity. However, given the difficulty in accurately measuring all or any of the various policy impacts in quantitative terms, we treat these interventions qualitatively only.[1] As such, any IFI lending that is directly linked to policy or administrative management will be classed as 'IEP-unknown'.

4. Fossil fuel (high-carbon) energy investments (e.g. coal power plant) are also difficult to define against IEP impacts. In general, greenfield fossil fuel energy interventions would deliver an IEP-negative outcome (worsening IEP) since it may increase economic value, but it also increases energy use (from high-carbon sources) and, importantly, if the GHG emissions are left unabated, causes high environmental and social damages (GHG emissions and air pollution respectively—damages which, for coal, can be many times the market price of coal per ton[2]).

There may be some exceptional cases where some IFIs[3] may define greenfield high-carbon energy investment as IEP-relevant if, for instance, the best available technology is used in conjunction with energy efficiency measures, capture technology, or if there is a lack of viable alternatives. Without individual project assessments, we cannot deduce this from the project-level dataset used in this report.

Energy efficiency investments to improve existing high-carbon energy generation here are classed as 'IEP-relevant' measures given the improvement in operational efficiency of the plant but such interventions can still lead to high-carbon lock-in by potentially extending the operating lives of projects. Ideally, any measures should not extend the lifetime of plants.

1 See for instance, Falconer and Stadelmann (2015) who attempt to estimate the role of policy interventions to mobilize climate finance.
2 Boyd et al (forthcoming) who apply an International Monetary Fund approach to incorporate air pollution and climate damages into the cost of energy from burning coal.
3 Some IFIs leave open the possibility of investing in greenfield fossil fuel power plants in rare and exceptional circumstances, e.g. the World Bank Group, KfW, and EBRD.

3. Assessing IFI targets, processes, and strategies

Many IFI policies, targets, and processes improve IEP but each IFI can learn from the best practices of its peers in, for example, mainstreaming energy efficiency across sectors, setting clear project-level benchmarks, publishing documents, and consulting Energy Advisory Boards

We present anonymized aggregate results for current IFIs processes and strategies related to IEP in Figure 2 to reflect IFIs current performance as a group and highlight areas for improvement while acknowledging the difficulties in accurately and objectively comparing one IFI to another (see Box 4). The scoring is therefore designed to identify best practices and potential areas for improvement for IFIs as a group.

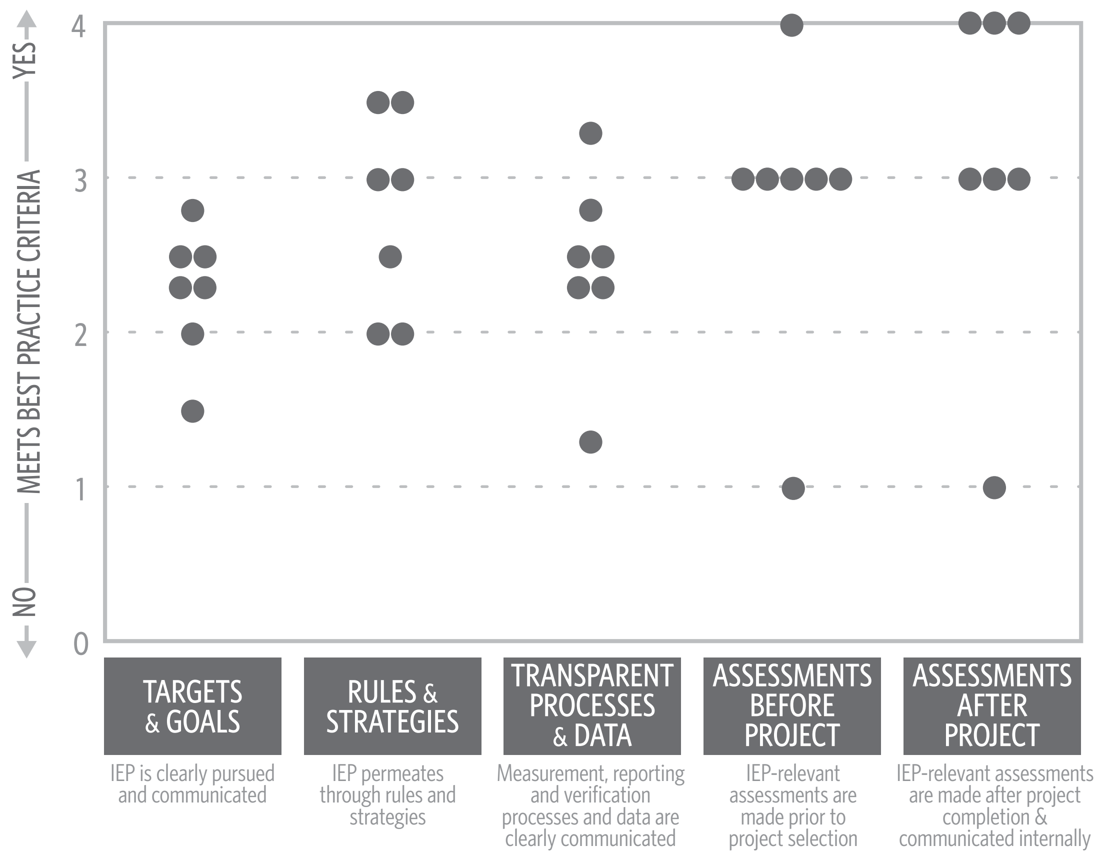
Integrated Energy Productivity (IEP) is not an explicit goal for any IFI but all have targets and project selection processes that improve IEP. Relevant indicators like energy savings are already tracked for some projects and could be further applied throughout the portfolio of IFIs.

It is important to note the following on our assessment:

- It provides a snapshot of the current situation and may be subject to change over time
- The relative scores reflect the assessment for a sub-set of IFIs that are particularly transparent. The performance of this group can be expected to be on average higher than for the average of non-assessed IFIs.
- The assessment is based on a review of documents and a limited amount of interviews with different IFIs. Scores could change if new evidence arises.
- The fact that for some of the five dimensions no IFI receives the highest score only means that no IFI meets best practice for all sub-indicators of this one dimension. In almost all cases, at least one IFI demonstrates best practice for each sub-indicator (the exception being that no IFI targets the improvement of energy productivity through its actions).
- We checked for targets and processes affecting both renewable energy and energy efficiency (given their importance for IEP), however, we put more emphasis on procedures related to energy efficiency measures, as more work is needed to develop this area and there are larger (operational) differences and approaches among our group of IFIs.

In the following sections, we discuss results for each criterion separately. Details on the methodology and data are provided in Annex section 1.

Figure 2: Qualitative assessment of IFI policies and strategies



BOX 4: WHY IT IS DIFFICULT TO COMPARE IFIS' EFFORTS ON IEP

It is not possible to compare processes and strategies within IFIs because of key differences between them, particularly related to the overall approach, goals, clients and geographies.

General approach to energy productivity/energy sector: energy productivity, and thus our integrated version, is not in the operational 'language' of IFIs as highlighted in our interviews. Indeed, not all IFIs have the same approach on energy. Some IFIs mostly focus on new power plants/energy supply, others have a stronger focus on the supply side, so across sectors. Some have a heavy involvement in energy-related projects as key development infrastructure, while others see it as just one of the relevant sectors. These differences can be linked to general needs of clients and/or overall goals when setting up IFIs (path dependency), and are therefore not easy to change. Despite this, our assessment of integrated energy productivity still provides important insights into IFI energy operations through the indicators they use in project and sectoral assessments and their operations.

Overall goals in the energy sector: While no IFI has integrated energy productivity as a high-level goal, some IFIs focus more strongly on energy access and others more strongly on GHG emissions reduction.

Clients: Some IFIs only have private clients, others only work with public clients, and most have a mix of public and private clients. The client base will affect the external publication of data, as private contracts are normally confidential.

Geographies: Some IFIs focus more on countries where renewable energy sources are abundant, while others also support countries where coal is easily available and other energy sources are not.

Because of the difficulty of making a fully fair comparison of IFIs, we are not publishing the names of individual IFIs in Figure 2.

3.1 Targets

- This component was the one where IFIs scored the lowest (2.2 out of 5 on average); it represents an important area of improvement as IFIs have not yet adopted IEP or EP as goals or targets. The IFI that comes closest to having EP as a target is IDB, which tracks CO_2 emissions per unit of GDP in the region where it operates.
- Given the lack of IEP targets, we focused our assessment on energy efficiency and renewable energy-related targets. Many IFIs have adopted targets for improving energy efficiency and scaling up renewable energy and, according to our EP definition, both energy efficiency and renewable energy projects have an EP-positive impact.
- We identified significant variance in the type of energy-related targets adopted by IFIs[19]; these differences make it hard to compare IFIs in a relevant way.
- We identified four IFIs that already have energy efficiency/renewable energy-specific targets. The remaining three had climate-related targets, which contained energy efficiency or renewable energy as an element but did not set specific shares for either.
- Even though IFIs have not adopted EP as a target, we identified that at least five IFIs already have measurable objectives beyond economic investment. The latter is important as it suggests that transitioning from the traditional definition of EP to the one we propose in this document would provide IFIs with a better framework to track their contribution to social and environmental goods.
- We identified as best practice the cap for GHG emissions for OPIC's operations; wider adoption of such caps would push IFIs to opt for more carbon-efficient projects and to better allocate their emissions in regions where low-carbon options are more constrained.
- When looking into the communication of targets, we identified that all IFIs are already communicating progress on IEP-related targets at least annually. Four IFIs are currently communicating IEP-related progress per region of operations.
- Among best practices, we identified EBRD's regional communication of energy efficiency related targets, goals and progress, and the WBG and ADB publication of all public sector project documents on their website, allowing various stakeholders to assess the project goals for energy, environment and the economy.

