THEMATIC EVALUATION

ANNEXES to the Review of the EBRD Energy Sector Strategy

April 2018

EBRD EVALUATION DEPARTMENT

European Bank
for Reconstruction and Development

Annexes to: EvD's Review of the EBRD's Energy Sector Strategy

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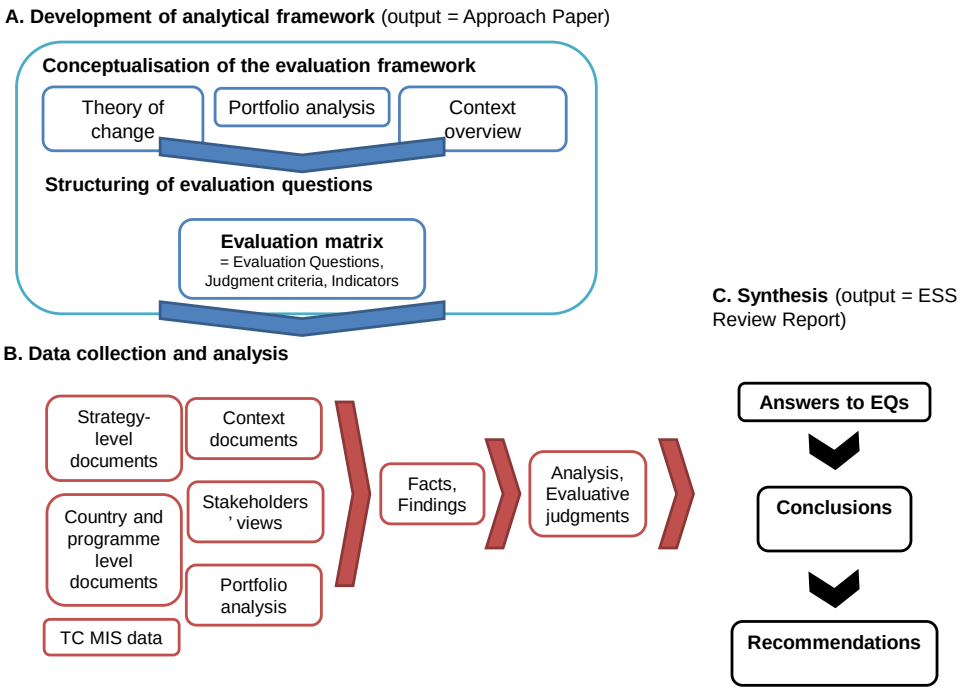
Annex 1 Evaluation methodology

The approach utilised for the Review of the EBRD's Energy Sector Strategy is summarised in Figure A. 1.

Figure A. 1: Review approach



Source: EvD elaboration

A. Development of the analytical framework (April-July 2 017)

The output of this phase is represented by the Approach Paper approved in September 2017. The Approach Paper included the evaluation matrix that served as analytical framework to guide and structure data collection through various tools identified. The key building blocks underpinning the selection of key issues to be included in the evaluation matrix were the understanding of the strategic objectives of the ESS, its actual implementation, and context.

For the purpose of the Approach Paper the following activities were carried out:

- Development of the theory of change (absent in the ESS, but necessary to develop the evaluation questions)
- Portfolio analysis
- Collection of documentation about technical cooperation and policy dialogue
- Document analysis
- Interviews with internal and external stakeholders
- Development of the evaluation questions
- Development of the evaluation matrix (including evaluation questions judgement criteria, indicators and data sources)

As per Operations Manual a draft Approach Paper was circulated by the Chief Evaluator to Management (**12th July 2017**) following which Management comments have been provided (**2nd August 2017**) and discussed in a meeting (**13th September 2017**) which minutes have

been recorded. The final Approach Paper was circulated by the Chief Evaluator on **19th September 2017** and **published on EBRD's website**.

B. Data collection and analysis (July-October 2017)

Data was collected via the various tools and methods for data collection structured along the review matrix. Data were of a quantitative and qualitative nature - to allow to the extent possible for verification and cross-checking (triangulation) from different sources. The Review has combined secondary (desk) sources with fresh data collection through interviews of relevant stakeholders (for a total of **102 people interviewed** during country visits, conference calls and in EBRD HQ – see Annex 8).

Two country visits took place: **24-28 September 2017 in Jordan** and **16-20 October 2017 in Kazakhstan**. The list of people interviewed is available in Annex 8. All the credit for the success of the missions goes to the sector and country teams – to which the evaluation team is grateful.

C. Synthesis (November 2017-February 2018)

The synthesis phase has been devoted to constructing answers to the evaluation questions based on the findings from data collected in phase B. During this phase the original evaluation matrix has been amended to reflect the inputs substantive for achieving the objective of the evaluation – see Table A. 1.

Also, the evaluation team has seen value in adding extra resources to add a stand-alone piece about the role of sector strategies in the EBRD's strategic planning process, which is likely to be useful for the future work on other sector strategic documents other than 'energy' related ones. This has required collection of internal documentation and interviews, as well as analysis of documentation from partner IFIs.

Based on the harvested findings the evaluation team has formulated conclusions and recommendations. The final output of the synthesis is this report.

As per Operations Manual a draft report was circulated by the Chief Evaluator to Management (**2nd March 2018**) following which Management comments have been provided and carefully reviewed by EvD.

The final report was circulated to Management and the Board by the Chief Evaluator on 28th March 2018 and will be discussed at the Board's Audit Committee on **17th April 2018**. Eventually the report is published on the EBRD website.

Table A. 1: Revised evaluation matrix

Evaluation questions	Judgement criteria	Indicators	Sources of Data
1. Did the ESS set **appropriate priorities** for the EBRD?	1.1 Clarity of ESS's identification of sector challenges (and broader context)	– Existence and use of methodology to assess sector challenges aimed at drafting ESS – Alignment with CRR4, SCF, SEI 3 and SRI and other strategic planning documents	– ESS – EPG documents and interviews – CSRM team interviews
	1.2 Clarity of themes of intervention as derived from sector challenges and aligned with EBRD strategic planning documents	– Coherence in the narrative between sector/needs analysis and priorities – Identification of specific methodologies to address specific challenges (e.g. related to coal)	– ESS – EBRD CRR4, SCF – SEI 3, SRI – Other strategic planning documents
	1.3 The ESS adequately identifies the potential for and implications of complementarity with other key players	– Existence of mapping of other IFI/donors on-going or planned activities in the sector and indication of possible complementarity actions and activities	– ESS – Preparatory analysis to ESS
	1.4 Adequate consideration for EBRD specific business model and unique value added ("institutional additionality") in the identification of priorities in the ESS	– EBRD institutional attributes reviewed – ESS includes an ex-ante assessment on how EBRD's interventions are likely to be additional – Risks	– ESS – Preparatory analysis to ESS
	1.5 ESS incorporates adequately inputs of all relevant stakeholders	– Existence of processes (such as specific meetings/hearings) for expression and/or contribution by stakeholders of their views – Actual incorporation in the ESS of points raised/inputs made by stakeholders during the consultation or otherwise	– ESS and Report on the Invitation to Public to Comment – Documents from consultation meetings from Civil Society Engagement Unit
	1.6 ESS incorporates elements of internal learning	– Findings and lessons from the previous Energy Operations Policy – Findings and lessons from previous relevant sector evaluations	– ESS – Preparatory analysis to ESS
2. Has the ESS been an effective **guide for and means to track** operations?	2.1 EBRD Country Strategies priorities and targets are aligned with the ESS	– EBRD Country Strategies incorporate sections about the energy sector with results and indicators aligned with ESS – Approved EBRD's operations alignment with Country Strategies' priorities and ESS	– 29 Country Strategies approved between December 2013 and July 2017 – Country Strategies Results Frameworks – CSRM team interviews – Interviews with users of ESS and Country Strategies
	2.2 Adequacy of the metrics incorporated in the ESS	– Existence of adequate OPIs and targets – Δ OPI 2 (cost-reflective pricing): o Pre-tax subsidies (% GDP)	– International databases (IEA, IRENA, IMF, UN)

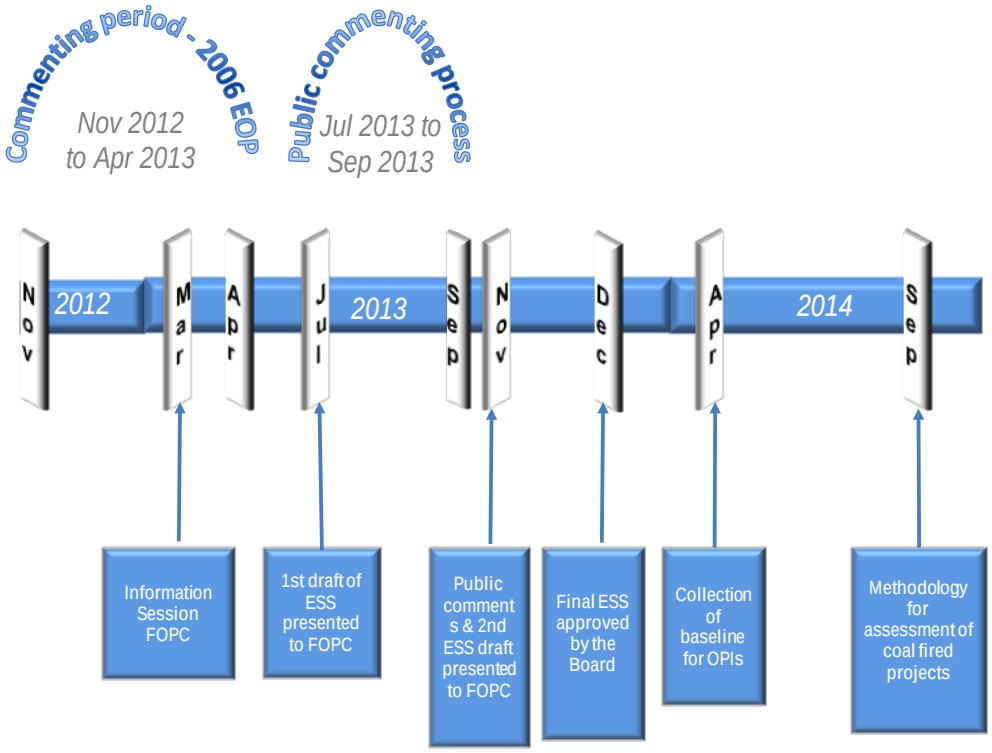
Evaluation questions	Judgement criteria	Indicators	Sources of Data
		o Post-tax subsidies (% GDP) – Δ OPI 3 (energy efficiency): o Absolute energy consumption per capita (toe per capita) o Energy intensity (toe per thousand GDP 2010 USD PPP) – Δ OPI 4 (carbon intensity): o CO2 emissions per unit of GDP, PPP adjusted (KgCO2 per 2010 USD PPP) o Absolute CO2 emission per capita (tCO2 per capita) – Δ OPI 5 (energy trade): o % of energy export over total energy consumption o % of energy imports over total energy consumption – Use of the OPIs	
	2.3 Adequate accountability mechanisms	– Frequency and quality of the updates to the Board – Existence of other mechanisms	– Office of the Secretary General (OSG)
3. What **results** are observable **thus far**?	3.1 Progresses towards improved energy and resource efficiency / lower energy intensity on the supply and demand sides	Contribution of activities to ESS outcome and SEI/SRI/GET as reflected by: – Primary energy savings (Toe/year) from EBRD's operations – Water savings (cubic meters per year) from EBRD's operations – Material savings (tons) from EBRD's operations – Progresses made by policy dialogue activities (donor funded, EBRD funded, and part of daily EBRD activities in HQ and countries of operations) on legislation conducive to energy efficiency	– Project documentation (investments, TCs and policy dialogue) – Interviews with internal stakeholders (EBG, E2C2, ESD, LTT) – Interviews with external stakeholders in Jordan and Kazakhstan
	3.2 Progresses towards improved environmental performance	Contribution of activities to ESS outcome and SEI/SRI/GET as reflected by: – GHG emissions reduction (Mt CO2-equ.) from EBRD's operations – Progresses made by policy dialogue activities (donor funded, EBRD funded, and part of daily EBRD activities in HQ and countries of operations) on NDCs and Paris Agreement commitments	– Project documentation (investments, TCs and policy dialogue) – Interviews with internal stakeholders (EBG, E2C2, ESD, LTT) – Interviews with external stakeholders in Jordan and Kazakhstan
	3.3 Progresses towards enhanced quality and security of supply	Contribution of activities to ESS outcome as reflected by: – Gas transportation from EBRD's operations – Power transmission, distribution and control from EBRD's operations – Cross-border energy trade from EBRD's operations – Renewable energy from EBRD's operations: o Δ # and volume of operations	– Project documentation (investments, TCs and policy dialogue) – Interviews with internal stakeholders (EBG, E2C2, ESD, LTT) – Interviews with external

Evaluation questions	Judgement criteria	Indicators	Sources of Data
		o Δ installed capacity – Progresses made by policy dialogue activities on renewable energy	stakeholders in Jordan and Kazakhstan – Interviews for Azerbaijan and Poland cases
	3.4 Progresses towards more open and better functioning markets	Contribution of activities to ESS outcome as reflected by: – Δ ratio private/state from EBRD's operations in the energy supply-side – Δ ratio EBRD finance, private syndication, special funds, co-finance and external finance out of total projects' values from EBRD's operations in the energy supply-side – Δ use of grants for operations in the energy supply-side – Progresses made by policy dialogue on energy regulatory programmes, etc.	– Project documentation (investments, TCs and policy dialogue) – Interviews with internal stakeholders (EBG, E2C2, ESD, LTT) – Interviews with external stakeholders in Jordan and Kazakhstan
	3.5 Progresses towards improved transparency, governance, skills, and standards/practices	Contribution of activities to ESS outcome as reflected by progresses made by policy dialogue activities – transparency practices (e.g. EITI principles) – social, environmental and governance practices – modernised SOEs	– Project documentation (investments, TCs and policy dialogue) – Interviews with internal stakeholders (EBG, E2C2, ESD, LTT) – Interviews with external stakeholders in Jordan and Kazakhstan

Annex 2 2013 ESS approval process

The approval process of the 2013 ESS is summarised in Figure A. 2.

Figure A. 2: Timeline of the approval process and monitoring of the 2013 ESS



Source: EvD elaboration

Pre-drafting phase

During the pre-drafting phase **from November 2012 to April 2013**, EBRD has sought input from the widest possible range of stakeholders to ensure that its review was informed by an awareness of the full range of concerns and opportunities in this area. This engagement took the shape of:

- An Invitation to Comment on the 2006 EBRD Energy Operations Policy published on the EBRD's website on 16 November 2012 and closed on 16 January 2013;
- A brainstorming meeting with a group of CSOs specialising in energy issues held on 6 December 2012 in London;
- A joint workshop with Chatham House on Future trends in the energy sector and priorities for EBRD energy policy with a number of key energy experts on 2 February 2013 in London;
- Two separate brainstorming discussions with Greenpeace on 22 January 2013 (via a conference call) and CEE Bankwatch on 20 February 2013 in London.

Key topics discussed are available in a summary document.[1]

On **13 March 2013** an **Information Session** for the Board was organised to introduce the key issues for the Energy Strategy under drafting.[2] There is no official record of the proceedings.

[1] Summary of comments received on the existing Energy Operations Policy (2006) and the forthcoming Draft Energy Strategy in the period from November 2012 to April 2013.

First draft

A first draft of the ESS was circulated in late June 2013[3] and submitted for consideration of the Board's Financial and Operations Policies Committee. The latter discussed the document in its meeting of the **11 July 2013**.

The official minutes of the meeting stress that the document was welcome. Specific elements discussed are summarised:

- "the strategy could set out more clearly its overall objectives (…)In particular, many felt that the nature of the strategic performance indicators should be made more precise before publication for comment;
- discussion of the nature of the Bank's sectoral documents and the relationship between them and country strategies;
- the need for the Bank's activities on energy demand to be reflected in this strategy;
- The need to emphasise more the work in supporting greater transparency;
- Unconventional oil and gas exploration (including fracking) needed to be discussed more because of different views;
- Talking about coal where mixed views emerged again "management needed to strongly emphasise its expectation of very limited participation in this area".[4]

Following FOPC meeting few changes were made to the draft before circulating it for public consultation (such as the introduction of Operational Performance Indicators).

Public consultation

The draft was posted on the EBRD website for public consultation for more than 60 days **from 19 July 2013 to 30 September 2013**. In preparation of and during the consultation, the Bank actively contacted more than 1,000 organisations, seeking comments from a wide range of stakeholders, including companies, CSOs, governments, academia and others. During the consultation period, EBRD held four public consultation meetings in London, Istanbul, Belgrade and Moscow, attended by a total of 121 representatives of various stakeholders. Eighty three sets of written comments were received before 30 September, as well as two petitions from 350.org and the Price of Oil campaign.[5]

Comments and EBRD's response have been captured in a Report eventually circulated in November 2013. [6] The list of issues raised by the public as well as EBRD's responses are summarised in Table A. 2.

Table A. 2: Snapshot of public comments issues and actual incorporation in ESS

Issue	#	Issues incorporated	Description
Better regulation	**15**	1	Revised text to explain better transparency in energy markets.
Biodiversity	1	-	
Biomass / biogas	4	1	Emphasis added on the role of bioenergy among renewables.
Capacity building	6	-	
CCS	10	2	Added considerations about seismic conditions and CCS; More references to CCU
Carbon markets	2	-	
Civil Society	6	-	
Climate Change	10	-	
Climate resilience	2	-	

[2] Information Session: Energy Strategy - key issues
[3] dated 27 June 2013
[4] Minutes of the Meeting of the Financial and Operations Policies Committee of 11 July 2013
[5] Public Information Policy Report on Implementation 2013
[6] Energy Sector Strategy: report on the invitation to the public to comment

Issue	#	Issues incorporated	Description
Coal	40	1	Clarified commitment on greenfield coal power generation
Coal - shadow pricing	11	4	Methodology to screen coal projects
CHP	2	-	
Decentralised energy	2	-	
Decommissioning	2	-	
EBRD financing	17	-	
Energy efficiency	23	-	
Energy security	3	-	
Energy storage	1	-	
Environmental and	1	-	
EU integration	1	-	
Evaluation of projects	1	-	
Fossil fuels	12	-	
Fuel switching	1	-	
Gas flaring	1	-	
Gas resources	3	-	
General	14	1	Annex 3 includes a map of EBRD's regions
Hydrocarbons	10	-	
Integrity	2	-	
Key partners	2	-	
Local Content	2	-	
Nuclear energy	8	-	
Pricing of externalities	2	-	
Public consultation	6	-	
Public information	2	-	
Refining	2	-	
Renewables	19	-	
Rethinking energy systems	6	-	
Role of LNG	2	-	
Security of supply	1	-	
Sensitive regions	2	-	
Smart infrastructure	9	2	Clarified intention to work on smart metering
Social aspects, affordability	5	-	
Standards and best practice	9	-	
Stranded assets	2	-	
Strategic Orientation	6	-	
Subsidies	3	-	
Supporting a cleaner transport sector	4	-	
Table of contents	1	1	Included coal in the table of content
Low Carbon Transition	6	-	
Transparency	5	2	Commitment to standards as per other policies; Added reference to disclosure of subsoil licenses and contracts.
Unconventional Oil and Gas	7	-	
Waste to energy	1	-	
TOTAL	**315**	**15**	

Source: EvD elaboration based on the Report on the Invitation to the Public to Comment on the Energy Sector Strategy

Second draft

On 15th November 2013 a revised draft of the ESS was circulated[7] together with the Report on the invitation to the public to comment.[8] The second draft tracked changes reflecting the comments received from the public – to the extent EBRD's found it appropriate – and the FOPC's requests discussed in July 2013.

The second draft and the Report on the invitation to the public to comment were discussed by the **FOPC** on **25th November 2013** – unusually as it is not normal practice for a sector strategy to be discussed twice at FOPC before submission to the Board.

The official minutes of the meeting stress that the revised document was welcome. Specific elements discussed were:

- OPIs are welcome, despite the attribution issue
- Low carbon agenda
- The wording on coal was subject to particular attention (with different views expressed by Board Directors)
- The language on unconventional oil and gas was subject to particular attention (with different views expressed by Board Directors)
- The Committee supported the priorities of the Strategy, the performance indicators and other features.[9]

The comments made at FOPC were incorporated in the second draft – a revised version was circulated on 3rd December 2013.[10]

Final

On **10th December 2013** the EBRD Board discussed and approved the Energy Sector Strategy[11] following the recommendation for approval included in the Report by the Chairman of the FOPC.[12]

The document was eventually approved with the following **abstentions**:

- **Austria and Israel** because of the opposition to supporting financing in nuclear generation that are not exclusively or even primarily safety driven.
- **Japan** considered that there was excessive restrictiveness of financing of coal projects in the text.
- **United Kingdom** noted his authorities' policy that greenfield coal construction should take place only in the poorest countries. The abstention was based on the absence of such distinction.[13]

Follow-up actions

Operational performance indicators (OPIs) – in 2014 the Bank collected data and information (**baseline**) on the five **OPIs** in each country of operation. The indicators will again be collected after the end of the strategy period in 2019.

On 25 September 2014 the Bank circulated its methodology for the assessment of coal fired generation projects.

[7] Energy Sector Strategy
[8] Energy Sector Strategy: report on the invitation to the public to comment
[9] Minutes of the Meeting of the Financial and Operations Policies Committee of 25 November 2013
[10] Energy Sector Strategy
[11] Energy Sector Strategy
[12] Report by the Chairman of the Financial and Operations Policies Committee on Energy Sector Strategy
[13] Minutes of the Board Meeting of 10 December 2013

Annex 3 Comparing the 2006 Energy Operations Policy and the 2013 Energy Sector Strategy

Feature	2006	2013	Differences
Title	Energy **Operations Policy**	Energy **Sector Strategy**	Sector 'operations policy' vs 'strategy'
Scope	– All forms of energy conversion (including renewables, fossil fuel-based and nuclear), transportation, distribution and certain aspects of consumption (such as demand-side efficiency); – Oil and gas activity covering the entire cycle from production to transportation, refining, and distribution; and – Coal mining	– All the Bank's activities in electricity generation, transmission, distribution and supply and hydrocarbon extraction, processing, transportation, distribution and supply. – Hydrocarbons for this purpose include oil, gas and thermal coal.	2013 ESS does not cover demand-side operations
Goal	The goal of the policy is to address these [transition] challenges and help the region **to achieve secure, affordable and efficient energy supplies**, which are fundamental to the emergence of open market-based economies and sustainable development.	An operational approach for **secure, affordable and sustainable energy** through the transition to a market oriented energy sector	None
Main theme	EBRD is making **energy efficiency** the cornerstone of its 2006 Energy Operations Policy.	The Energy Strategy is built around **energy efficiency**.	None
Transition challenges	– Competitiveness and efficiency – Investments and growth – Energy security – Climate change – Natural resource development	– Building energy markets and best practice – The role of hydrocarbon production in a market-oriented economy – The low carbon transition – Resource efficiency – Energy security – Affordable energy	
Operational approach	Sub-sectors: – Energy efficiency – Renewable energy – Fossil-fuel-based power generation – Nuclear power – Power transmission and system and market operations – Power and gas distribution – Power/gas supply/trade – Carbon market	Themes/pillars: – Energy efficiency and demand side measures – Building deep and liquid energy markets – Rethinking energy systems – The low carbon transition – Cleaner energy production and supply – Setting standards and best practice – The wider role of energy sector	Sub-sectors vs themes

Feature	2006	2013	Differences
	– Oil and gas upstream – Oil and gas midstream – Oil and gas downstream – Coal mining – District heating – Energy operations through financial intermediaries		
Priorities	– Promoting energy efficiency (target: a minimum of €1 million in EE and RE) – Advancing the unfinished reform agenda – Promoting renewable energy technologies – Promoting carbon trading – Unlocking regions' energy potential – Supporting sound natural resource management – Promoting energy trade and competition – Increasing nuclear safety – Promoting environmentally sustainable development	– Energy producers – EU Member States, candidate countries and ECSEE members – Small, isolated markets – State-dominated sectors – Regional markets	Sub-sector vs group of countries
Approach to coal (fossil fuels)	The Bank will finance both rehabilitation and greenfield projects […]. A project should fit within a least-cost solution that takes into account security of supply and new or rehabilitated transmission as an alternative, does not contradict any regionally-based plan, and results in an overall efficiency gain to the Region served.	The Bank will not finance any greenfield coal-fired power plant, except in rare circumstances, where there are no economically feasible alternative energy sources.	2013 ESS restricts greenfield coal-fired power plants and a methodology has been developed accordingly
Indicators	None	Five Operational Performance Indicators (OPIs): – Private participation – Cost reflective pricing – Energy efficiency – Carbon intensity – Interconnections/energy trade	Indicators introduced by ESS
Monitoring/reporting	None	Baseline of the OPIs collected in the first half of 2014 and then updated at the end of the Strategy period (end 2018)	Tracking indicators introduced by ESS

Annex 4 IFIs approaches to coal

IFI	Source	Extract
AfDB	2012 Energy Sector Policy	"The Bank is committed to supporting RMCs achieve universal access to energy in an environmentally sustainable manner. For many African countries, coal-fired power generation is likely to form part of such an approach to help the continent increase its access to modern energy at an affordable cost. To ensure that any Bank support for coal-power generation is consistent with this approach, this support will take place within the broad framework outlined below: 1. Development impact: **A proposed greenfield or retrofit coal-fired power plant supported by the Bank should have a strong developmental impact**. In particular, such a power plant should contribute: (i) to poverty reduction, and (ii) addressing national and/or regional energy security needs. 2. Transitioning towards green growth: Bearing in mind the Long Term Strategy objective to help Africa transition to a cleaner energy path, the Bank will collaborate with RMCs to ensure that **any coal power plant** to be financed by the Bank will form part of a **technologically and commercially feasible low-carbon and cost-effective** strategy for energy resources. 3. Environmentally responsible: When supporting a **coal power plant**, the Bank will take advantage of **progress in technology** to adequately mitigate negative environmental impacts, allow for high efficiency, reduce greenhouse gas (GHG) emissions, and diversify the energy mix. 4. Technology: The Bank will work with RMCs to ensure adoption of **the most appropriate, commercially available and affordable technology for reducing GHG emissions**. The Bank will assist in sourcing additional financing to invest in such technologies. The Bank will ensure that a desk-top assessment of the technical, economic and financial feasibility of abatement is undertaken, and will encourage assessment of the potential for readiness for relevant Carbon Capture and Storage technologies. 5. Offsetting measures: The Bank is in line with, and seeks to promote United Nations conventions on climate change. Consequently, it ensures that its interventions comply with agreements and related standards that are ratified by its RMCs within the framework of climate-change negotiations in terms of GHG emissions, including offsetting measures. The Bank will therefore support RMCs that express an interest in implementing **offsetting measures** in relation to these agreements, or on a voluntary basis." (pp. 21-22)
ADB	2009 Energy Policy	"**Since coal and oil are internationally traded commodities with established commercial interests, ADB will not finance coal mine development except for captive use by thermal power plants, and oil field development except for marginal and already proven oil fields**." (p. 4) "To meet the electricity needs of the region, large capacity additions will be required for which coal-based generation will grow. ADB will encourage DMCs to adopt available cleaner technologies, such as fluidized bed combustion, supercritical and ultra-supercritical boilers, and flue gas desulfurization. As new technologies—such as integrated gasification combined cycle and carbon capture and storage (or sequestration)—are shown to be technically feasible and economically viable, ADB will support their deployment in DMCs to increase their financial viability. ADB will also assist DMCs in collaborating with developed countries on long-term technology transfer agreements for new and better technologies under development. **It will selectively support coal-based power projects if cleaner technologies are adopted and adequate mitigation equipment and measures are incorporated into the project design**. Some DMCs with smaller size grids that depend on oil-based power supply or imports from neighbouring countries may need to install coal-based power plants using subcritical boiler technology. Such diversification will improve power system reliability and energy security, and may be the least-cost option. In the interest of economical and developmental needs, ADB will support such base-load power plants, if found to be justified after due diligence. Assistance will also be extended to retrofit existing power plants that need to improve efficiency." (p. 6) "Since coal is a major source of energy for electricity and heat, several DMCs will aggressively pursue coal mine development. As coal is an internationally traded commodity, ADB will maintain its current policy of **not directly financing coal mine development except for captive use by power plants**. This is the case