3.2 Rules and strategies

- This was the component where IFIs scored highest (between 2.0 and 3.5). We identified that all IFIs already consider social, environmental and economic elements across their energy strategies and policies. We also identified that six IFIs already have a strategy that is compatible with other energy-related initiatives, such as SE4ALL. Moreover, we found that half of the IFIs[20] have already incorporated clean energy components[21] across more than 40% of the sectors in which they engage. The latter highlights that IFIs have already advanced in mainstreaming energy efficiency across sectors (see Box 5 in section 4 for a wider discussion of mainstreaming).
- We identified that all IFIs are still supporting fossil fuel projects; however, most IFIs have some restrictions when engaging in high-carbon projects. While it is difficult to derive from written rules and strategies whether IFIs in practice avoid investments in non-productive fossil fuel projects or not, IFIs clearly have to be very careful to avoid locking-in the energy systems into long-term fossil fuel infrastructure that score low on several dimensions of energy productivity (particularly CO_2 emissions and fossil energy use).

19 IFIs have personalized targets depending on their structure and utilized MRV mechanisms and indicators (e.g. cumulative capacity RE targets, share of portfolio invested on energy efficiency/renewable energy, clean energy, climate action).

20 OPIC was excluded from this sub-indicator as it does not follow a sectoral approach.

21 Clean energy components were considered to be incorporated within a sector where any of the following occurred as part of its policy: sectoral policy encourages the implementation and/or investment on EE measures, energy audits take place within the sector, energy department/division is involved in the sector, EE and/or RE solutions are considered within the sector.

- EBRD showed a deep understanding of the importance of energy impacts across its operations, which was reflected by the inclusion of energy elements across 11 of 12 of its sectoral policies. We identified this broad inclusion of clean energy components across IFIs policies and strategies as best practice.

3.3 Transparent processes and data

- We found many differences regarding monitoring and reporting processes and data among the six IFIs;
- External stakeholders cannot easily identify energy efficiency projects on IFI websites, even though project-level data is mostly available within IFIs. In fact, only two IFIs label or have energy efficiency filters in place for online project-level information. When project-level information is available, it is normally easier to detect or identify renewable energy projects compared to energy efficiency projects.
- IFIs use very different indicators to track progress for energy projects. We defined as best practice if IFIs use a majority of identified indicators; however, we found that no IFI is currently using more than 40% of these indicators (see Annex section 1). We identified main gaps on tracking of improved access to electricity, pollution, land use and energy cost savings.
- When it comes to verifying data, we found that four IFIs are already using external experts to either calculate or double-check projected energy efficiency savings. We also discovered that baseline and end targets are only available at the project level for three IFIs.
- In terms of EP investments and achievements, we found that six out of seven IFIs currently report on energy efficiency investments and achievements as part of their annual or sustainability report. Still, we were only able to access public data on energy efficiency investments by sector in case of three IFIs.
- We identified as best practice the World Bank's approach to knowledge, learning, and communication. The institution provides public access to all public sector project documents, including individual project goals and progress.

3.4 Assessments before project approval

- We found significant differences within this criterion, with IFIs scoring between 1.0 and 4.0. We identified that five IFIs already have guidelines and/or performance requirement to filter out projects that do not meet energy-related criteria of the institution, particularly in the use of renewable energy, reduction of GHG emissions and energy efficiency.
- We defined best practice as assessing energy efficiency across all projects; we found that only one IFI has already adopted this practice. The remaining IFIs only assess energy efficiency for projects in the energy sector and for projects that have energy efficiency among their main goals (e.g. the IDB EcoCasa Energy Efficiency Program that provided finance to build energy efficient low-income housing).
- We identified that only EBRD has set up a formal group with external experts that provide advice on its newest energy sector strategy. ADB has an internal Energy Sector Advisory Group that reviews every project before approval. The other IFIs draw on internal advice without formalizing the process. All IFIs consult external experts to help in the assessment of specific energy-related projects.
- We identified a range of best practices on assessment before approval: OPIC's absolute GHG limit for projects and its application of guidelines to maintain efficiency standards across energy projects; KfW's use of a German government guideline document for the energy sector that sets specific benchmarks e.g. on the minimal efficiency of electricity transmission, EBRD's and EIB's mainstreaming of energy efficiency in project approval processes across sectors, ADB's internal Energy Sector Advisory Group, and the EBRD external expert group used for developing its last energy strategy.

Our assessment has some shortcomings in that we have not assessed to which extent IFIs take an economy-wide perspective and assess effects across sectors. This requires further discussion and analytical work to better assess IFIs' secondary and tertiary impacts in other sectors (beyond energy which is the focus of this report) and even nations.

3.5 Assessments after project completion

- This criterion was the one where we found the greatest variance, with IFIs scoring from 1.0 to 4.0. We identified that all IFIs already have monitoring and reporting mechanisms in place for all energy-related projects, including for energy efficiency beyond the energy sector.
- We identified that IFIs follow different approaches to communicating results within the institution. However, only three IFIs have an active mechanism in place to communicate energy-related results within the institution, such as 'brown bag lunches', project briefings, thematic studies, direct communication to the board, and learning sessions.
- We identified as best practice the IDB carbon-intensity indicator (CO_2 per unit of GDP), at the regional level, the World Bank's tracking of CO_2 in Implementation Completion Reports and EBRD's assessment of GHG and energy savings for all projects labeled as "green economy projects", and its plans to develop an interactive database of lessons learned available for all their staff.
- The World Bank demonstrates best practice in assessments that go beyond their own operations, as it has established initiatives like the Global Tracking Framework for Sustainable Energy (GTF) and Readiness for Investment in Sustainable Energy (RISE) that measure energy indicators, such as the energy intensity of GDP per country and worldwide.

4. An assessment of IFI portfolios of energy interventions

There is room for IFIs to improve their portfolios' impact. In total, around 50% of energy investments are IEP-positive. Most of these result from renewable energy interventions, which account for 30% of total energy investments among IFIs. Despite delivering economic and environmental benefits more consistently than any other kind of energy project, energy efficiency investments only account for 14% of IFIs' overall energy portfolios

To understand the impact that IFIs have on IEP through their interventions, we categorize the portfolio of IFI new energy commitments in the years 2012 to 2014 according to their various degrees of IEP impact (IEP-positive, IEP-relevant, and IEP-negative). This allows us to make a high-level estimate of the "effort" that IFIs place on the various IEP interventions within their energy portfolios.[22]

We based this analysis on data from the *OECD Creditor Reporting System* (CRS) database[23] in addition to the information provided by OPIC (see data in Annex section 2 for more information).

Assessing IFIs' entire energy-related investment portfolios at this level of detail against an expanded definition of energy productivity requires consistent, detailed, and comparable project-level data. This data is not always available.

The OECD CRS database provides project-level data on development finance flows from developed to developing countries by the calendar year[24] but does not cover all recipients of IFI finance. For example, Turkey, a major energy finance recipient of the World Bank, is not included. However, the database is still the most comprehensive source of information on development banks' project financing, and so we used it to determine in which energy projects the seven IFIs allocate their resources.

It is beyond the scope of this project to collect more comprehensive and harmonized data. In section 6, we provide some potential next steps for improving data collection to better identify relevant flows and to better understand how effective IFI financing has been in terms of improving a country's energy productivity in an integrated way.

Non-energy sector interventions account for 80% of the 2012-2014 total, revealing the huge potential gains from mainstreaming energy efficiency across IFIs' portfolios.

For instance, even if IFIs have already mainstreamed energy efficiency measures into their operations, this will not be evident in the project-level data they provide. This frustrates internal and external learning on why and how these measures were made possible.

See Annex section 2 for more information on what assumptions there are to this application of data, and Box 5 on how to account for mainstreamed energy efficiency activities.

22 An important element missing from this approach is IFIs' impact on non-energy sectors including those that consume large volumes of energy like buildings and industry. In this report, we only capture energy efficiency measures in non-energy sectors we were able to identify in our datasets.

23 While high level sectoral funding data is available from other resources, we found that the level of detail that is provided by the OECD CRS data fits our needs (see Annex section 2).

24 Only includes lending to countries eligible to receive Official Development Assistance. See www.oecd.org/dac/stats/daclist.htm for more information.

BOX 5: ACCOUNTING FOR MAINSTREAMED ENERGY EFFICIENCY ACTIVITIES, ENERGY EFFICIENCY DATA TRENDS IN IFIS

Energy efficiency investments cover a diverse set of measures to improve the efficiency of energy use and reduce waste. Aside from policy interventions to support energy efficiency such as energy standards (which can be effective), investment in energy efficiency is challenging due to a lack of homogeneity with makes it difficult to scale.

IFIs can play important roles in supporting both soft and hard infrastructure investment in energy efficiency, but these are determined by what operational procedures (including targets) and data tracking systems they have in place. This box describes how IFIs currently account for mainstreamed energy efficiency measures and what challenges data analysts face.

Mainstreaming energy efficiency according to IFI strategies and processes

We note that some IFIs may have already mainstreamed some measures into their investment activities, for instance, by making all investments as energy efficient as possible. While our data cannot provide this information, we have found evidence in our assessment of IFI strategies and processes of efforts to mainstream energy efficiency across sectors, e.g. high-level energy efficiency investment targets, improvement of energy efficiency within planned projects, clear benchmarks for minimum energy efficiency in some sectors, and the tracking of energy efficiency measures outside of the energy sector (see section 3). However, there are neither clear high-level goals nor internal processes that would guarantee the mainstreaming of energy efficiency throughout all sectors.

Some further indicators for mainstreaming in strategies and processes are the following:

1. Integration of energy in sectoral strategies: on average, around 40% of IFI sectoral strategies include energy components and for instance, in the case of EBRD, energy is included in 11 out of 12 sectoral strategies.

2. Assessments before project start: most IFIs only assess energy efficiency for projects in the energy sector but don't assess the potential for EE across other sectors in a standardized way. Only EBRD and EIB have started to assess EE across all projects.

3. Monitoring: IFIs mostly only monitor energy efficiency for projects that are specifically tagged as energy efficiency projects, apart from EBRD which monitors energy efficiency for all green economy projects.

Evidence of mainstreaming EE in the OECD database

Energy efficiency is a major topic in development and climate finance – 14% of mitigation finance in 2015 was in energy efficiency (EIB 2015) – but it is difficult to track in the OECD CRS database.

There are several reasons for this. Many are linked but not limited to the cross-cutting nature of energy efficiency and the type of data reporting in the OECD database. Energy efficiency is a cross-cutting theme as it can be incorporated into a wide range of projects across different sectors in many different types of technologies and interventions.

Continued on next page...

The high-level reporting structure of the OECD CRS dataset makes it difficult to track this plethora of different energy efficiency financing approaches as energy efficiency is only mentioned in the project title or in the project description. Further, the level of detail reported varies by IFI. While some institutions report very detailed project descriptions, others only include a few high-level keywords. Gaps in reporting and lack of granularity in projects provided by IFIs make it difficult to determine whether a project had energy efficiency components or not, and if so, how much of the reported finance commitment was actually allocated to energy efficiency.

As a general rule, IFIs are more active in the energy efficiency sector in countries with high levels of energy access and older infrastructure that can be upgraded. The MDB Joint Report on Climate Finance considers energy efficiency investments as climate finance when old technologies are "replaced well before the end of their lifetime with new technologies that are substantially more efficient". Greenfield investments are only considered as energy efficiency and mitigation finance when they prevent the lock-in of high-carbon infrastructure (EIB 2015). Currently, more than 60% of USD 2,854 million energy efficiency mitigation finance reported in the MDB Joint Report on Climate Finance is in the EU11 countries (ca. USD 600 million) and in Non-EU Europe and Central Asia (ca. USD 1,300 million).

Unfortunately, the MDB Joint Report does not provide a breakdown of energy efficiency finance by MDB. EBRD, KFW, and EIB provided about EUR 7 billion[1],[2],[3] to energy efficiency according to their annual reports but most of these investments happen in Europe and the regions mentioned above.

As our project does not evaluate energy-related lending to developed countries, energy efficiency is less likely to be part of IFI activities we capture. EBRD, EIB, and KFW would perform significantly better on energy productivity if their flows to Europe were covered.

Nevertheless, EIB and KFW invest 6% and 9% of their total portfolio in 2012–2014 in energy efficiency compared to OPIC (3%), WB (1%), IDB (0%), and ADB (5%) according to information in the OECD database and from the OPIC active projects dataset. We omitted EBRD from our portfolio analyses, as the information on EBRD projects in the OECD database is incomplete.

1 EIB = EUR 2.3 billion (EIB, 2014)
2 KFW = EUR 3.2 billion (KFW, 2014)
3 EBRD = 17% of EUR 2.3 billion of new finance investments were in energy efficiency, EUR 480 million for energy efficiency in transport, EUR 74 million credit line for EE in Turkey, EUR 98 million in energy networks (EBRD, 2014)

4.1 Results of analysis of IFIs' portfolios

Our dataset offers an accurate picture of total IFI interventions since it captures 107% of the total energy investments detailed within the annual reports of the various IFIs for the three years 2012 to 2014 (Figure 3).

Interestingly, energy commitments' share of overall portfolios is 20% (range: 10-39% among IFIs). This tells us that while IFIs are making significant efforts to meet development and climate goals through energy, combined investment in education, health, etc. is larger.

The work presented here to improve energy lending practices and reinforce the positive impacts of IFI energy interventions could, therefore, have important implications for non-energy sectors, particularly where they are energy intensive.

Energy efficiency interventions account for only 14% (range: 5–25%) of energy investments which is low considering the benefits they provide. If applied thoroughly across both energy and non-energy sectors, energy efficiency measures could deliver cost savings, jobs, and reduced emissions of greenhouse gases among other benefits.

Operational 'safeguards' for project appraisals in key sectors could ensure IFIs' interventions improve energy efficiency across their energy and non-energy commitments (see Box 6 for an illustrative list of safeguard questions for the building sector). Identifying the energy efficiency potential in each sector and applying these insights at the project design stage would increase the impact of IFI actions and help disseminate best practice.

Within the energy sector, over half of energy investments are in renewable energy and transmission and distribution, with 30% (range: 15–73%) and 27% (range: 0–33%) respectively. This means more than two-thirds of energy interventions are IEP-positive (49%; range 40–81%) or IEP-relevant (22%; range 0–33%). Importantly, fossil fuel project investments, IEP-negative according to our definition, account for the smallest share, at 5% (range 3–12%). Energy interventions with unknown impacts account for the remaining 24% (range: 12–37% among IFIs) (Figure 4).

IFIs can also increase interventions in energy efficiency, renewable energy, and T&D for renewable energy (IEP-positive), which, due to energy investments' relatively small share of total IFI investments, currently account for only 10% (range: 5-31%) of overall investments.

Figure 3: Total IFI energy and non-energy commitments captured by our dataset versus annual reports (left side) and share of energy to non-energy within portfolios 2012-2014 (right side).