IFI	Source	Extract
		when a substantial part of the production of thermal coal is tied to long-term fuel supply contracts, or administrative allocation, for power plants. ADB will not finance when a coal mine is envisaged to be developed to sell thermal coal to the open markets or is linked through international trading channels to power generation in another country because the transaction will be considered market-based." (p. 8)
AIIB	2017 Energy Sector Strategy	"Carbon efficient oil- and coal-fired power plants would be **considered if they replace existing less efficient capacity or are essential to the reliability and integrity of the system, or if no viable or affordable alternative exists in specific cases**." (p. 17)
EIB	2013 Energy Lending Criteria	"These criteria – discussed below – would screen out power only coal or lignite fired power stations, but would allow some high efficiency coal and lignite fired CHP, coal and lignite projects fitted with CCS and some coal/lignite stations co-fired with carbon neutral fuel sources (e.g. biomass) and gas fired CCGT power and CHP plants. All fossil fuel power plants financed by the Bank: – Must be economically justified based on a cost benefit analysis – including a carbon price which reflects the marginal damage of each unit harmful emission (e.g. CO2, NOx, SOx). – Have CO2 emissions of less than the EPS (Emission Performance Standard), expressed in gCO2/kWh." (p. 26) "Shale gas present in some EU countries with limited diversification of gas supplies and high coal utilisation, and the potential for gas as a transition fuel may be particularly welcome in such cases." (p. 30)
	EIB Emission Performance Standard	**EPS Absolute Level** The EIB has introduced an Emission Performance Standard (or EPS) of 550gCO2/kWh to screen the Bank's investments in fossil fuel generation projects. **EPS Calculation Methodology** The EPS is calculated as the moving average of the ratio of annual targeted annual carbon emissions from power plants to the electricity generated by the same plants in the same year. The annual carbon emissions from power plants are calculated assuming an annual reduction consistent with the requirements of the ETS Directive (2009/29/EC). The electricity generated by the power plants is forecasted to grow yearly at a rate consistent with the higher end of the full set of scenarios contained in the Energy Roadmap 2050.
IaDB	2015 Energy Sector Framework Document	"An Approach to Reconciling the Financing of Coal-fired Power Plants with Climate Change Objectives" (p. 47)
WBG	Towards a Sustainable Energy Future for All: Directions for the WBG's Energy Sector	"The WBG will provide financial **support for greenfield coal power generation projects only in rare circumstances**. Considerations such as meeting basic energy needs in countries with no feasible alternatives to coal and a lack of financing for coal power would define such rare cases. The "**Criteria for Screening Coal Projects under the Strategic Framework for Development and Climate Change**" will apply to all greenfield coal power projects undertaken in such exceptional circumstances." (pp. V-VI)

Annex 5 IFIs approaches to oil and gas

IFI	Source	Extract
AfDB	2012 Energy Sector Policy	" In order to boost oil and gas supplies on the continent for the benefit of all, thereby alleviating the burden of imported energy and increasing energy security, the Bank Group will (i) support the environmentally and socially sound production, processing, distribution and export of African hydrocarbons; (ii) support power generation from oil and gas; (iii) promote policies, principles, and practices that enhance transparency in the exploitation of the resource as well as in the use and distribution of the revenues; and (iv) support the optimal use of oil and gas resources to secure equitable and intergenerational long-term benefits. The Bank will **not support oil and gas exploration activities**." (p. 7)
ADB	2009 Energy Policy	"Since coal and oil are internationally traded commodities with established commercial interests, **ADB will not finance coal mine development except for captive use by thermal power plants, and oil field development except for marginal and already proven oil fields**." (p. 4) " ADB will continue to support financing natural gas-based power plants, because of their environmental benefit. […] ADB will continue to finance modern, small, oil-based power plants for island communities, remote areas, and sparsely populated areas where other options are not feasible." (p. 7) "ADB will **continue its policy of not financing any oil and gas field exploration** projects because of the associated risks. As oil is an internationally traded commodity with established private sector involvement, ADB **will not, in general, fund oil field development projects**. If necessary, ADB will consider assistance to develop marginal and already proven oil fields, if such a development is economically sound. ADB will provide support for refining, transportation, and distribution of petroleum products. ADB will continue to provide assistance for gas field development, and transportation and distribution of gas." (p. 8)
AIIB	2017 Energy Sector Strategy	"Carbon efficient oil- and coal-fired power plants would be considered if they replace existing less efficient capacity or are essential to the reliability and integrity of the system, or if no viable or affordable alternative exists in specific cases. […] In some countries in Asia, national oil and gas companies also are active in these subsectors and governments may express interest in Bank financing. The Bank will support such investments provided that they improve energy security or promote regional integration and trade. The Bank will also consider development, rehabilitation and upgrading of natural gas transportation (including storage) and distribution networks, and control of gas leakage, to foster greater use of gas during the transition to a less carbon-intensive energy mix/power sector, especially in Asia where such penetration is low compared to other regions." (p. 17)
EIB	2013 Energy Lending Criteria	"[…] the EIB is reinforcing its project screening criteria such that only the best available, efficient and clean technologies, aimed at supporting a low carbon economy are supported for financing. These criteria – discussed below – would screen out power only coal or lignite fired power stations, but **would allow some high efficiency coal and lignite fired CHP, coal and lignite projects fitted with CCS and some coal/lignite stations co-fired with carbon**

IFI	Source	Extract
		neutral fuel sources (e.g. biomass) and gas fired CCGT power and CHP plants." (p. 26) "All fossil fuel power plants financed by the Bank: • Must be economically justified based on a cost benefit analysis – including a carbon price which reflects the marginal damage of each unit harmful emission (e.g. CO2, NOx, SOx). • Have CO2 emissions of less than the EPS (Emission Performance Standard), expressed in gCO2/kWh. In addition all projects would have to comply with the principles of EU legislation, including the CCS Directive, the large combustion plant Directive, the industrial emissions Directive, and the ETS Directive, and make use of best available technology. [...] The same EPS threshold will be used for Bank's operations outside the EU [...] exceptions will be made for projects outside the EU located in the poorest countries where it can be demonstrated that projects with carbon emissions above the threshold will have a significant and material positive impact on poverty alleviation and economic development." (p.26) "[...] the upgrading and construction of new infrastructure for the security of energy supplies, notably new gas and oil facilities, is a priority area for energy investments in the EU and for the EIB. [...] The Bank adopts a **very selective approach to the oil and gas upstream (extraction) and the petroleum refining sector**. In particular in the refining sector, the Bank prioritises investments aiming at improving energy efficiency, meeting EU fuel specification requirements to support the development of more fuel efficient engines and increasing the production of such fuels at the expense of lower value products, without increasing the overall refining processing capacity. [...] The EIB will finance the extraction of hydrocarbons if opportunities arise, which are technically, financially and economically justified, taking into account environmental and social impacts. [...] For projects outside the EU, financing will be mandate dependent. Priority would be given to **projects that aim to supply gas to the EU**, support significant local economic development and poverty alleviation or generate climate action or other environmental benefits. In the operations it finances, the EIB will ensure the application of the updated Transparency Directive and Accounting directive, which build upon the Extractive Industries Transparency Initiative (EITI) endorsed by the EIB since 2008." (p. 30)
	EIB Emission Performance Standard	**EPS Absolute Level** The EIB has introduced an Emission Performance Standard (or EPS) of 550gCO2/kWh to screen the Bank's investments in fossil fuel generation projects. **EPS Calculation Methodology** The EPS is calculated as the moving average of the ratio of annual targeted annual carbon emissions from power plants to the electricity generated by the same plants in the same year. The annual carbon emissions from power plants are calculated assuming an annual reduction consistent with the requirements of the ETS Directive (2009/29/EC). The electricity generated by the power plants is forecasted to grow yearly at a rate consistent with the higher end of the full set of scenarios contained in the Energy Roadmap 2050.
WBG	Towards a	"As part of a drive for universal access, financial solutions or guarantees will be made available for the most feasible energy options for the poor and for

IFI	Source	Extract
	Sustainable Energy Future for All: Directions for the WBG's Energy Sector	people living in fragile and conflict-affected states. If short-term options include those with moderate or high greenhouse gas emissions, complementary support will also be provided in the medium term to harness lower-emission options." (p. v) "The WBG will scale up **its engagement in natural gas**. […]The WBG will help countries develop national and regional gas markets and, where it makes economic sense, use natural gas as an alternative to coal and thus shift away from locking into coal infrastructure." (p. 23) At the One Planet Summit convened in Paris in December 2017 the World Bank Group made a number of new announcements in line with its ongoing support to developing countries for the effective implementation of the Paris Agreement's goals. The World Bank Group will end financial support for oil and gas exploration by 2019. In exceptional circumstances, consideration will be given to financing upstream gas in the poorest countries if there is a clear benefit in terms of energy access for the poor and the project fits within the countries' Paris Agreement commitments. http://www.worldbank.org/en/news/press-release/2017/12/12/world-bank-group-announcements-at-one-planet-summit

Annex 6 Operational Performance Indicator

Baseline and update

Below the baseline and the update to the OPIs identified in the 2013 ESS.

OPI 1 on ***private participation*** was not updated by the evaluation team due to lack of access to data.

OPI 5 on ***interconnections*** and energy trade the evaluation team updated only indicators about energy trade. It was not possible to update interconnections due to lack of access to data.

Table A. 3: OPI 2 on Cost reflective pricing

Country	Pre-tax subsidies (%GDP)		Post-tax subsidies (%GDP)	
	Baseline 2013	EvD update 2016	Baseline 2013	EvD update 2016
Albania	1%	1%	3%	3%
Armenia	0%	0%	5%	5%
Azerbaijan	3%	2%	9%	16%
Belarus	0%	0%	10%	13%
Bosnia and Herzegovina	0%	0%	38%	50%
Bulgaria	0%	0%	34%	40%
Croatia	0%	0%	3%	5%
Cyprus	0%	0%	0%	0%
Egypt	11%	5%	17%	11%
Estonia	0%	0%	0%	1%
Georgia	0%	0%	5%	7%
Greece	0%	0%	2%	4%
Hungary	0%	0%	3%	5%
Jordan	4%	2%	11%	5%
Kazakhstan	1%	2%	10%	23%
Kosovo	N/A	0%	N/A	0%
Kyrgyz Republic	15%	11%	35%	37%
Latvia	0%	0%	1%	2%
Lithuania	0%	0%	4%	6%
FYR Macedonia	0%	0%	18%	22%
Moldova	0%	0%	5%	7%
Mongolia	0%	0%	15%	26%
Montenegro	0%	0%	16%	22%
Morocco	0%	0%	4%	3%
Poland	0%	0%	9%	13%
Romania	0%	0%	7%	8%
Russia	2%	3%	15%	27%
Serbia	0%	0%	34%	41%
Slovak Republic	0%	0%	3%	4%
Slovenia	0%	0%	2%	3%
Tajikistan	3%	5%	6%	11%
Tunisia	3%	3%	6%	5%

Country	Pre-tax subsidies (%GDP)		Post-tax subsidies (%GDP)	
	Baseline 2013	EvD update 2016	Baseline 2013	EvD update 2016
Turkey	0%	0%	4%	5%
Turkmenistan	16%	18%	29%	40%
Ukraine	5%	9%	51%	96%
Uzbekistan	18%	12%	34%	28%

Subsidies: IMF Energy Subsidy Template, dated December 2015
GDP data: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2016&start=2013

Table A. 4: OPI 3 on Energy Efficiency

Country	Absolute energy consumption per capita		Energy intensity		
	Baseline 2012 (toe/capita)	EvD update 2015 (toe/capita)	Baseline 2012 (TPES/GDP PPP toe/k US$2005)	Baseline 2012 (TPES/GDP PPP toe/k US$2010)	EvD update 2015 (TPES/GDP PPP toe/k US$2010)
Albania	0.68	0.76	0.09	0.07	0.07
Armenia	0.88	1.02	0.17	0.14	0.13
Azerbaijan	1.37	1.49	0.15	0.09	0.09
Belarus	3.11	2.66	0.24	0.19	0.16
Bosnia and Herzegovina	1.89	2.11	0.25	0.19	0.22
Bulgaria	2.57	2.59	0.22	0.16	0.15
Croatia	1.91	2.00	0.12	0.11	0.10
Cyprus	2.95	2.38	0.11	0.08	0.08
Egypt	0.94	0.87	0.17	0.09	0.09
Estonia	4.27	4.13	0.23	0.17	0.16
Georgia	0.79	1.25	0.16	0.13	0.14
Greece	2.45	2.14	0.11	0.10	0.09
Hungary	2.36	2.56	0.14	0.11	0.11
Jordan	1.14	1.14	0.22	0.11	0.11
Kazakhstan	4.72	4.45	0.41	0.20	0.19
Kosovo	1.41	1.40	0.20	0.16	0.16
Kyrgyz Republic	0.56	0.67	0.27	0.26	0.21
Latvia	1.97	2.16	0.14	0.11	0.10
Lithuania	2.28	2.49	0.13	0.11	0.10
FYR Macedonia	1.51	1.29	0.16	0.12	0.10
Moldova	0.94	0.95	0.31	0.24	0.20
Mongolia	1.29	1.67	0.31	0.17	0.15
Montenegro	1.83	1.62	0.17	0.13	0.11
Morocco	0.54	0.56	0.12	0.08	0.08
Poland	2.51	2.47	0.14	0.11	0.10
Romania	1.68	1.61	0.15	0.10	0.08
Russia	5.15	4.93	0.35	0.23	0.23
Serbia	2.23	2.08	0.23	0.17	0.17
Slovak Republic	3.06	3.02	0.14	0.12	0.11
Slovenia	3.47	3.19	0.14	0.13	0.11