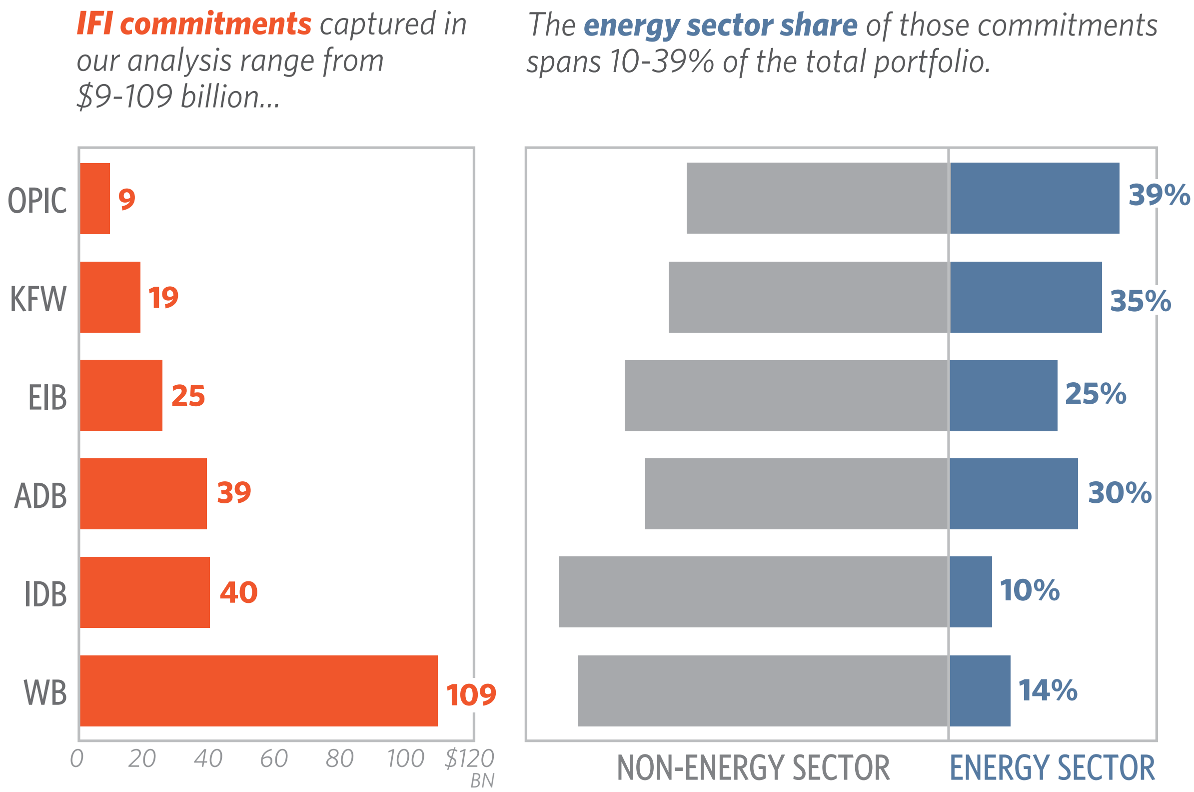
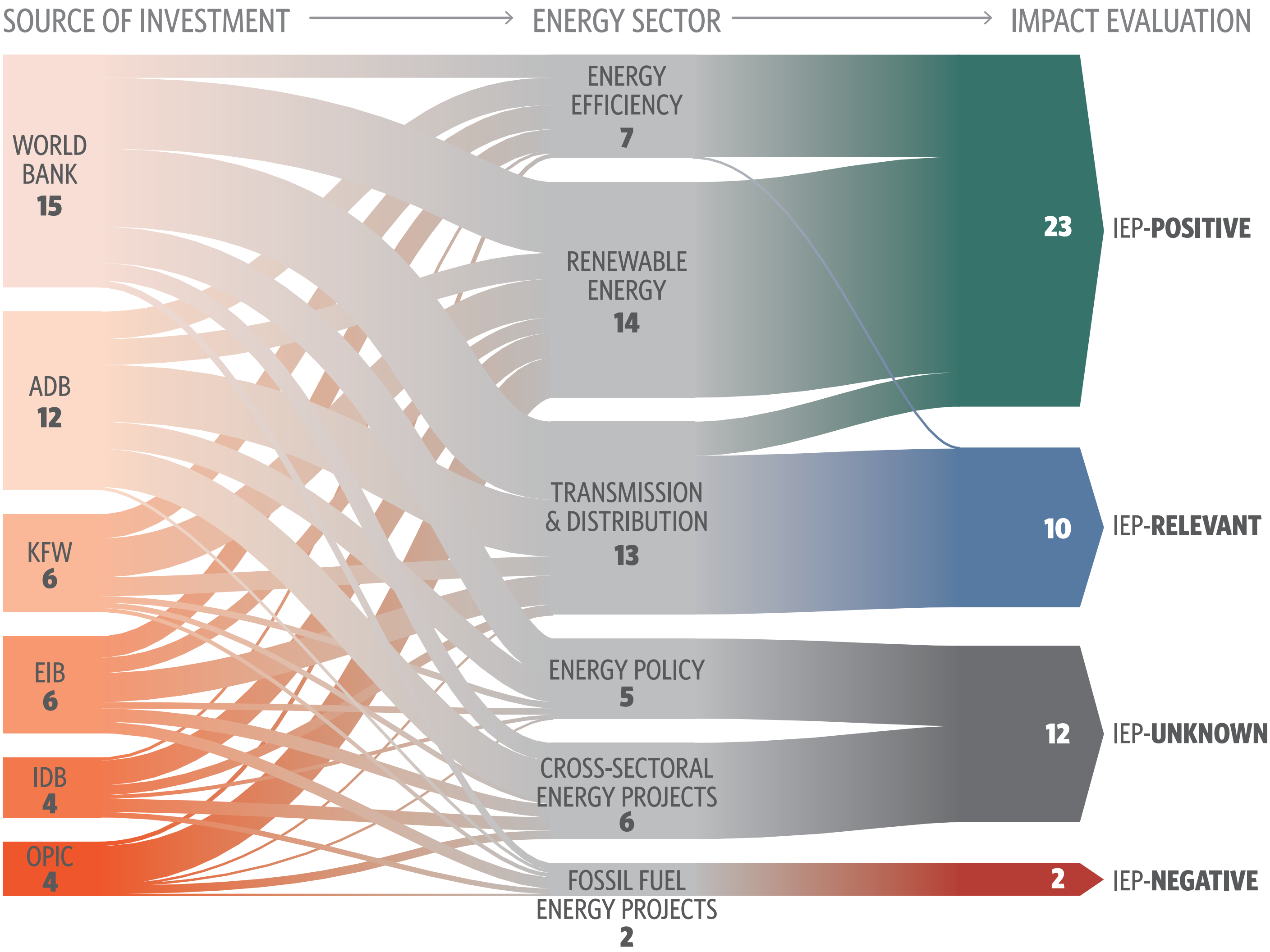


Figure 4: IFI interventions by energy sector (2012-2014; USD billions) and impact of these interventions on integrated energy productivity (IEP)



Note: Energy efficiency measures in high-carbon generation are IEP-relevant. EBRD omitted because of lack of data (see Box 5 for additional information).

BOX 6: EXAMPLE SET OF SAFEGUARD QUESTIONS FOR ENERGY EFFICIENCY MEASURES IN NEW BUILD AND RETROFIT BUILDING SECTOR INTERVENTIONS

The draft below is illustrative of the type of checklist that we recommend preparing and using for each sector that an IFI might consider investing in. Separate checklists should be prepared for the building, industry, transport, energy and infrastructure sectors. We recommend that these be used at the project initiation stage and widely disseminated to potential developers and applicants so the most effective technologies and instruments can be incorporated before the project moves to final approval stages in an IFI.

1. Siting and Design

a. Are the windows oriented and shaded to minimize solar gain in hot climates, including the use of cool roofs and appropriate solar heat gain glaring?

b. Is the building sited and designed to maximize solar gain in cold climates during the cold months but not needlessly warm it during hot months?

c. Is daylighting used to the maximum extent practicable?

d. Is the building's onsite use of fossil fuels minimized or eliminated?

e. Is the building located in an area with good access to public transit?

f. Does the building connect to a local district heating system, if available?

2. Insulation

a. Does the proposed level of insulation substantially exceed the relevant building code?

3. Energy Utility Interactions and Use of Incentives.

a. Is on-site renewable energy used?

b. Are the necessary energy management controls or thermal storage systems installed to enable the building to participate in any demand response programs undertaken by a local power utility?

c. Is the building sub-metered to the maximum extent practicable?

d. Do the local utilities engage in "least-cost planning" and has the building developer taken advantage of any efficiency incentives?

3. Equipment

a. Is the HVAC equipment utilized of the highest energy efficiency rating?

b. Is all lighting LED?

c. Are occupancy sensors utilized?

d. Do plumbing fixtures minimize water use?

4. Building Operations

a. Will the building collect and share (to relevant channels) data on building energy performance?

b. Is there a commitment to hire a new or utilize an existing operations manager with a mandate to run the building as efficiently as possible during its lifetime?

5. Overall

a. Does the building design come close to a net zero carbon building?

b. Would the building qualify for at least a Silver LEED or a comparable rating?

5. Assessing IFI project-level interventions

After assessing IFIs' process and strategies, and the IEP impact of their 2012–2014 portfolios at a high-level, we assessed several innovative project-level interventions in detail.

This section identifies several projects that could be classed as IEP-innovative (see definition for IEP-innovative in Box 7 below) and then assesses the impact of a promising energy efficiency project in China on EP in detail.

IFI projects can promote innovation if they integrate multiple objectives, trigger policy change, build major technical capacity or business models, or promote novel technologies

BOX 7: ASSESSING AND IDENTIFYING INNOVATIVE PROJECTS

There are a number of possible ways in which projects could go beyond short-term or measurable improvements to IEP and lay foundations for long-term improvements of IEP. We define such interventions as IEP-innovative if the intervention covers multiple development objectives [point 1 below] and at least one of the other criteria are met [from points 2 – 5], in addition to being IEP-positive or -relevant:

Integrating multiple development objectives. The project takes a systems-wide perspective that reflects the impact on the whole economy and targets a number of objectives (e.g. Sustainable Development Goals), including health, education, gender equality, and other non-energy benefits. E.g. when building a new road to provide access to a port, scope different planning possibilities to deliver a piece of infrastructure that benefits multiple development objectives.

Triggering relevant policy change. The IFI develops the project in parallel with policy-makers to influence policy change that will have longer or more sustainable effects on improving IEP. E.g. assisting implementation of a competitive auctioning process for renewable energy capacity in a country where no support existed, to help reduce technology costs and encourage private sector participation.

Building major technical capacities. The project targets the internal capacities of public and private implementing agencies to prolong improvements in IEP. E.g. training government agencies or state-owned utilities on supporting the roll-out of energy efficiency measures.

Building new business models. The project design includes a series of investments to help take project developers from 'incremental' upgrades in project technologies to more in-depth sectoral shifts through process improvement or business model upgrades. E.g. Rather than assist project developers to undertake efficiency improvements on a one-off basis, an IFI works with a developer over a longer time period, gradually reducing concessionality of support until the developer is self-sufficient.

Novel technological solutions. The project uses innovative technologies that have likely never been used in the national/regional context before and where these technology risks prevented such projects occurring without IFI intervention. E.g. mainstream support of novel off-grid energy solutions using hybrid renewable energy plus energy storage.

Clearly, it is important to ensure that any of these criteria translate from IFI interventions into real and effective transformative change, and make a distinct improvement over incremental changes. While assessing the effectiveness of such interventions is often hard due to difficulties in measuring baselines or 'business-as-usual' pathways, it is important that IFIs have robust post-intervention processes in place (**see the chapter on policies and procedures**). Assessing the effectiveness of IEP-innovative projects will not be covered in this report due to lack of data availability.

From our interviews, EIB provides an example of targeting more innovative projects by placing specific emphasis on those with an energy access element to them (including building a funding envelope for energy access). In this sense, the EIB has made an operational decision to give more importance or 'weighting' to increasing the share of energy access projects within their portfolio. Such a process—targeting projects with important outcomes, prioritizing innovative projects, or identifying so-called 'gold star' projects could be a practical and valuable way forward for IFIs to increase the impact of project interventions in the regions where they operate.

5.1 Examples of innovative projects

Table 5 provides brief examples of projects that could be classified as IEP-innovative. Projects that are, for instance, first-of-a-kind in a region, use innovative approaches to technology, policy, or finance, or could satisfy several development aims.