Country	Absolute energy consumption per capita		Energy intensity		
	Baseline 2012 (toe/capita)	EvD update 2015 (toe/capita)	Baseline 2012 (TPES/GDP PPP toe/k US$2005)	Baseline 2012 (TPES/GDP PPP toe/k US$2010)	EvD update 2015 (TPES/GDP PPP toe/k US$2010)
Tajikistan	0.34	0.32	0.17	0.13	0.12
Tunisia	0.89	0.97	0.11	0.09	0.09
Turkey	1.54	1.66	0.11	0.08	0.07
Turkmenistan	4.84	5.14	0.58	0.40	0.34
Ukraine	2.77	2.00	0.43	0.33	0.29
Uzbekistan	1.63	1.36	0.56	0.35	0.25

Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Table A. 5: OPI 4 on Carbon intensity

Country	CO2 emissions per unit of GDP, PPP adjusted			Absolute CO2 emission per capita	
	Baseline 2012 (KgCO2 emissions/GDP PPP $2005)	Baseline 2012 (KgCO2 emissions/GDP PPP US$2010)	EvD update 2015 (KgCO2 emissions/ GDP PPP US$ 2010)	Baseline 2012 (tCO2 per capita)	EvD update 2015 (tCO2 per capita)
Albania	0.15	0.12	0.13	1.20	1.32
Armenia	0.29	0.26	0.20	1.50	1.56
Azerbaijan	0.33	0.20	0.20	2.92	3.19
Belarus	0.53	0.37	0.34	6.97	5.61
Bosnia and Herzegovina	0.80	0.63	0.61	6.08	5.84
Bulgaria	0.56	0.39	0.36	6.58	6.10
Croatia	0.27	0.20	0.19	4.26	3.69
Cyprus	0.33	0.24	0.23	8.63	6.96
Egypt	0.41	0.22	0.22	2.28	2.17
Estonia	0.79	0.51	0.45	13.06	11.83
Georgia	0.29	0.22	0.26	1.40	2.26
Greece	0.33	0.29	0.25	7.45	5.95
Hungary	0.27	0.20	0.18	4.75	4.32
Jordan	0.61	0.32	0.31	3.20	3.13
Kazakhstan	1.22	0.62	0.53	14.14	12.83
Kosovo	0.67	0.55	0.53	4.73	4.78
Kyrgyz Republic	0.57	0.61	0.53	1.21	1.66
Latvia	0.25	0.17	0.16	3.41	3.46
Lithuania	0.24	0.17	0.14	4.13	3.63
FYR Macedonia	0.47	0.36	0.27	4.40	3.48
Moldova	0.75	0.53	0.46	2.22	2.13
Mongolia	1.11	0.63	0.52	4.66	5.80
Montenegro	0.38	0.28	0.26	4.02	3.80
Morocco	0.35	0.23	0.22	1.55	1.60

Country	CO2 emissions per unit of GDP, PPP adjusted			Absolute CO2 emission per capita	
	Baseline 2012 (KgCO2 emissions/GDP PPP $2005)	Baseline 2012 (KgCO2 emissions/GDP PPP US$2010)	EvD update 2015 (KgCO2 emissions/GDP PPP US$ 2010)	Baseline 2012 (tCO2 per capita)	EvD update 2015 (tCO2 per capita)
Poland	0.43	0.35	0.30	7.79	7.34
Romania	0.35	0.23	0.18	3.82	3.51
Russia	0.79	0.49	0.47	11.65	10.19
Serbia	0.70	0.52	0.51	6.86	6.27
Slovak Republic	0.30	0.22	0.19	6.22	5.43
Slovenia	0.30	0.27	0.22	7.43	6.22
Tajikistan	0.21	0.17	0.20	0.43	0.51
Tunisia	0.24	0.21	0.21	1.98	2.28
Turkey	0.29	0.21	0.18	3.86	4.10
Turkmenistan	1.45	1.01	0.85	12.06	12.86
Ukraine	0.98	0.73	0.60	6.24	4.20
Uzbekistan	1.29	0.78	0.55	3.76	3.05

Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Table A. 6: OPI 5 on Energy trade

Country	Energy export over total energy production		Energy imports over total energy consumption	
	Baseline 2011	EvD update 2015	Baseline 2011	EvD update 2015
Albania	54%	60.1%	69%	69.2%
Armenia	25%	20.6%	77%	73.3%
Azerbaijan	79%	76.2%	0%	2.0%
Belarus	410%	543.4%	143%	161.3%
Bosnia and Herzegovina	27%	21.9%	51%	41.9%
Bulgaria	38%	49.1%	62%	69.1%
Croatia	55%	69.0%	80%	85.8%
Cyprus	N/A	19.8%	112%	122.1%
Egypt	25%	22.0%	16%	32.7%
Estonia	22%	36.9%	34%	47.8%
Georgia	13%	30.6%	74%	82.2%
Greece	104%	194.6%	111%	150.3%
Hungary	45%	39.7%	73%	71.7%
Jordan	3%	1.4%	97%	101.5%
Kazakhstan	59%	57.3%	13%	9.6%
Kosovo	13%	3.5%	37%	30.0%
Kyrgyz Republic	21%	12.6%	70%	70.4%
Latvia	63%	91.4%	96%	105.7%
Lithuania	541%	488.0%	195%	200.9%
FYR Macedonia	22%	13.2%	58%	59.1%
Moldova	12%	4.6%	98%	91.0%

Country	Energy export over total energy production		Energy imports over total energy consumption	
	Baseline 2011	EvD update 2015	Baseline 2011	EvD update 2015
Mongolia	84%	73.1%	30%	26.2%
Montenegro	10%	13.0%	43%	39.4%
Morocco	121%	26.3%	106%	99.3%
Poland	23%	30.9%	48%	52.4%
Romania	16%	22.8%	33%	36.0%
Russia	46%	47.2%	4%	3.9%
Serbia	9%	13.5%	36%	37.7%
Slovak Republic	75%	86.7%	89%	94.3%
Slovenia	44%	74.0%	73%	87.6%
Tajikistan	3%	6.2%	39%	34.7%
Tunisia	42%	41.6%	57%	69.3%
Turkey	25%	27.1%	82%	87.1%
Turkmenistan	61%	65.4%	0%	0.0%
Ukraine	12%	2.3%	46%	35.0%
Uzbekistan	19%	25.7%	3%	2.3%

Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

OPIs analysis

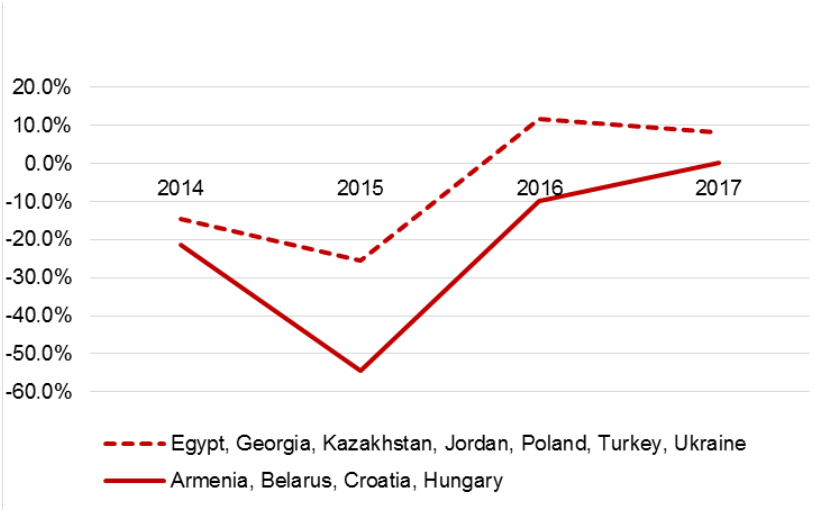
In order to make some considerations about the updated OPIs, the evaluation team has looked at those that could be aggregated (OPIs 2, 3 and 4) in the seven countries that absorbed most of the EBRD's investments (Egypt, Georgia, Kazakhstan, Jordan, Poland, Turkey and Ukraine)[14] versus the same OPIs in countries where the Bank did not perform any investment (Armenia, Belarus, Croatia and Hungary). The timeframe for comparison is the one overlapping with the ESS, since end 2013.

This analysis reveals that for both group of countries (with or without EBRD's interventions) the indicators show similar results. The graphs below show no significant difference in the trends between the countries where EBRD operated versus where EBRD did not operate.

The analysis confirms that the OPIs identified in the ESS are **not adequate to assess the contribution** of EBRD's operations approved – as indicated in the ESS "*it does not expect necessarily to be able to show clear causal links between its activities and these indicators.*"

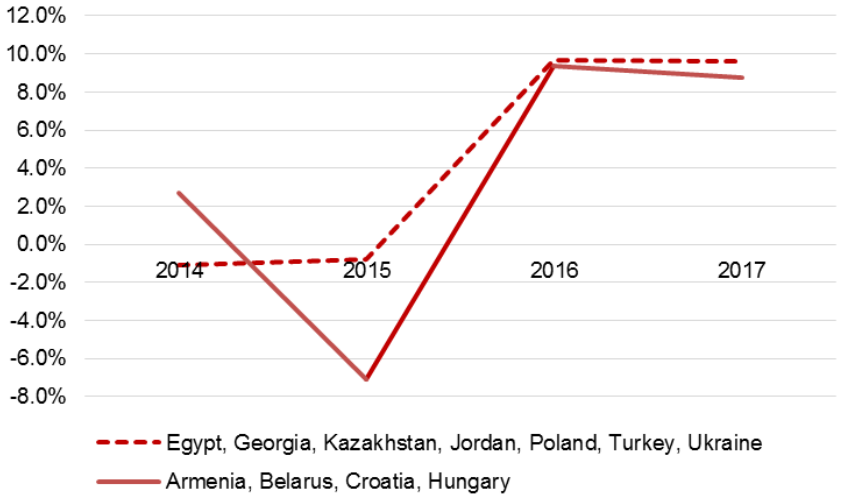
[14] The seven countries together count for 60% of the total volume (€2.7 billion) and 49% in terms of number of operations (41)

Figure A. 3: OPI 2 – Pre-tax subsidies (% of GDP)



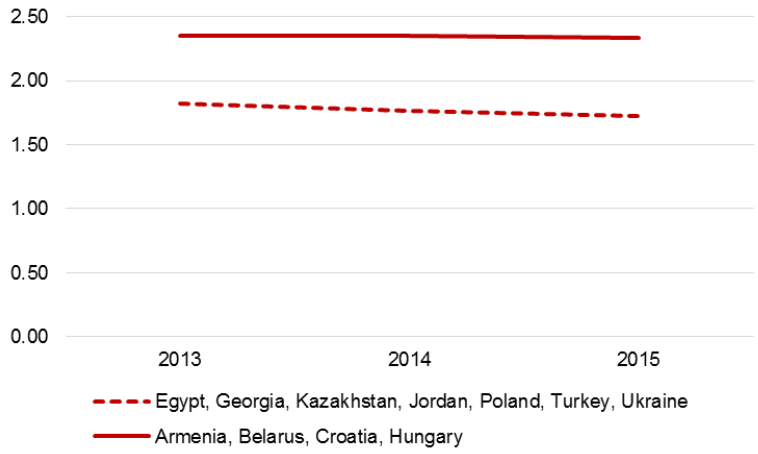
Subsidies: IMF Energy Subsidy Template, dated December 2015
GDP data: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2016&start=2013

Figure A. 4: OPI 2 – Post-tax subsidies (% of GDP)



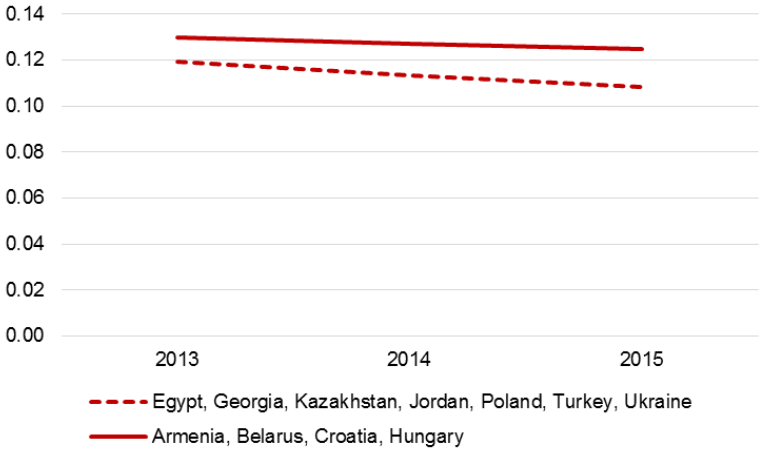
Subsidies: IMF Energy Subsidy Template, dated December 2015
GDP data: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2016&start=2013

Figure A. 5: OPI 3 – Energy Efficiency: absolute energy consumption (toe per capita)



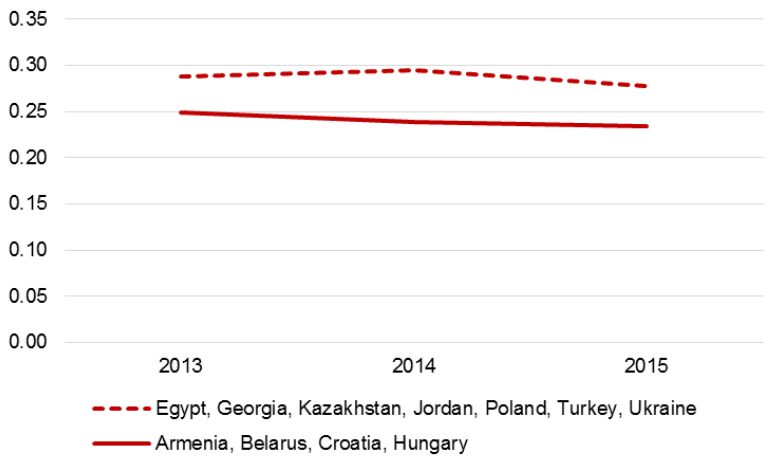
Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Figure A. 6: OPI 3 – Energy efficiency: energy intensity (toe per thousand GDP 2010 USD PPP)



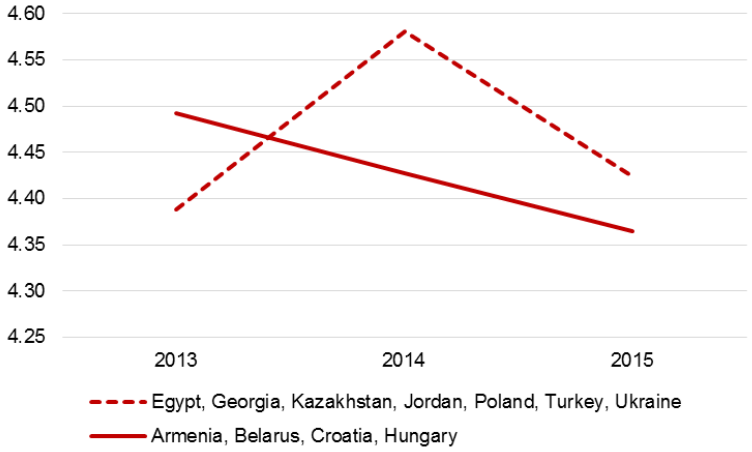
Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Figure A. 7: OPI 4 – Carbon intensity: CO2 emissions per unit of GDP, PPP adjusted (KgCO2 per 2010 USD PPP)



Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Figure A. 8: OPI 4 – Carbon intensity: absolute CO2 emissions per capita (tCO2 per capita)



Source: International Energy Agency http://www.iea.org/statistics/statisticssearch/

Annex 7 Data analysis

Data considered are operations approved by the EBRD Board from **December 2013** (when the ESS was approved) until **April 2017**. The population considered refers only to the **supply-side of energy**, hence with the portfolio of the **Energy Business Group** (EBG), with the exclusion of extractive industries operations.

Information about investments and other activities implemented after April 2017 or before December 2013 have been used when relevant or to allow comparisons over time.

Financial Frameworks

From December 2013 until April 2017, the EBRD Board of Directors has approved seven financial frameworks, including one Integrated Approach, as listed below. One framework has been cancelled.

Table A.7: EBG Financial Frameworks approved by the EBRD Board (Dec 2013-Apr 2017) in chronological order

Framework	FW OPID	Board approval	Banking team	Country	EBRD finance approved	Status	(Sub-) operations approved *
IA: Integrated Approach to Polish Renewables (**IAPR**)	46289	15 Oct 2014	Power & Energy	Poland	€400 million**	Active	5 (signed)
Genesis Framework	47091	28 Jan 2015	Power & Energy	Poland	€250 million	Cancelled	2 (cancelled)
SEMED Private Renewable Energy Framework (**SPREF**)	46907	14 Oct 2015	Power & Energy	Regional	US$ 250 million	Active	2 (1 not signed yet)
PLUTO - Early stage geothermal support framework	46809	09 Dec 2015	Power & Energy	Turkey	US$ 100 million	Active	2 (1 signed)
Georgian Low Carbon Framework (**GLCF**)	48124	16 Dec 2015	Power & Energy	Georgia	US$ 120 million	Active	2 (1 signed)
Kazakhstan Renewables Framework (**KAZREF**)	48919	14 Dec 2016	Power & Energy	Kazakhstan	€200 million	Active	2 (signed)
Greek Renewable Energy Framework (**GREF**)	49024	08 Mar 2017	Power & Energy	Greece	€300 million	Active	1

Source: DTM
**As of December 2017. Operations approved as part of Integrated Approach Financial Frameworks are classified as stand-alone, not sub-operations.*
***differently from other financial frameworks, in the case of Integrated Approach the envelope of investments is indicatively approved, but resources are not committed as each operation is required to be Board approved (no delegation of authority as for standard sub-operations of financial frameworks)*

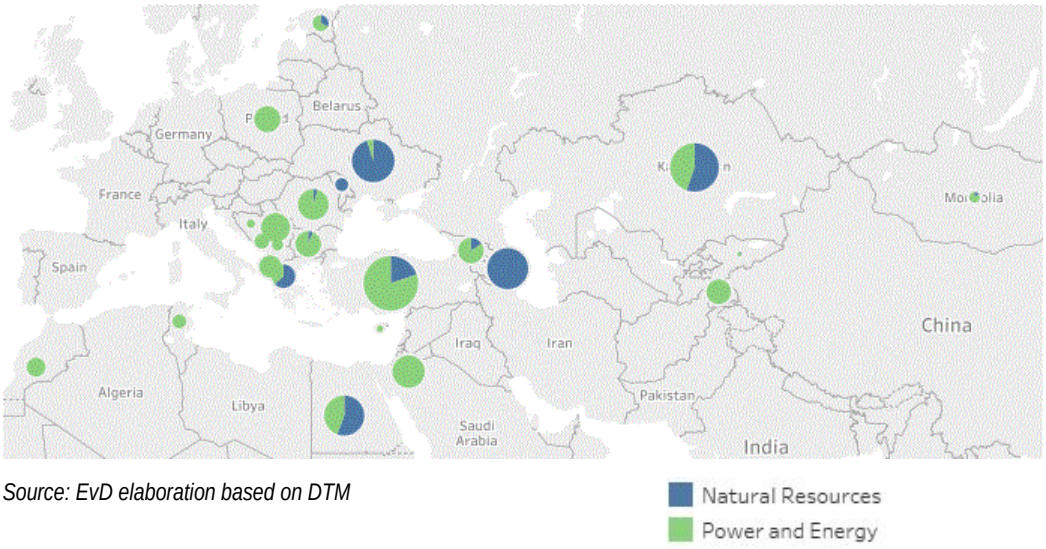
It is also worth mentioning other two frameworks approved by the Board by end 2017, namely:

- **Integrated Approach to Economic Inclusion in Natural Resources and Power**[15] to address substantial inclusion gaps in relation to youth and gender in **Kazakhstan** through a set of measurable and achievable project and policy level inclusion transition goals in Natural Resources and Power & Energy. It consists of two stages with a total envelope of US$ 1 billion. As of end 2017, two operations under the Integrated Approach have been signed.[16]
- **Egypt Renewable Feed-In-Tariff Framework**[17] which consists of EBRD debt financing for multiple loans to private developers to construct and operate renewable energy generation projects in Egypt under the Feed-In-Tariff Scheme. The Board approved an envelope of US$ 500 million. As of end 2017, 16 sub-operations have been signed.

Standalone and sub-operations

In the timeframe **December 2013-April 2017** the EBRD Board approved 85 operations eventually signed. Out of those, as of end 2017, one was cancelled.[18] Therefore the total population under consideration is composed by **84 operations**.

Figure A. 9: Energy Business Group NCBI per country (Dec 2013 – Apr 2017)



Source: EvD elaboration based on DTM

[15] Approved on 4th May 2017 (OPID 49219)
[16] Kyzyl Project (OPID 48218) approved in May 2017 and signed in June 2017 – senior loan of US$ 140 million for the development of the Kyzyl gold project in Kazakhstan; Shalkiya Zinc: Pre-Privatization Loan (OPID 48347) approved and signed in June 2017 – loan of US$ 175 million to support the pre-privatisation efforts in expanding operations of the existing Shalkiya zinc-lead mine located in the Kyzylorda region and construction of a 4 million tonnes per annum processing plant at the site
[17] Approved on 7th June 2017 (OPID 48213)
[18] Egypt: Damanhour CCGT(OPID 47336) approved and signed in November 2015, sovereign loan of up to US$ 200 million to finance the construction of a combined cycle power plant in Damanhour City. The project was cancelled in March 2017 as it was no longer considered a priority by the Egyptian Government due to a successful completion of the investment programme addressing the electricity shortage in the country and was moved to 2022-2027 investment plan.

Table A. 8: EBG operations approved and signed (Dec 2013-Apr 2017)

Sector Team	NCBI (€ million)	%	# of operations	Average size (€ million)
Natural Resources	**1,721**	**37.8%**	**23**	**75**
Debt	*1,721*	*37.8%*	*23*	*75*
Power & Energy	**2,831**	**62.2%**	**61**	**46**
Debt	*2,650*	*58.2%*	*59*	*45*
Equity	*180*	*4.0%*	*2*	*90*
TOTAL	**4,551**	**100%**	**84**	**54**

Source: DTM

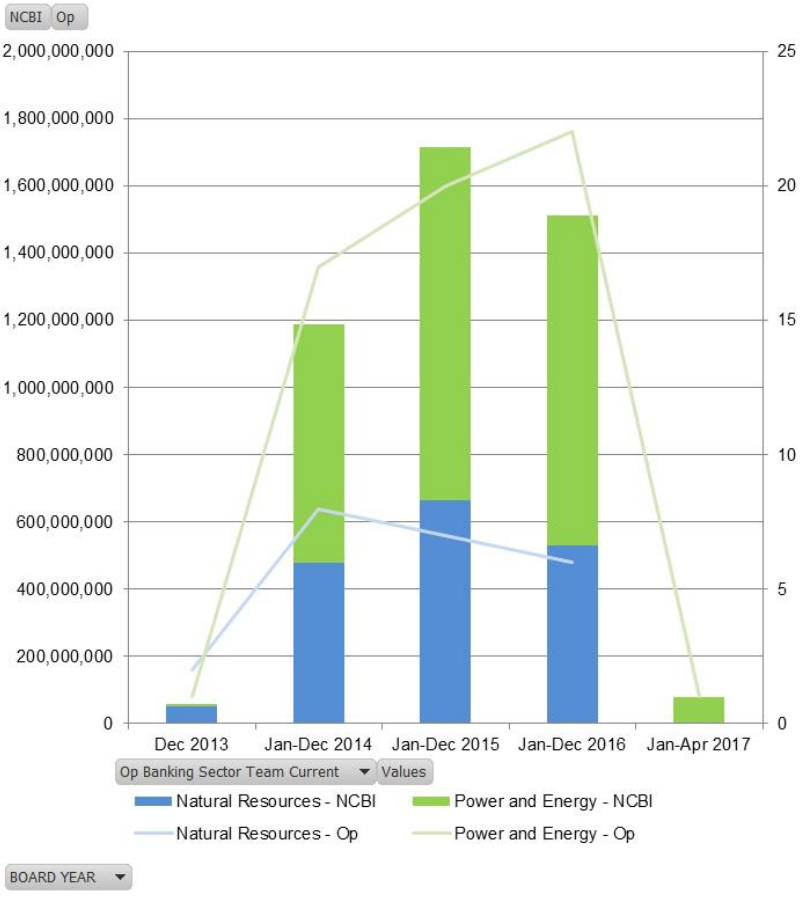
In the same timeframe the EBRD approved 949 investments for a total amount of €24,128,913,558, thus making count the energy supply-side operations (exclusive of the ore mining projects) its **8.9%** of it in terms of **number of projects**, and **18.9%** in terms of **volume**.

Table A. 9: Portfolio class of the EBG operations approved and signed (Dec 2013-Apr 2017)

Class	Natural Resources	Power & Energy	TOTAL
Private	19	41	**60**
State	4	20	**24**
TOTAL	**23**	**61**	**84**

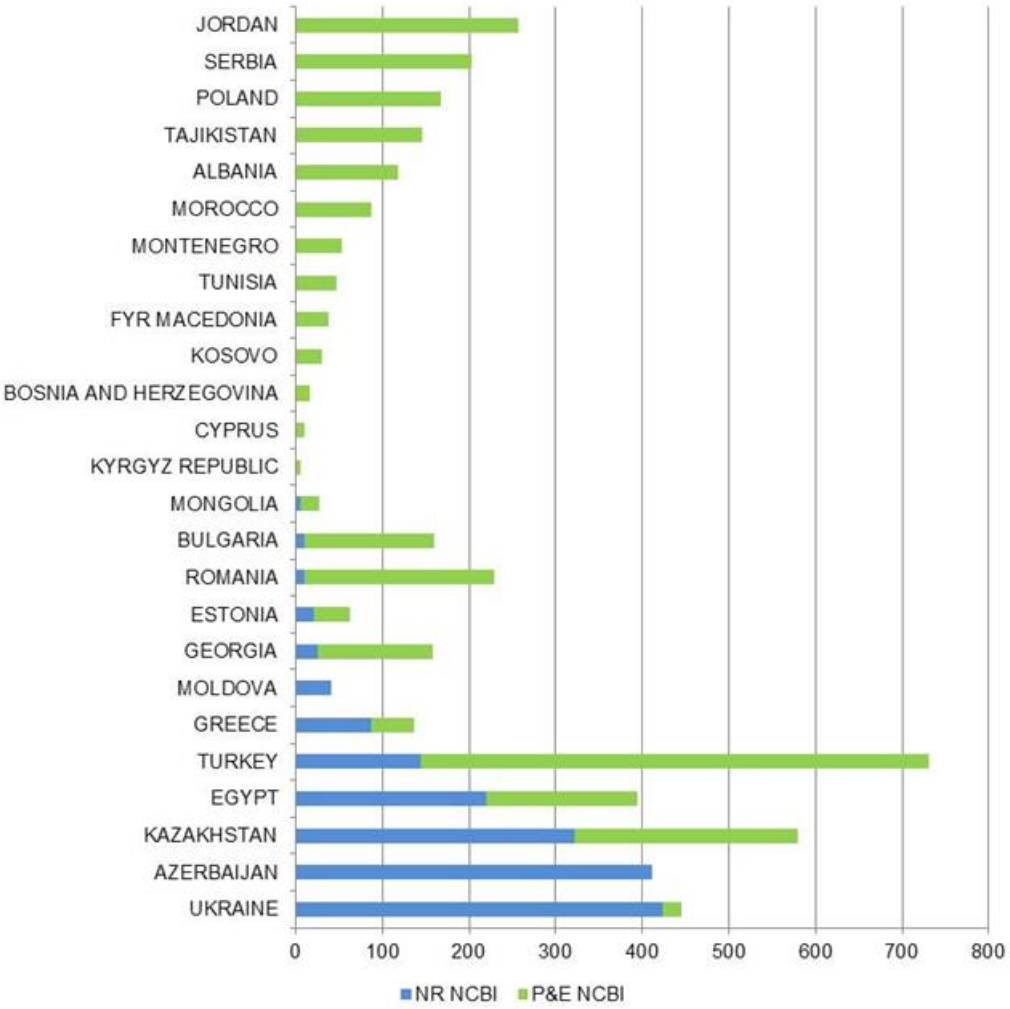
Source: DTM

Figure A. 10: Volume (€) and Number of EBG operations approved (Dec 2013 – Apr 2017)