Table 5: List of IEP-innovative projects

IFI	PROJECT NAME AND COUNTY	PROJECT TYPE	SHORT DESCRIPTION	CONTRIBUTION TO IEP	INNOVATIVE REASONING
EIB	Omnicane Sugar Ethanol Plant, Mauritius	Renewable energy for industry	Omnicane is a fully-integrated sugar plant which makes use of the entire sugar cane to not only produce refined sugar but also bioethanol. The plant captures CO2, reprocesses on-site coal ash as an additive to cement and generates energy and heat for its own and nearby use.	IEP outputs: Economic, social, and environmental IEP inputs: Fossil fuel energy use Main IEP-high impact factors: Building new business models Building major technical capacities	A forward-thinking multi-stage investment plan for several projects over several years allowed the developer to diversify and adopt a more sustainable approach to project operations. It supports 570 jobs, value creation by building on existing facilities, and innovation by enabling the project developer to expand into new products and sectors, including residential and commercial property.
	Bucharest S1 Thermal Rehabilitation, Romania	Energy efficiency in buildings	The program renovates housing in Bucharest. In total 22,771 apartments were refurbished, 10% more than initially planned. Investment was realized from 2011-2015 and focused on the buildings' thermal energy efficiency.	IEP outputs: Economic, social, and environmental IEP Inputs: Fossil fuel energy use Main IEP-high impact factors: Novel technological solutions Building major technical capacities	The project introduced a series of new building technologies and a quality management system including monitoring and verification procedures that ensured savings were realized. Funds were only disbursed once national government co-funding was secured.
EBRD	ACWA Power Khalladi Wind Farm, Morocco	Renewable energy - onshore wind	The Khalladi Wind Farm (120 MW), built by ACWA Power, is the largest private sector wind farm in Morocco and the first to be financed by EBRD. EBRD provided USD124m and by USD35m from Climate Investment Funds and USD15m from the Global Environment Facility. A Moroccan private commercial bank provided USD124m to the project.	IEP Outputs: Economic, social, and environmental IEP Inputs: Fossil fuel energy use Main IEP-high impact factors: Triggering policy change Building new business models	As part of the project, EBRD had a policy dialogue with the Moroccan Ministry of Energy to liberalize the electricity market. The new 'Renewable Energy Law' allows a project developer to sell energy directly to private sector consumers via the national electricity grid, instead of selling first to the national energy utility. Importantly, this project does not rely on state support. It is already able to sell its energy at a competitive price.
OPIC	Nova Lumos Solar PV, Nigeria	Renewable energy - rooftop solar PV	Developer Nova Lumos received USD50m from OPIC to purchase, import and sell rooftop solar panel kits through a partnership with MTN Nigeria, the leading telecommunications company in Nigeria. This allowed commercial customers to purchase power as needed.	IEP outputs: Economic, social, and environmental IEP inputs: Fossil fuel energy use Main IEP-high impact factors: Building major technical capacities Novel technological solutions Building new business models	Nova Lumos offers clean energy access to the millions of Nigerians not connected to the grid at lower costs than alternatives such as kerosene. Households take 5-year lease-to-own contracts for rooftop PV kits that can be installed without technicians and come with 5-year warranties and anti-theft measures. Users pay for energy use via mobile phones.
IDB	Energy Savings Insurance	Energy efficiency - financial risk	Piloted in Mexico with 190 SMEs, the IDB's Energy Savings Insurance (ESI) instrument addresses a major barrier to investment in energy efficiency: under-performance risk. It has been expanded into El Salvador to serve an additional 500 companies and is also operating in Colombia.	IEP outputs: Economic, social, and environmental IEP inputs: Fossil fuel energy use Main IEP-high impact factors: Building new business models Building major technical capacities	ESI is the first such instrument in the Latin American region to stimulate investment in energy efficiency by mitigating the risk of SMEs being unable to recover investment costs if actual energy savings are lower than anticipated by integrating insurance-backed performance guarantees into energy efficiency technology supply contracts. If scaled up and replicated in other regions, it could reduce emissions by 27-234 MtCO2e per year.
KfW	Energy Efficiency in Public Buildings and Infrastructure	Energy efficiency	Energy Efficiency Services Limited (EESL) is responsible for structuring, financing and implementing energy efficiency projects to address institutional barriers and implement India's National Mission for Enhanced Energy Efficiency. KfW provided a reduced interest loan of EUR51.5m to establish EESL and has supported it since its establishment in 2010. The World Bank and ADB have also supported EESL in the last 2 years.	IEP outputs: Economic, social, and environmental IEP inputs: Fossil fuel energy use Main IEP-high impact factors: Building major technical capacities Novel technological solutions	EESL is organizationally efficient as it generally has only one contractual partner and contact point at the responsible municipality. Its interventions are expected to modernize India's street lighting by replacing old light bulbs with efficient LEDs, distribute LED lights at reduced prices to private households, and increase energy providers' revenue. Investments from EESL could cut GHG emissions by 600,000 tons of CO2 per year.

Sources: For references for these projects see EIB Omnicane, EIB Bucharest, EBRD ACWA, EBRD Nova, IDB

5.2 Case study: Chemical Industry Energy Efficiency and Emission Reduction Project, China

The Chemical Industry Energy Efficiency and Emission Reduction Project will be an important step towards a more sustainable chemical industry China. The chemical industry is one of China's most energy-intensive sectors[25] so channeling investment towards high impact companies[26] is imperative. By scaling up innovative technology and phasing out the use of mercury in PVC production, this project will reduce energy consumption, cut greenhouse gas emissions, and prevent pollution. Other chemical plants in China can benefit from the establishment of the energy services company (ESCO) Huatai. The project was successful in aligning private interests[27] with ADB's climate mitigation targets[28] and China's national energy and climate strategy.[29]

The Asian Development Bank (ADB) is supporting an innovative energy efficiency project in the Chinese chemical sector that introduces the newest technologies and promotes a new business model for the sector in the form of an energy services company (ESCO)

Its selection does not imply that it is more innovative than other reviewed projects. Its selection is rather linked to the public availability of project documents and effective communication with the responsible IFI.

25 The chemical industry in China is its second largest industrial energy consumer and one of the most energy intensive, using coal as its main energy input.

26 ChemChina is China's largest producer of fluoropolymers, polyvinyl chloride (PVC), and synthetic resins.

27 Reducing operational costs by adopting innovative, energy efficient technologies and minimizing energy consumption.

28 To invest at least USD4bn in projects that mitigate climate change by 2020.

29 Targets for 2015 include a 16% reduction of energy consumption per unit of GDP, and a 17% reduction of carbon dioxide emissions per unit of GDP relative to 2010.

As with some other innovative projects featured in this section, an in-depth examination of the long-term impacts of the project is not possible as the project is still in an early stage of development. Still, we highlight some of the key factors to consider when assessing the proposed IEP definition at the project level.

Details of the project

In the next few years, the China National Chemical Group (ChemChina) will scale up piloted innovative technologies and implement process transformations to improve energy efficiency, phase out mercury use, and reduce GHG and toxic emissions from their operations in China.

Beijing Zhonghao Huatai Energy Technology (Huatai), an innovative sector-specific energy service company (ESCO) will be established and employed during the process. Huatai will differ from traditional ESCOs by having the full support of environmental staff and the backing of the China Construction Bank, which will provide financial due diligence and capital to support subprojects.

Huatai will address the current lack of chemical-specific ESCOs in the country and demonstrate their commercial viability. It will also tackle major challenges of the chemical industry by acting as a platform for dissemination of technologies both for ChemChina and its competitors.

ADB is providing USD 100 million (41% of the total funding) in the form of a financial intermediation loan (revolving escrow fund). China Construction Bank will co-finance USD 82 million on a collaborative basis and a counterpart (Chinese government) will provide the remaining USD 63 million.

ADB supported the project because the chemical industry is the second largest industrial energy consumer in China and also because technical risks, the need for debt financing, a lack of economic incentives, and the absence of a suitable ESCO has prevented the scaling up of the energy efficiency technologies and process transformations that ChemChina has developed.

Table 6: Goals of the ADB Chemical Industry Energy Efficiency and Emission Reduction Project, China

ENERGY	CLIMATE/ENVIRONMENTAL	SOCIAL	ECONOMIC
Reduce energy consumption by around 400,000 tce per year	Reduce GHG emissions by 14 MtCO2e per year and avoid 1,205 tons of organic fluoride Eliminate 35 tons of mercury per year by 2019	No major goals mentioned though mercury reduction has health benefits	Replicable business model Mobilization of private investments

Table 6 shows that the project should clearly have a positive contribution to integrated energy productivity (IEP) thanks to reduced energy use, increased economic value through reduced operating costs, social benefits through reduced mercury pollution, and environmental benefits through reduced GHG emissions.

Qualitative assessment of project's innovativeness in terms of IEP

This case study has several innovative features and illustrates how the proposed IEP approach could work at the project level to drive, for example, the adoption of novel technical solutions, and the building of major technical capabilities.

It meets our basic pre-conditions for innovativeness as it clearly covers multiple development objectives, including environment, social, and economic objectives and meets at least one if not two further features of innovativeness:

- **Building major technical capacities:** The project will support the establishment of an innovative chemical-industry-specific ESCO. This will address the current lack of technical energy efficiency know-how in the industry, disseminate technologies to tackle major challenges, and facilitate ESCO engagement in the future
- **Adopting novel technological solutions:** The project will involve the adoption of a mercury-free catalyst to produce PVC and a plasma incineration technology for HFC-23. Technical and financial risks have until now prevented the adoption of these technologies in the country's chemical industry.