Source: EvD elaboration based on DTM

Figure A. 11: Country distribution of EBG operations approved (Dec 2013 – Apr 2017) in million €



Source: EvD elaboration based on DTM

In terms of transition impact, an operation can address more than one source of transition impact. The transition impact sources are:

- TI sources 1: "Greater competition in the project sector"
- TI sources 2: "Competitive market interactions in other sectors"
- TI sources 3: "More widespread private ownership"
- TI sources 4: "Institutions, laws and policies that promote market functioning and efficiency"
- TI sources 5: "Transfer and dispersion of skills"
- TI sources 6: "Demonstration of new replicable behaviour and activities"
- TI sources 7: "Setting standards for corporate governance and business conduct"

Table A. 10: Transition impact source for EBG operations approved Dec2013-Apr2017

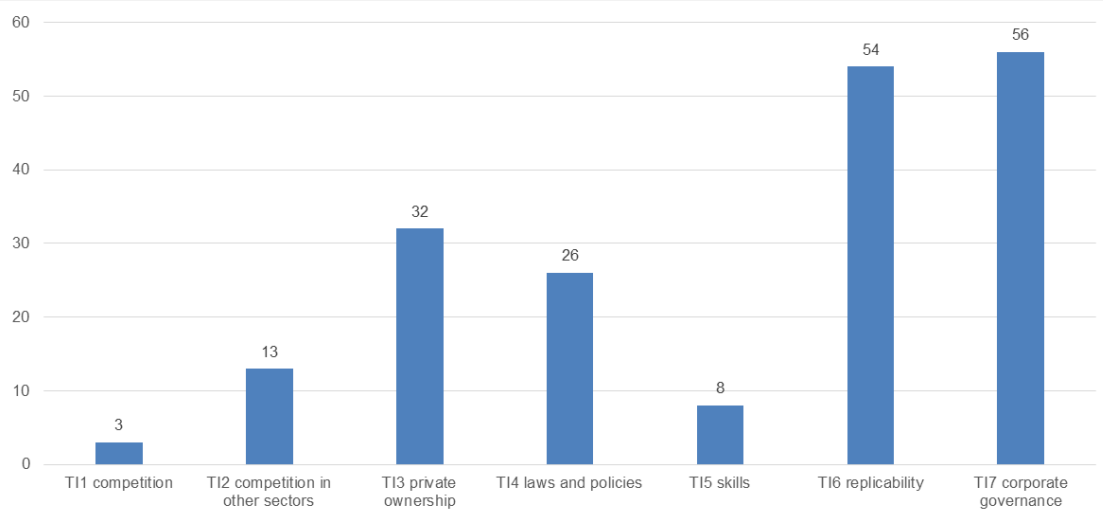
Country	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Source 7	# ops
Albania								1
Azerbaijan								2
Bosnia and Herzegovina								2
Bulgaria								2
Estonia								2
FYRoM								1
Egypt								6
Georgia								5
Greece								3
Jordan								8
Kazakhstan								8
Kosovo								1
Kyrgyz R								1
Moldova								1
Mongolia								1
Montenegro								1
Morocco								2
Poland								4
Romania								4
Serbia								1
Tajikistan								2
Tunisia								1
Turkey								9
Ukraine								6
TOTAL	3	13	32	26	8	54	56	

Source: EvD elaboration based on projects' documentation

Figure A. 12 shows to which transition impact (TI) source the operations were aimed to address at approval. Most operations are associated to more than one TI source.

The TI sources more used are: TI source 6 (Demonstration of new replicable behaviour and activities) and TI source 7 (Setting standards for corporate governance and business conduct).

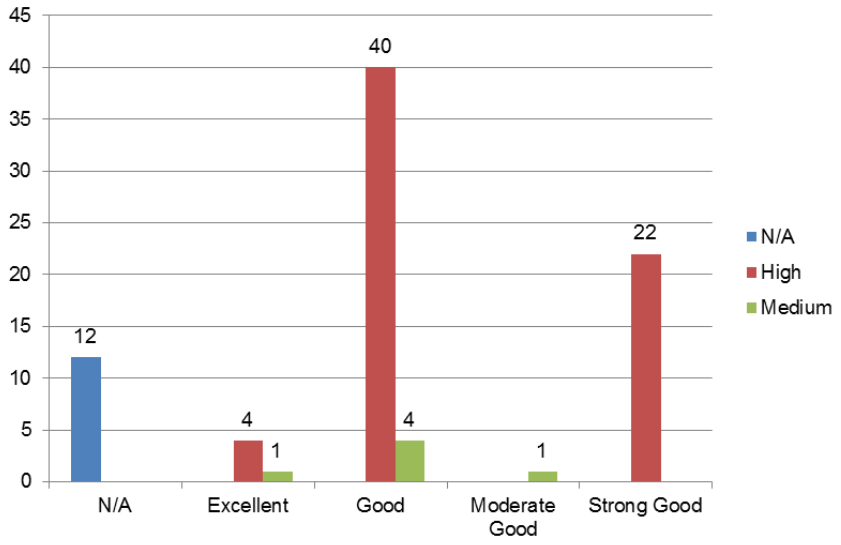
Figure A. 12: Number of energy operations by transition impact source (Dec 2013-April2017)



Source: EvD elaboration based on projects' documentation

Figure A. 13 shows the distribution of the TI at Board and related risk. Most operations were rated "Good" (44) with high or medium risks, followed by "Strong Good" (22) with high risk, and "Excellent" (5) with high or medium risks. Only one operation was rated "Moderate Good" with medium risk.[19] Operations classified as N/A are sub-operations (for which the TI score is derived from the financial framework they belong to) or extension of existing operations (for which TI is captured by the original operation).

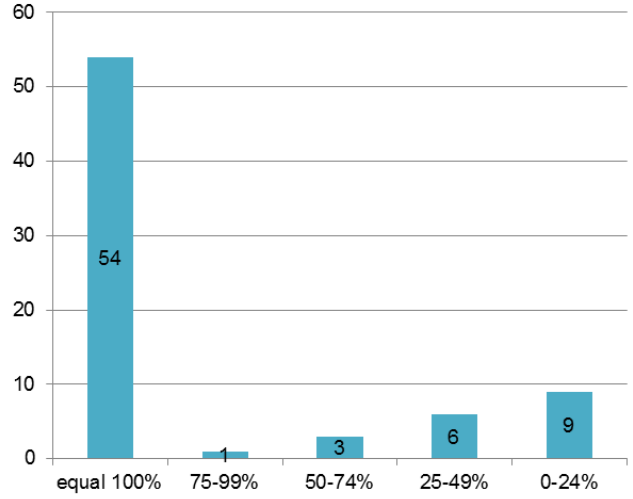
Figure A. 13: TI at approval and related risk for energy operations (Dec2013-Apr2017)



Source: EvD elaboration on DTM data

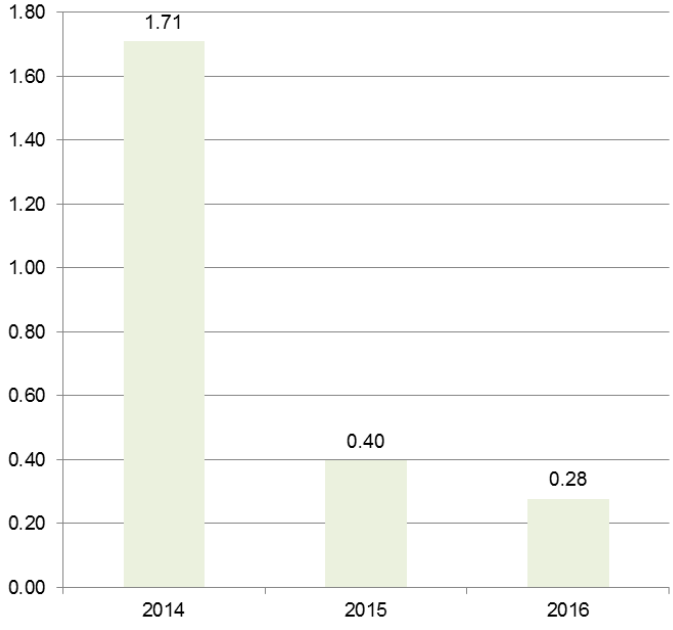
[19] Egypt: Sonker (OPID: 47010) approved in July 2015 and signed January 2016 as EBRD's contribution of US$94 for the construction and operation of the Bulk Liquid Terminal facilities and associated works required for the importation and storage of gasoil, LPG and LNG at Ain Sokhna Port on the Red Sea, Egypt.

Figure A. 14: SEI/SRI/GET share of SEI/SRI/GET qualified EBG operations approved Dec2013-Apr2017



Source: EvD elaboration of Energy Efficiency and Climate Change data

Figure A. 15: Primary energy savings toe/year from EBRD's operations (2014-2016)



Source: EvD elaboration of Energy Efficiency and Climate Change team data

Figure A. 16: Portfolio class EBG operations 2011-2016 (€M)

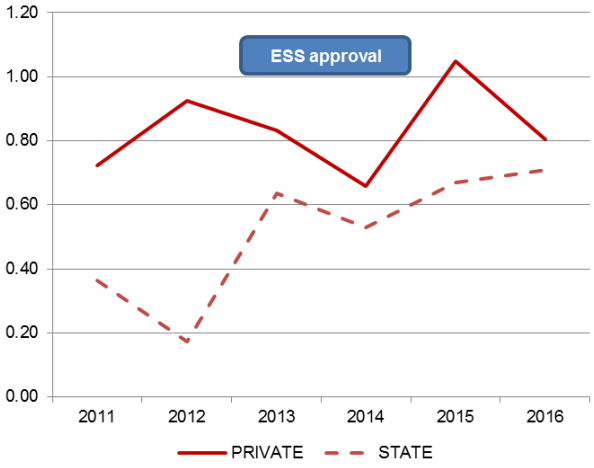
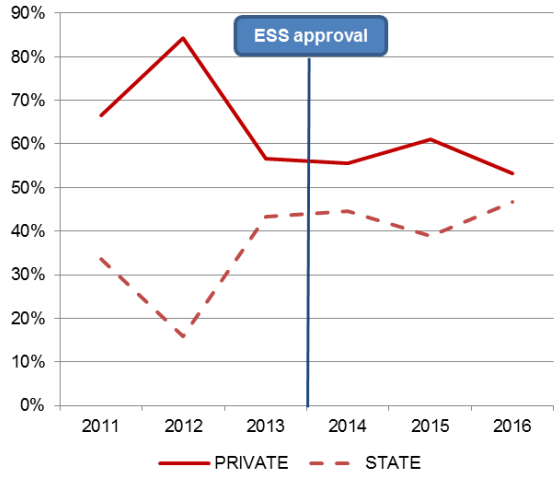
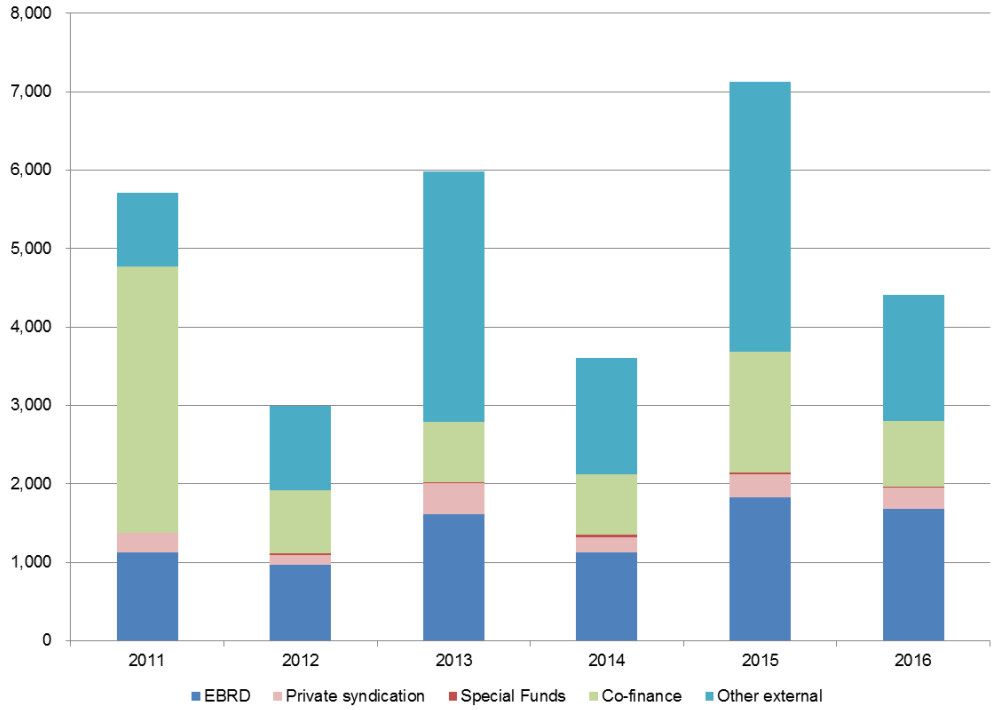


Figure A. 17: Portfolio class EBG operations 2011-2016 (%)



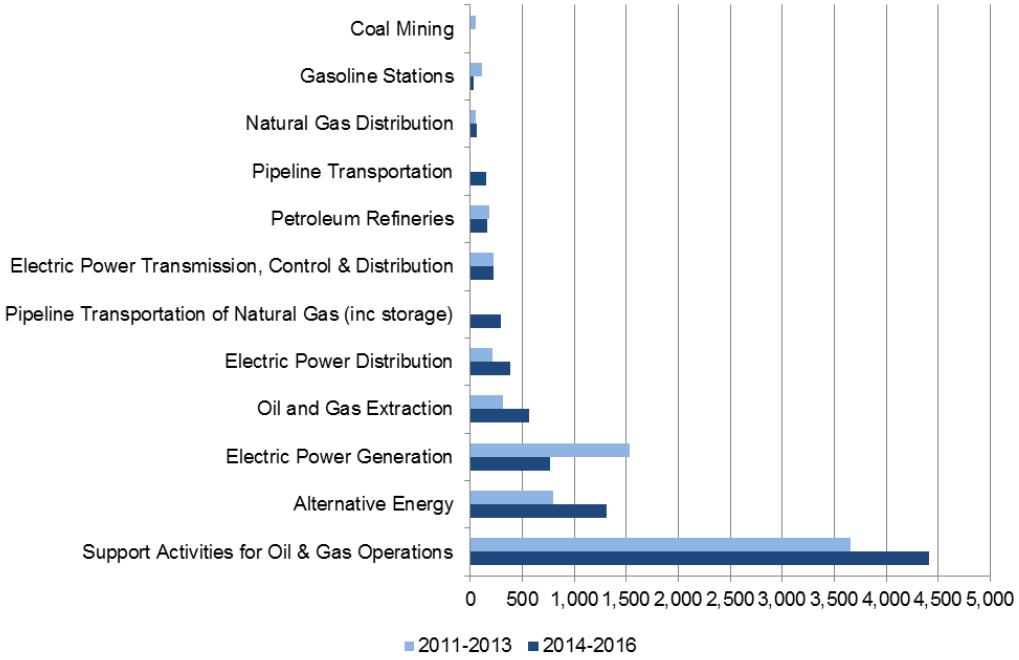
Source: EvD elaboration of DTM data

Figure A. 18: EBRD finance, private syndication, special funds finance, co-finance and other external finance over total project value (approvals 2011-16) in € million



Source: EvD elaboration of DTM data

Figure A. 19: Industry of energy operations (excluding extractive industry) by year of Board approval



Source: EvD elaboration of DTM data

Natural Resources (Dec2013-Apr2017)

The description of the **23 projects** approved and signed as Natural Resources between December 2013 and April 2017 is available in the tables and graphs below.

Table A. 11: Approved and signed operations in Natural Resources (ordered by country), Dec2013-Apr2017

Op Id	Operation Name	Country	Industry	Net Cumulative Bank Investment (€)
45599	Lukoil Overseas: Shah Deniz Gas Condensate Field Develop. II	**AZERBAIJAN**	Oil and Gas Extraction	182,840,426
46766	Lukoil Shah Deniz Stage II	AZERBAIJAN	Oil and Gas Extraction	228,550,533
46442	LEF: Horse	**BULGARIA**	Support Activities for Oil & Gas Operations	10,000,000
44491	PICO Oil and Gas	**EGYPT**	Oil and Gas Extraction	34,330,667
45184	IPR Development Facility	EGYPT	Oil and Gas Extraction	45,710,107
46386	ADES	EGYPT	Support Activities for Oil & Gas Operations	25,597,660
47010	Sonker Bunkering Company	EGYPT	Support Activities for Oil & Gas Operations	85,715,592

Op Id	Operation Name	Country	Industry	Net Cumulative Bank Investment (€)
47177	Merlon Petroleum	EGYPT	Oil and Gas Extraction	28,645,000
45286	VKG Energy Efficiency	**ESTONIA**	Petroleum Refineries	20,240,122
45236	Wissol Petroleum Georgia	**GEORGIA**	Gasoline Stations	22,855,053
45237	MCFF - TBC Bank Wissol Petroleum III	GEORGIA	Gasoline Stations	2,285,505
47822	Energean Oil	**GREECE**	Support Activities for Oil & Gas Operations	68,565,160
48358	Energean II	GREECE	Oil and Gas Extraction	18,284,043
46043	Petrom Kazakhstan	**KAZAKHSTAN**	Oil and Gas Extraction	64,908,351
48356	Bozoi Gas Storage Facility	KAZAKHSTAN	Pipeline Transportation of Natural Gas (inc storage)	256,340,441
45631	MCFF - KICB Standard Oil	**KYRGYZ REPUBLIC**	Gasoline Stations	1,325,593
48769	UCNGP	**MOLDOVA**	Pipeline Transportation of Natural Gas (inc storage)	41,000,000
44754	DIF - Sharyn Gol	**MONGOLIA**	Coal Mining	4,571,011
47182	LEF: Winstar	**ROMANIA**	Oil and Gas Extraction	10,312,200
47073	Balpet Gasoline Stations	**TURKEY**	Gasoline Stations	7,280,000
48256	TUPRAS Resource Efficiency Loan	TURKEY	Petroleum Refineries	137,130,320
42608	NAK Naftogaz Emergency Pipeline Upgrade and Modernisation	**UKRAINE**	Pipeline Transportation	150,000,000
47283	Naftogaz Gas Purchase Facility	UKRAINE	Support Activities for Oil & Gas Operations	274,260,639

Source: DTM

Table A. 12: Natural Resources – country distribution per industry (Dec 2013-Apr 2017)

Industry	Op #	NCBI (€)	% total volume	Average size (€)
Oil and Gas Extraction	**8**	**613,581,326**	**35.7%**	**76,697,666**
Azerbaijan	*2*	*411,390,959*	*23.9%*	
Egypt	*3*	*108,685,774*	*6.3%*	
Greece	*1*	*18,284,043*	*1.1%*	
Kazakhstan	*1*	*64,908,351*	*3.8%*	
Romania	*1*	*10,312,200*	*0.6%*	
Support Activities for Oil & Gas Operations	**5**	**464,139,050**	**27.0%**	**92,827,810**
Bulgaria	*1*	*10,000,000*	*0.6%*	
Egypt	*2*	*111,313,251*	*6.5%*	
Greece	*1*	*68,565,160*	*4.0%*	
Ukraine	*1*	*274,260,639*	*15.9%*	
Pipeline Transportation of Natural Gas (inc storage)	**2**	**297,340,441**	**17.3%**	**148,670,220**
Kazakhstan	*1*	*256,340,441*	*14.9%*	
Moldova	*1*	*41,000,000*	*2.4%*	
Petroleum Refineries	**2**	**157,370,442**	**9.1%**	**78,685,221**
Estonia	*1*	*20,240,122*	*1.2%*	
Turkey	*1*	*137,130,320*	*8.0%*	
Pipeline Transportation *(Ukraine)*	**1**	**150,000,000**	**8.7%**	**150,000,000**
Gasoline Stations	**4**	**33,746,152**	**2.0%**	**8,436,538**
Georgia	*2*	*25,140,559*	*1.5%*	
Kyrgyz Republic	*1*	*1,325,593*	*0.1%*	
Turkey	*1*	*7,280,000*	*0.4%*	
Coal Mining *(Mongolia)*	**1**	**4,571,011**	**0.3%**	**4,571,011**
TOTAL	**23**	**1,720,748,421**	**100%**	**74,815,149**

Source: DTM

Figure A. 20: Natural Resources – industry distribution by number of operations (Dec 2013 – Apr 2017)

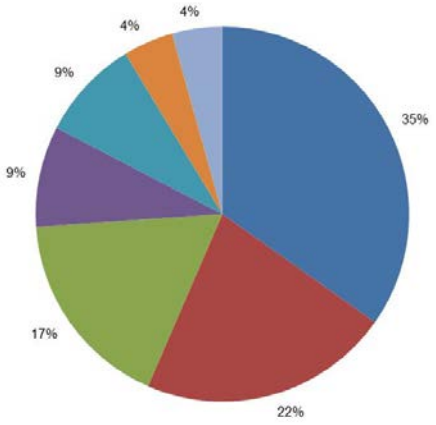
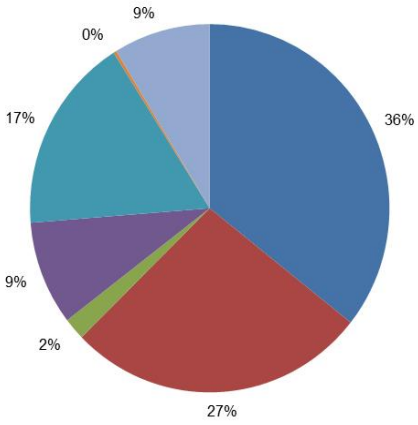
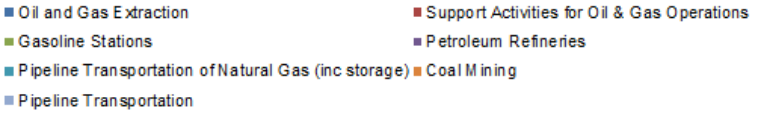


Figure A. 21: Natural Resources – industry distribution by volume (Dec 2013 – Apr 2017)





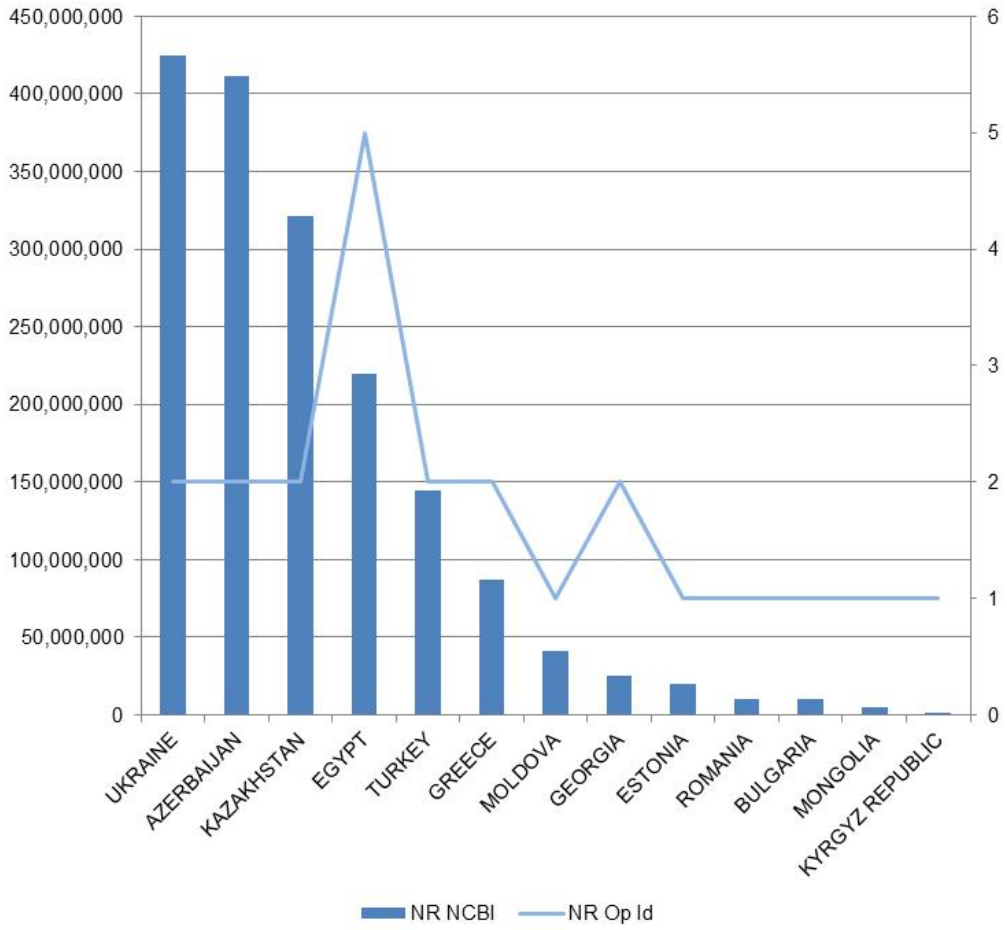
Source: EvD elaboration based on DTM

Table A. 13: Natural Resources – geographic distribution (Dec 2013-Apr 2017)

Region & Country	Op #	NCBI (€)	% total
Eastern Europe and Caucasus	**7**	**901,792,156**	**52.4%**
Azerbaijan	2	411,390,959	23.9%
Georgia	2	25,140,559	1.5%
Moldova	1	41,000,000	2.4%
Ukraine	2	424,260,639	24.7%
Central Asia	**4**	**327,145,396**	**19.0%**
Kazakhstan	2	321,248,792	18.7%
Kyrgyz Republic	1	1,325,593	0.1%
Mongolia	1	4,571,011	0.3%
Southern and Eastern Mediterranean	**5**	**219,999,025**	**12.8%**
Egypt	5	219,999,025	12.8%
Turkey	**2**	**144,410,320**	**8.4%**
Turkey	2	144,410,320	8.4%
Cyprus and Greece	**2**	**86,849,202**	**5.0%**
Greece	2	86,849,202	5.0%
South-Eastern Europe	**2**	**20,312,200**	**1.2%**
Bulgaria	1	10,000,000	0.6%
Romania	1	10,312,200	0.6%
Central Europe and Baltics	**1**	**20,240,122**	**1.2%**
Estonia	1	20,240,122	1.2%
TOTAL	**23**	**1,720,748,421**	**100.0%**

Source: EvD elaboration based on DTM

Figure A. 22: Natural Resources - Net Cumulative Bank Investment and number of projects (Dec 2013 – Apr 2017)



Source: EvD elaboration based on DWH data

Table A. 14: Natural Resources – Transition Impact at approval (Dec 2013-Apr 2017)

TI	TI Risk		
	High	Medium	TOTAL
Excellent	-	-	-
Strong Good	5	-	5
Good	10	1	11
Moderate Good	-	1	1
Satisfactory	-	-	-
Marginal	-	-	-
SUB-TOTAL	15	2	17
N/A*	-	-	6
TOTAL			23

Source: DTM

** 6 projects does not have TI rating because either are sub-operations in a Framework or because they are an extension of an existing operation*

Table A. 15: Natural Resources – SEI/SRI/GET and Environmental Category (Dec 2013-Apr 2017)

SEI/SRI/GET Category / Env Category	A	B	C	None	TOTAL
3 – Cleaner Energy Production	2	10	-	-	**12**
No SEI	1	7	1	2	**11**
TOTAL	**3**	**17**	**1**	**2**	**23**

Source: DTM

Power & Energy (Dec 2013-Apr 2017)

The description of the **61 projects** approved and signed classified as Power and Energy between December 2013 and April 2017 is available in the tables and graphs below.