ADB could improve its MRV processes for the project by measuring the human health and environmental benefits that derive from preventing the release of mercury into water bodies and establishing the quantitative link between the adoption of energy efficiency measures and job generation is not fully clear.

6. Next Steps

Narrow economic assessments of energy investments do not account for many of the valuable social and environmental benefits resulting from energy efficient and low-carbon growth or, conversely, the damage caused by fossil fuel, high-carbon investments.

IFIs appreciate that sustainable development and poverty reduction are often inseparable from addressing climate change and they are well placed to drive the transition towards low-carbon economies and productive energy systems. However, they lack tools to meet their different mandates for sustainable development and climate action in a more coherent and effective way.

This report demonstrates that expanding the traditional energy productivity approach to enable assessments of integrated energy productivity (IEP) impacts that also measure social and environmental impact can help IFIs assess and adjust investment portfolios and investment processes in order to meet their different goals.

6.1 Limitations of current research

This study presents an overview of the economic, social, and environmental impacts of almost USD 50 billion in energy interventions from a key group of IFIs in the years 2012–2014, using high-level assumptions on the impact of different project types. It does not assess the impact at the level of individual projects as this would require consistently defined and applied project-level indicators that are not yet available. We have included suggestions on the next page on how this might be achieved.

Because of varying levels of data quality and difficulties in aggregating individual projects within large project portfolios we have had to make some simplifications. For instance, this analysis does not distinguish between different types of energy efficiency measures (e.g. in buildings or industry), renewable energy projects (e.g. solar photovoltaic or hydropower), energy networks and infrastructure, or fossil fuel power projects.

We should also acknowledge that while IFIs do have long-term plans and strategies, they are typically demand-driven entities in that they appraise and fund projects brought to them by actors such as project developers and governments. The need for quantitative and system-wide analyses applies to both external stakeholders and IFIs themselves though the latter are particularly well placed to demonstrate how to do this.

Finally, we acknowledge the difficulty of comparing the actions of IFIs because they work in diverse sectors and regions with different mandates, and therefore will weight various economic, social and environmental impacts differently according to their goals and objectives.

6.2 Recommendations for next steps

The executive summary of this report describes key findings and recommendations that IFIs can implement in the short-term. Here we discuss how to address medium-term challenges.

We believe that IFIs can further increase the positive impacts of their energy portfolios[30] by establishing a joint initiative with international research organizations to harmonize accounting methods and indicators for assessing how interventions improve economy-wide energy productivity and associated social and environmental benefits.

Because a common tracking framework would enable IFIs to comprehensively value and quantitatively assess the different impacts of their own and others' past and potential projects, it could help demonstrate to governments and donors how to most effectively direct their own resources to reduce emissions, grow economies, and reduce the costs of low-carbon transitions through the efficient and low-carbon use of energy in all sectors.

IFIs and international research organizations could establish a joint initiative to harmonize accounting methods and indicators for energy productivity to identify opportunities to reduce the costs and accelerate the rollout of low-carbon transitions across economies

30 And non-energy sector interventions where energy efficiency measures can be applied.

The initiative's discussions could center on: what data to track and how; which indicators to use when assessing projects and how to measure progress before, during, and after project delivery; what best practice policies and procedures look like and how to employ them; what constitutes a best practice project, and what processes are needed to target them.

With this in mind, we suggest the following tangible steps to IFIs:

1. **Establish a standardized approach to identify and track investments that support energy efficiency.** While IEP is not in the conceptual or operational language of IFIs, energy efficiency is a common theme in sustainable development and in low-carbon transitions. Better tracking and reporting on measures that support energy efficiency is, therefore, easy to justify under a strong operational framework and could form the foundation for the introduction of broader and more stringent IEP assessments that would promote the prioritization of energy efficiency and renewable energy interventions within broader development planning. A better and more harmonized tracking of energy efficiency could be integrated into the work of the MDB Joint Report on Climate Finance or, for instance, as a new 'energy efficiency' marker across all sectors in the OECD Development Assistance Committee (DAC) Creditor Reporting System (CRS).
2. **Develop harmonized indicators to assess economic, environmental, and social impacts in the energy sector.** Many IFIs already track a wide range of energy-related indicators, but they can do more to fill gaps between current and best practices. For instance, the formal adoption of harmonized project output indicators and strategic outcomes at the program level and methodologies with which to assess and track them would enable IFIs to align their activities more closely with their own international development and climate mandates and pledges (WBG, 2015). It would also enable them to increase their accountability to donors for the impacts of their work. With climate change being one of their core goals, IFIs could adopt an approach that prioritizes IEP-positive actions, using energy to increase economic and social output and minimize GHG emissions while reducing the use of energy from high-carbon sources.
3. **Share knowledge on innovative projects and best practices that deliver positive and transformational IEP impacts that align the energy system as a whole with the targets of the international development and climate agenda.** Such an approach could increase the influence of IFIs, encourage governments and private developers to bring them more innovative energy projects, and unlock projects that developers would typically be unwilling or unable to deliver on their own. Our case studies of innovative IEP projects showed that some interventions enable relevant policy change, capacity building, and the deployment of first-of-a-kind technologies to support long-term energy system transformation in line with the development and climate objectives of, for instance, Sustainable Energy for All (SE4ALL), the Sustainable Development Goals (SDGs) and the Paris Agreement. Clear identification and tagging of such projects in public reporting could encourage dissemination of these best practices.
4. **Further investigate the long-term and economy-wide impact of supporting energy efficiency high-carbon measures such as power plants or vehicles.** Even energy-efficient generation can lock in high emissions and low energy productivity pathways if an efficiency upgrade extends the lifetime of a coal or gas plant. To help inform the energy efficiency policies of IFIs, more work is needed to determine the long-term and economy-wide IEP impact of energy efficiency upgrades in existing conventional power plants. Another example of an area where IFIs may have to look at secondary effects of their project is the replacement of old inefficient vehicles with new efficient ones. Unless old cars are scrapped, they may end up in poor countries where they lead to additional pollution and GHG emissions.

The improving alignment between and across IFI project objectives through the Paris Agreement and SDGs bodes well for concerted action on the international climate and development agenda. Establishing a **Joint IFI Initiative on Energy Investments** (or building on an existing initiative, such as the MDB Joint Report on Climate Finance) to establish a common framework for tracking energy efficiency and productive energy investments could, therefore, prove valuable.

7. Annex

7.1 Questionnaire, indicators, and scoring system used to assess the impact of IFIs' energy interventions

We reviewed publically available IFI documents and conducted interviews with IFIs in order to assess how likely their frameworks and practices are to drive the selection of IEP-positive projects. This section provides details on the interviews and the dimensions, sub-indicators, and scales used to assess IFI targets, processes, and strategies.

7.1.1 IFI INTERVIEW QUESTIONNAIRE

We conducted a series of semi-structured interviews with representatives within IFIs to understand their internal policies and procedures, using the following questionnaire:

Policies

- Are there any internal energy efficiency (EE) or IEP strategies in place? If so, when were they set or last revised? Are economic, social and environmental factors considered?
- Are there any active internal EE or IEP targets or goals? Are they linked to independent energy initiatives (e.g. the UN's Sustainable Development Goals)?
- Which measuring, reporting, and verification (MRV) mechanisms are in place for energy projects? Are any of these verified by a third party?
- Are there any active mechanisms or initiatives to upgrade EE for existing projects?
- Do you have any other internal EE or IEP related initiatives in place?

Procedures

- Are there any internal guidelines or criteria for screening energy projects? Is there a record of how many projects have been rejected for not meeting these criteria?
- What are the main EE or IEP tasks performed by your personnel?
- What proportion of your staff performs or is involved in EE/IEP related tasks?
- Is EE or IEP monitored within and/or beyond the energy sector? If so, what is the rationale for establishing the monitoring process (e.g. what is the scope, what is the process for selecting projects that will be monitored beyond those that are 100% EE) and how frequently are they monitored?
- Is there a mechanism in place for communicating MRV results internally within the institution? How often is data communicated and who has access to it?

Structures, Bodies & Committees

- Is there a specialized body or committee that advises the institution on energy matters? If so, how is this body integrated, how often does it meet and what kind of advice is received provided to the IFI?
- Who has the highest level of direct responsibility for EE/IEP within the institution?

7.1.2 DIMENSIONS, SUB-INDICATORS, AND SCORING

We considered the following components of IFI targets, processes, and strategies that are likely to determine whether IFIs select IEP-positive projects and achieve productive results:

- Targets
- Rules and strategies
- Transparent processes and data
- Assessments before project
- Assessments after project

For each of these dimensions, we defined a list of non-weighted qualitative and quantitative criteria to evaluate the IFIs. Each criterion was made up of a series of individual sub-criteria where IFIs could score from 0 to 1 point, depending on the extent to which the criteria was met. We scored IFIs based on a pre-defined scale (see Tables A1-A5 for details) and determined the scores based on semi-structured interviews with IFI representatives and in-depth analyses of publically-available information. We added up individual scores from sub-criteria to come to a final mark from 0 to 4 for each criterion, where 4 represented best practice.

7.1.3 SUB-INDICATORS & SCORING FOR "TARGETS"

Table A1: Assessment sub-indicators and scoring for "targets"

CRITERIA	SUB-INDICATORS
DEFINITION OF IEP TARGETS	• IFI has IEP-related targets (1pt) • IFI has a target that includes at least 2 of the elements from our proposed definition of IEP (0.5)
	• Internal targets specific to EE/RE are in place (1pt) • Climate change related targets that contain EE/RE as an element, but do not set specific objectives are in place (0.5 pts)
	• Targets have a measurable objective beyond economic investment (e.g. % of portfolio, RE generated, GHG emissions reduced;1pt)
	• IFI has an active GHG cap for its operations (1pt) • IFI has a specific target for reducing GHG emissions from their operations (0.5pts)
COMMUNICATION OF IEP TARGETS	• IFI externally communicates EE-related targets (1pt) • IFI externally communicates on lending for sectors which might include EE* (0.5pts)
	• Progress against targets is communicated at least annually (1pt)
	• EE/RE progress per region of operations is communicated (1pt) • Lending data is disclosed but EE/RE progress cannot always be tracked** (0.5pts)
	• Progress on IEP is communicated (1pt)

Notes:
*e.g. lending programs for sustainability initiatives, climate action, or clean energy
** e.g. total lending for a sector is reported but EE/RE is not labeled, or project-level data is disclosed but EE/RE is not labeled and can only be tracked if mentioned in the name of the project

The assessment of targets highlighted to what extent IFIs are pursuing IEP and how effectively they are communicating about it.

We regarded the existence of specific energy efficiency (EE) and/or renewable energy (RE) related targets,[31] which had measurable objectives beyond economic investment as good practice. We also identified the existence of an active cap for GHG emissions from IFI operations as a practice to follow, as it would encourage IFIs to implement more low-carbon projects.

When communicating targets, we defined good practice as an IFI publically communicating EE-specific targets and reporting on progress at least annually.

IFIs also scored higher if they communicated of EE results per region of operations. This allows both IFIs and the public to better understand the role of these institutions in promoting EE at a regional scale.

The complete list of sub-indicators for mapping targets and the rationale for their scoring can be found in table A1.

7.1.4 SUB-INDICATORS & SCORING FOR "RULES AND STRATEGIES"

Table A2: Assessment sub-indicators and scoring for "Rules and strategies"

CRITERIA	SUB-INDICATORS
ENERGY SECTOR STRATEGY	• Energy strategy contains basic IEP elements (1pt)
	• Energy strategy considers social/environmental elements (1pt)
	• When supporting the hydrocarbon sector, IFI only engages in EE projects (1pt)
	• Energy strategy is aligned or compatible with other EE initiatives (1pt)
SHARE OF SECTORS WHERE ENERGY IS CONSIDERED	• Percentage of IFI strategies/sectoral policy including energy/EE elements; 0-10% (0pts) 10-20% (1pt), 20%-40% (2pts), 40%-60% (3pts), >60% (4pts)

This indicator focused on highlighting the extent to which IEP does or does not pervade IFI rules and strategies.

Good practice was defined as an IFI having an energy policy that contained economic, social and environmental considerations and that was compatible with other EE initiatives or targets.[32] We felt this would demonstrate that an IFI understands the implications of IEP-related projects and their opportunity to coordinate their efforts with other institutions.

IFIs scored higher if their fossil fuel energy investments were limited to EE interventions as this would result in projects that either have a neutral or positive contribution to the IEP definition proposed in the report.

31 As IEP was found not to be represented across IFIs' policies and strategies, our approach gave an important weight to EE inclusiveness.

32 Initiatives included Sustainable Energy for All, European Union EE targets for 2020, and Sustainable Development Goals, among others.

We regarded the inclusion of energy components across >60% of IFI sectoral policies as a positive practice, as it would demonstrate an understanding of the importance of energy as an input across IFIs operations.

The set of sub-indicators used for the assessment of externally communicated rules and strategies can be found in table A2.

7.1.5 SUB-INDICATORS & SCORING FOR "TRANSPARENT PROCESSES OR DATA"

Table A3: Assessment sub-indicators and scoring for "transparent processes and data"

CRITERIA	SUB-INDICATORS
COMMUNICATION OF MRV PROCESSES	• MRV project-level data on EE is available publically and EE projects can be filtered for ease of identification (1pt)
	• IFI uses more than 50% of the relevant EE/RE indicators (1pt) • IFI uses at least 25% of the relevant EE/RE indicators (0.5pts)
	• MRV data is verified by a third party (1pt) • MRV data is verified by another type of body (0.5pts)
	• Baseline and end targets are set at the project-level and are publically accessible (1pt)
PUBLICATION OF IEP INVESTMENTS AND ACHIEVEMENTS	• Investment in EE/RE is disclosed as part of annual report or similar (1pt)
	• IFI project-level data contributes to other institution's databases (1pt)
	• EE investment can be tracked across non-energy sectors (1pt) • EE investment cannot be tracked across non-energy sectors but it is evident that EE projects are implemented beyond the energy sector (0.5pts)
	• Both investments and achievement for EE and RE are reported (1pt)

We assessed the availability and quality of project-level data to establish the transparency and effectiveness of IFIs' MRV communication processes. We consulted IFI websites, annual reports, scorecards, sustainability reports, and project-level documents and complemented this information with that obtained during structured interviews with IFI representatives.

We identified the existence of publically available, project-level data where EE projects can be tracked as good practice for IFIs.

In addition, IFIs scored more highly if they document established baselines and targets for EE and RE in individual projects. The latter allows both IFIs and other users to effectively track progress from individual projects and identify innovative interventions.

We awarded points for the adoption of >50% of relevant IEP indicators and the verification or review of MRV data by an independent third party or semi-independent internal body. The verification or review could help to make data from MRV mechanisms comparable across IFIs, enhancing transparency.

We further defined good practice as IFIs disclosing both their investments and achievements with regard to EE and RE as this would enable them to more easily identify the impacts on IEP per dollar invested.

IFIs scored higher if they tracked EE investment beyond the energy sector and contributed project-level data to other institutions' databases (e.g. OECD CRS).

The list of sub-indicators used to assess MRV processes or data can be found in table A3.

7.1.6 SUB-INDICATORS & SCORING FOR "ASSESSMENT BEFORE PROJECT"

Table A4: Assessment sub-indicators and scoring for "Assessment before project"

CRITERIA	SUB-INDICATORS
INTERNAL GUIDELINES/PERFORMANCE REQUIREMENTS	• IFI has guidelines or performance requirements in place to filter out projects that do not meet EE criteria established by the institution (1pt)
	• EE is assessed across all projects (1pt) • EE is only assessed within the energy sector and 'EE labeled' projects (0.5pts)
	• IFI consults an independent advisory council on IEP/EE matters (1pt) • IFI consults with an internal group that advises on energy matters (0.5)
	• Evidence that at least one project has been rejected/adapted because of not meeting IEP/EE internal requirements (1pt)

With this group of sub-indicators, we aimed to indicate the extent to which IEP considerations currently influence the selection and implementation of future IFI projects. For this reason, we collected and analyzed information on the existence and characteristics of internal IEP-related guidelines, assessments and other internal processes. Information was collected during structured interviews with IFI representatives.

We defined good practice as IFIs establishing internal EE assessments for all projects and the adoption of guidelines and/or performance requirements to filter out projects that do not meet internal EE requirements. Adopting these practices would enable IFIs to define minimum standards of IEP contribution across their entire portfolio.

We also identified consulting an independent advisory council on energy either within or outside of the organization as a practice to follow during the design of strategies, guidelines, and requirements. Such a council could provide project teams within IFIs with a fresh, independent, and systemic view of their energy-related operations, identify future opportunities and develop and adapt their policy frameworks to effectively tackle up the latest challenges.

Sub-indicators used for pre-project assessments can be found in table A4.

7.1.7 SUB-INDICATORS & SCORING FOR "ASSESSMENTS AFTER PROJECT"

Table A5: Assessment sub-indicators and scoring for "Assessment after project completion"

CRITERIA	SUB-INDICATORS
MRV PROCESSES	• IFI counts with MRV mechanisms in place for all energy-related projects (1pt)
	• MRV mechanisms also cover EE in non-energy sectors (1pt)
	• Results from EE/RE projects are communicated to the board at least annually (1pt)
	• Results/data from EE/RE projects are available for all staff (1pt)

We gathered data on the existence and applicability of EE monitoring frameworks, and communication of results across the institution to assess the ability of IFIs to learn from previous IEP-related projects. We obtained the information through structured interviews with IFI representatives.

We defined good practice as IFIs having in place MRV mechanisms for all energy-related projects and EE tracking beyond the energy sector. The latter would allow IFIs to better understand their contribution to IEP across their operations and identify areas where improvement is needed.

We also considered communicating results from IEP-related projects to the board at least annually and having defined mechanisms in place[33] to communicate relevant findings across all staff as good practice.

The set of sub-indicators used for post-project assessments can be found in table A5.

7.1.8 ANALYTICAL CHALLENGES AND LIMITATIONS

Our assessment of IFI processes and strategies for IEP Interventions faced a series of challenges and limitations:

- The concept of IEP has not yet been adopted by IFIs. Our assessment mainly focused on EE as it was the only intervention that would consistently contribute in a positive way to our definition of IEP.
- We collected data from interviews using a standardized questionnaire. Still, this questionnaire may not have captured information uniformly as interviewed representatives from IFIs had different levels of expertise and roles within their institutions.[34]
- IFIs follow different approaches to structure and report on their operations. For instance, OPIC does not break down its projects into sectors and so was excluded from the assessment of 'share of sectors where energy is considered'.
- IFIs do not include EE or other energy elements within some sectors (e.g. education and health). IFIs with a larger number of 'non-energy related' sectors scored fewer points than more 'energy-specialized' IFIs within the sub-indicator 'Share of sectors where energy is considered'. This may be partly attributable to IFIs not reporting all of their energy-related interventions, particularly in non-energy-related sectors.

33 Mechanisms of communication included 'brown bags', lessons learned data base, project briefs, among other.

34 As IFIs have different structures, interviewed representatives came from different departments and often had different responsibilities and/or levels of expertise.

- IFIs follow different approaches to monitoring and communicating results on IEP-related projects (e.g. sustainability reports, project-level data available on website, financial reports, etc.). We consulted each IFI's website and a series of public documents but we could not assess IFIs' processes if information was disclosed in a different way.
- IFIs have different indicators to track progress from IEP-related projects. We defined a list of indicator categories (see table 1) to be used by IFIs rather than a list of specific indicators due to difficulties in defining a list that would suit all IFIs.

7.2 Data used to assess IFIs' energy-related lending

7.2.1 COMPARING AVAILABLE DATA SOURCES

To ensure we used the most comprehensive available data to assess IEP and IFI lending practices, we compared several data sources on IFI spending on energy efficiency, renewable energy generation, conventional energy generation, and transmission & distribution energy networks. To scope out the most useful source, we compared the Organisation for Economic Cooperation and Development Creditor Reporting System (OECD CRS) dataset (OECD CRS, 2016), the annual reports of IFIs, data from Climate Policy Initiative's (CPI) Global Landscape of Climate Finance report series, MDBs' joint reporting on climate finance, and the OPIC List of Active Projects.

We found that all of them vary greatly in reporting methodologies and level of detail but decided that the OECD CRS database (OECD CRS, 2016) satisfied many of our requirements for robust, project-level data and was the best fit for the aims of this assessment.

Table A6 provides an overview of the aforementioned sources.

To double-check the comprehensiveness of the data provided by the OECD CRS database, we compared it to data from CPI's own Global Landscape of Climate Finance data (CPI, 2015) and IFIs' annual reports for the relevant years.

Table A6: Comparison of data sources on seven IFIs' energy -related spending from 2012-2014

COVERAGE	OECD CRS DATA	OPIC LIST OF ACTIVE PROJECTS	IFI ANNUAL REPORTS	CPI GLOBAL LANDSCAPE OF CLIMATE FINANCE	MDB JOINT REPORTING
Calendar vs. fiscal Year	Calendar year	Calendar year	Varies by IFI	Calendar year	Fiscal year*
IFI-level data on sectors	✔	✔	✔	✔	✖
Project-level data	✔	✔	✖	Varies by IFI	✖
Commitment vs. disbursements	Commitments & disbursements	Commitments	Varies by IFI	Climate finance disbursements	Climate finance commitments
Public and private flows covered	ü (but some of the private deal volumes are confidential)	✔	✔	✔	✔**
Type of flows (e.g. North to South, North to North, etc.)	North to South	All	All	All	Selection of developing countries
Type of instrument (by sector)	✔	✔	✖	✖	✖
Information on type of intervention and whether it is 'soft' or 'hard' (e.g. technical assistance vs. built environment)	✔	✔	Varies by IFI. Mostly limited to high-level information on the amount of RE.	✔	✖
Technology (e.g. wind vs. solar)	✔	✔	✖	✖	✖
Energy infrastructure (e.g. transmission & distribution)	✔	✔	Varies by IFI Mostly high-level information on infrastructure or included in energy	✔	✔

*Data covers fiscal year. Even though MDBs do not follow the same reporting cycle, data remains comparable across MDBs as all reporting cycles correspond to a 12-month period. **Covers public and private flows for all reviewed IFIs

We also compared finance flows to the MDB Joint Reporting on Climate Finance (MDB, 2015). However, MDB Joint Reporting publications do not provide a breakdown of sector interventions by IFI which only makes it useful to check if the magnitudes of tracked flows are the same.

While the OECD CRS database provided much of what was needed to accurately cover energy interventions of six IFIs within our study, it did not include project-level data on OPIC, thus we added project level data from OPIC's List of Active Projects (OPIC, 2016).

7.2.2 PROCESS FOR FILTERING OECD AND OTHER DATASETS FOR ENERGY-RELATED PROJECTS

We focused on filtering results from a number of fields within the OECD Creditor Reporting System (CRS) dataset in order to find energy-related projects. We added OPIC projects to the OECD CRS dataset and filtered them using the same approach.

We checked energy efficiency and high-carbon projects manually to account for projects that the automatic formula miscategorized (e.g. if a project showed up under 'oil' but was not an energy project but a 'soil' improvement project). However, it is still difficult to capture projects that are sector cross-cutting in the right category.

We describe the fields and filters we applied to them below.

- DonorName (the original provider of the finance flow - mostly countries but could also be the capital of an institution)
- AgencyName (the direct provider of the finance to the recipient)
- ShortDescription (high-level description of the project)
- ProjectTitle
- PurposeName (theme of purpose - e.g. energy research, energy manufacturing, etc)
- SectorName (e.g. Energy, Mineral Resources & Mining, etc.)
- LongDescription (short to medium length paragraph on the project)

We applied the following filters to the above-mentioned columns in the database:

1. DonorName was filtered by:
   - ADB and ADB Special Funds
   - EU Institutions
   - European Bank for Reconstruction and Development [EBRD]
   - Germany, KfW, DEG
   - IDB and IDB Special Fund
   - World Bank, via International Bank for Reconstruction and Development [IBRD] and International Development Association [IDA]
2. AgencyName was filtered by:
   - EU Institutions was filtered for EIB
   - Germany was filtered for KfW and DEG
3. *SectorName* was filtered by 'energy' sector
4. *ShortDescription*, *ProjectTitle*, *PurposeName*, and *LongDescription* were filtered by:
   - "oil"," gas", "coal", "diesel", "refinery", "petrol"
   - "wind"
   - "solar", "photo"[35], "PV"
   - "hydro"
   - "geothermal"
   - "biogas", "biofuel", "biomass"
   - "transmission" ,"distribution", "interconnection"
   - " renewable sources",[36] "renewable energy"
   - "non-renewable"
5. *ProjectTitle, ShortDescription,* and *LongDescription* were filtered by
   - "efficiency", "efficiencia", "efficient", "energy savings", "efficiacite", "maitrise", "ahorro", "eficacia", "effizienz", "effizient" to capture efficiency projects across different regions[37]

We only captured commitments made in 2012, 2013, and 2014.

35 Photovoltaic

36 The space before 'renewable sources' ensured that projects that are 'non-renewable sources' were not counted as 'renewable'.

37 We used the same filtering method as the IEA Energy Efficiency Market Report. However, while the IEA only filtered the column 'ProjectTitle', we also filtered 'ShortDescription and LongDescription to find projects whose main purpose might not be energy efficiency but which incorporate energy efficiency.

7.2.3 LIMITATIONS TO DATA

To ensure our results are robust we took the following data limitations into account throughout our analysis and verified our results by reviewing IFIs' annual reports for the years 2012, 2013, and 2014, as well as by interviews when possible:

- The level of detail at which IFIs report project descriptions varies by type of finance flow (loan vs. equity vs. grant), by recipients, and by IFI. This means that we likely found more energy efficiency related projects for institutions such as ADB, EIB, KfW, and IDB, which provided overall very detailed data to OECD.
- EE is mostly a secondary element of a larger project and therefore not always reported. If IFIs do not report an EE activity in the descriptions within the databases we used we are unable to identify it (for further information see Box 5 on mainstreaming EE in section 4).
- The OECD database does not cover 100% of commitments made by IFIs. The OECD database only tracks flows to ODA countries. For example, one of the biggest energy finance recipients of the WB is Turkey which is not an ODA country and therefore finance flows to Turkey are not tracked in the database. For 2012, 2013, and 2014, we found that ADB, EIB, IDB, and WB report (in the OECD CRS dataset) at least 75% of the commitments mentioned in their annual reports, EBRD and KFW report less than 70% of commitments in annual reports.[38]
- Focus on public sector investments might bias assessment results. The confidential nature of private sector interventions tracked in the OECD and OPIC databases limits the amount of information provided on these projects in project descriptions. If there is a substantial difference between overall energy productivity lending in the private sector vs. the public sectors then our assessment might underestimate IEP-negative lending percentages or overestimate IEP-positive lending percentages.
- Differences in reporting intervals impact 'snapshot' assessments. Project-level data on the OPIC website for 'active projects', for instance, covers more project commitments (in dollar terms) than stated in annual reports in 2012 and 2014, but less than in the annual report for 2013. This might be due to a time-lag between commitment date and kick-off dates for projects as the OECD CRS database covers only 'active projects' or it may be because of differences between calendar and financial accounting years. However, IFIs are large institutions and we don't expect them to change investment policies quickly. By reviewing data over three years we expect a comprehensive picture of types of energy and energy efficiency activities these IFIs focus on.

38 For a full list of countries tracked see OECD, 2014

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