In September 2017 the Energy Business Group re-classified the industry of nine operations from Electric Power Generation to Alternative Energy. The new classification is considered in the main report (section 4.3.3).

Table A. 16: Approved and signed operations in Power & Energy (ordered by country), Dec2013-Apr2017

Op Id	Operation	Country	Industry	Net Cumulative Bank Investment (€)
48132	KESH Restructuring Project	**ALBANIA**	Electric Power Generation	118,000,000
47324	ISO - EMS, SCADA and IT upgrade	**BOSNIA AND HERZEGOVINA**	Electric Power Transmission, Control & Distribution	8,500,000
47658	Elektrokrajna power distribution project	BOSNIA AND HERZEGOVINA	Electric Power Distribution	7,500,000
47632	CEZ Distribution Bulgaria	**BULGARIA**	Electric Power Distribution	69,600,000
48556	BEH Bond Issue	BULGARIA	Electric Power Generation	80,000,000
47520	DFF - CYPV Solar	**CYPRUS**	Alternative Energy	6,250,000
47697	DFF - TPT Solar	CYPRUS	Alternative Energy	4,100,000
45434	Power sector energy efficiency project	**EGYPT**	Electric Power Generation	173,698,405
47509	Graanul Invest Phase III	**ESTONIA**	Alternative Energy	42,000,000
46274	MEPSO: FYR Macedonia-Albania Transmission Phase I	**FYR MACEDONIA**	Electric Power Transmission, Control & Distribution	37,000,000

Op Id	Operation	Country	Industry	Net Cumulative Bank Investment (€)
45335	Shuakhevi HPP	**GEORGIA**	Alternative Energy*	82,141,976
45542	Dariali HPP	GEORGIA	Alternative Energy*	36,568,085
47164	MCFF - Bank of Georgia Pshavela SHP	GEORGIA	Alternative Energy*	754,217
47431	Gori Wind Power Plant	GEORGIA	Alternative Energy	9,027,954
47534	RSF - TBC Bank Lukhuni 2 HPP	GEORGIA	Alternative Energy	5,071,408
48272	Terna Energy	**GREECE**	Alternative Energy*	50,000,000
44973	Ma'an Solar Power Project	**JORDAN**	Alternative Energy	22,855,053
46421	Oryx Solar Project Jordan	JORDAN	Alternative Energy*	10,584,747
46700	EJRE Solar Project Jordan	JORDAN	Alternative Energy	22,855,053
46701	Greenland Solar Project Jordan	JORDAN	Alternative Energy	11,829,949
47412	Hussein Thermal Power Station Repowering/Zarqa	JORDAN	Electric Power Generation	67,469,926
48100	Al Rajef Wind Farm	JORDAN	Alternative Energy	63,463,337
48153	FRV Al Mafraq Solar PV Project	JORDAN	Alternative Energy	32,427,309
48322	ACWA Power Mafraq PV IPP	JORDAN	Alternative Energy	24,683,042
45618	Yereymentau Wind Farm	**KAZAKHSTAN**	Alternative Energy	40,685,453
46570	Burnoye Solar Power Plant	KAZAKHSTAN	Alternative Energy	40,859,819
46770	Kyzylorda Electricity Distribution Project	KAZAKHSTAN	Electric Power Distribution	13,077,467
47478	Atyrau Energy Project	KAZAKHSTAN	Electric Power Generation	5,663,555

Op Id	Operation	Country	Industry	Net Cumulative Bank Investment (€)
48047	Gas Network Modernisation	KAZAKHSTAN	Natural Gas Distribution	58,122,076
48308	Samruk-Energy transformation loan	KAZAKHSTAN	Electric Power Generation	100,000,000
45552	Kosovo Transmission Development Project	KOSOVO	Electric Power Transmission, Control & Distribution	30,000,000
47118	Oshelectro Rehabilitation Project	KYRGYZ REPUBLIC	Electric Power Distribution	4,000,000
47949	Tsetsii Windfarm	MONGOLIA	Alternative Energy	22,855,053
44546	Krnovo Wind Farm	MONTENEGRO	Alternative Energy	48,500,000
47466	WeBSEDFF - Hydro Bistrica SHPP	MONTENEGRO	Alternative Energy	4,200,000
47297	Khalladi Wind Farm	MOROCCO	Alternative Energy	51,824,364
47379	ONEE Hydro Rehabilitation	MOROCCO	Alternative Energy*	35,000,000
45739	Darlowo Wind	POLAND	Alternative Energy	41,619,768
46645	Radzyn Wind Farm	POLAND	Alternative Energy	22,351,590
46962	Polenergia Wind Portfolio	POLAND	Alternative Energy	29,613,864
47932	Banie Wind Farm	POLAND	Alternative Energy	73,916,204
44601	Land Power Wind Farm	ROMANIA	Alternative Energy	73,426,313
46012	Transelectrica (Bond Issue)	ROMANIA	Electric Power Transmission, Control & Distribution	8,821,259
46271	Electrica Equity	ROMANIA	Electric Power Distribution	75,155,724
46630	CEZ Distribution Romania	ROMANIA	Electric Power Distribution	62,024,479

Op Id	Operation	Country	Industry	Net Cumulative Bank Investment (€)
47007	WeBSEDFF: BGS Biogas	**SERBIA**	Alternative Energy	3,100,000
47318	EPS Restructuring	SERBIA	Electric Power Generation	200,000,000
41553	Qairokkum Hydro Power Rehabilitation Project	**TAJIKISTAN**	Alternative Energy*	45,710,107
47221	Cross Regional Power Trade	TAJIKISTAN	Electric Power Transmission, Control & Distribution	100,562,234
46575	STEG Transmission	**TUNISIA**	Electric Power Transmission, Control & Distribution	46,500,000
44596	EFELER GPP	**TURKEY**	Alternative Energy	182,840,426
47451	SEDAS Phase II	TURKEY	Electric Power Distribution	30,691,140
47631	Akfen Yenilenebilir Enerji Co (f. Project Green)	TURKEY	Alternative Energy*	105,133,245
48173	Aksa Enerji Bond (f. Project Spark)	TURKEY	Electric Power Generation	25,808,150
48279	Karacaoren HEPPs	TURKEY	Alternative Energy*	40,224,894
48387	TREDAS FINANCING	TURKEY	Electric Power Distribution	123,188,737
48791	Zorlu - Kizildere III GPP Extension	TURKEY	Alternative Energy	77,707,181
45303	USELF: Aquanova Small Hydro Projects	**UKRAINE**	Alternative Energy	2,300,000
45543	USELF: Rokytne Biogas Plant	UKRAINE	Alternative Energy	5,060,000
47355	USELF: Karpatskyi Wind Farm	UKRAINE	Alternative Energy	8,600,000
48147	USELF: Shargorod Solar	UKRAINE	Alternative Energy	5,000,000

Source: DTM

** Industry classification modified in September 2017 from Electric Power Generation to Alternative Energy*

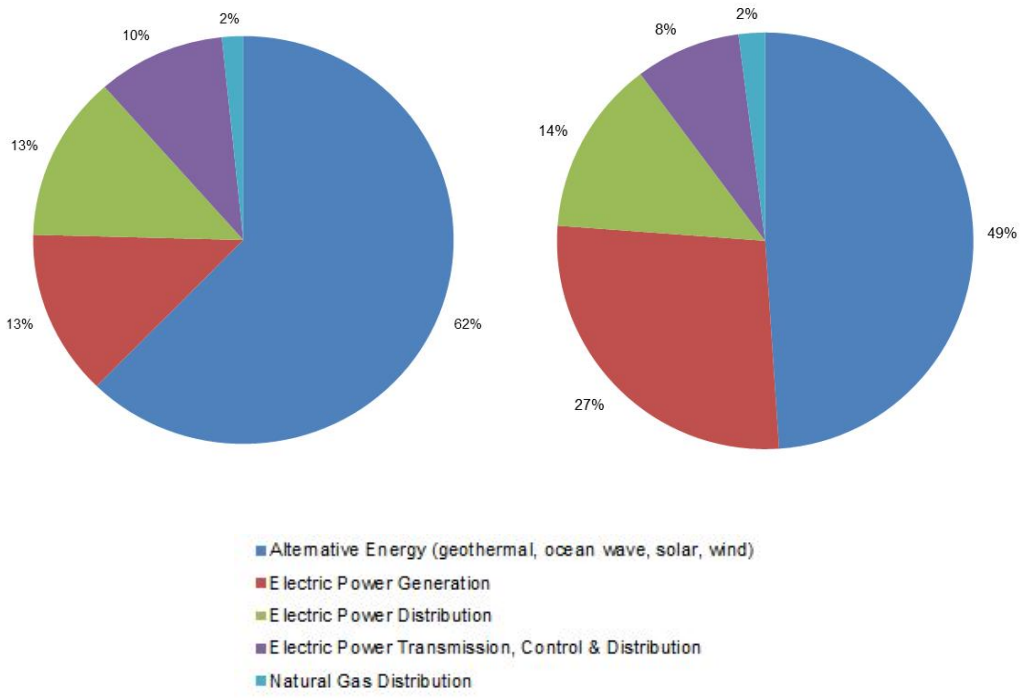
Table A. 17: Power & Energy – country distribution per industry (Dec 2013-Apr 2017)

Industry	Op #	NCBI (€)	% of total volume	Average size (€)
Alternative Energy (geothermal, ocean wave, solar, wind)	**38**	**1,385,140,411**	**48.9%**	**36,451,063**
Cyprus	*2*	*10,350,000*	*0.4%*	*5,175,000*
Estonia	*1*	*42,000,000*	*1.5%*	*42,000,000*
Georgia	*5*	*133,563,640*	*4.7%*	*26,712,728*
Greece	*1*	*50,000,000*	*1.8%*	*50,000,000*
Jordan	*7*	*188,698,491*	*6.7%*	*26,956,927*
Kazakhstan	*2*	*81,545,272*	*2.9%*	*40,772,636*
Mongolia	*1*	*22,855,053*	*0.8%*	*22,855,053*
Montenegro	*2*	*52,700,000*	*1.9%*	*26,350,000*
Morocco	*2*	*86,824,364*	*3.1%*	*43,412,182*
Poland	*4*	*167,501,425*	*5.9%*	*41,875,356*
Romania	*1*	*73,426,313*	*2.6%*	*73,426,313*
Serbia	*1*	*3,100,000*	*0.1%*	*3,100,000*
Tajikistan	*1*	*45,710,107*	*1.6%*	*45,710,107*
Turkey	*4*	*405,905,746*	*14.3%*	*101,476,436*
Ukraine	*4*	*20,960,000*	*0.7%*	*5,240,000*
Electric Power Generation	**8**	**770,640,036**	**27.2%**	**96,330,004**
Albania	*1*	*118,000,000*	*4.2%*	*118,000,000*
Bulgaria	*1*	*80,000,000*	*2.8%*	*80,000,000*
Egypt	*1*	*173,698,405*	*6.1%*	*173,698,405*
Jordan	*1*	*67,469,926*	*2.4%*	*67,469,926*
Kazakhstan	*2*	*105,663,555*	*3.7%*	*52,831,777*
Serbia	*1*	*200,000,000*	*7.1%*	*200,000,000*
Turkey	*1*	*25,808,150*	*0.9%*	*25,808,150*
Electric Power Distribution	**8**	**385,237,547**	**13.6%**	**48,154,693**
Bosnia and Herzegovina	*1*	*7,500,000*	*0.3%*	*7,500,000*
Bulgaria	*1*	*69,600,000*	*2.5%*	*69,600,000*
Kazakhstan	*1*	*13,077,467*	*0.5%*	*13,077,467*
Kyrgyz Republic	*1*	*4,000,000*	*0.1%*	*4,000,000*
Romania	*2*	*137,180,203*	*4.8%*	*68,590,101*
Turkey	*2*	*153,879,877*	*5.4%*	*76,939,939*
Electric Power Transmission, Control & Distribution	**6**	**231,383,494**	**8.2%**	**38,563,916**
Bosnia and Herzegovina	*1*	*8,500,000*	*0.3%*	*8,500,000*
FYR Macedonia	*1*	*37,000,000*	*1.3%*	*37,000,000*
Kosovo	*1*	*30,000,000*	*1.1%*	*30,000,000*
Romania	*1*	*8,821,259*	*0.3%*	*8,821,259*
Tajikistan	*1*	*100,562,234*	*3.6%*	*100,562,234*
Tunisia	*1*	*46,500,000*	*1.6%*	*46,500,000*
Natural Gas Distribution (Kazakhstan)	**1**	**58,122,076**	**2.1%**	**58,122,076**
TOTAL	**61**	**2,830,523,563**	**100.0%**	**46,402,026**

Source: EvD elaboration based on DTM

Figure A. 23: Power & Energy – industry distribution by number of operations (Dec 2013 – Apr 2017)

Figure A. 24: Power & Energy – industry distribution by volume (Dec 2013 – Apr 2017)



Source: EvD elaboration based on DTM

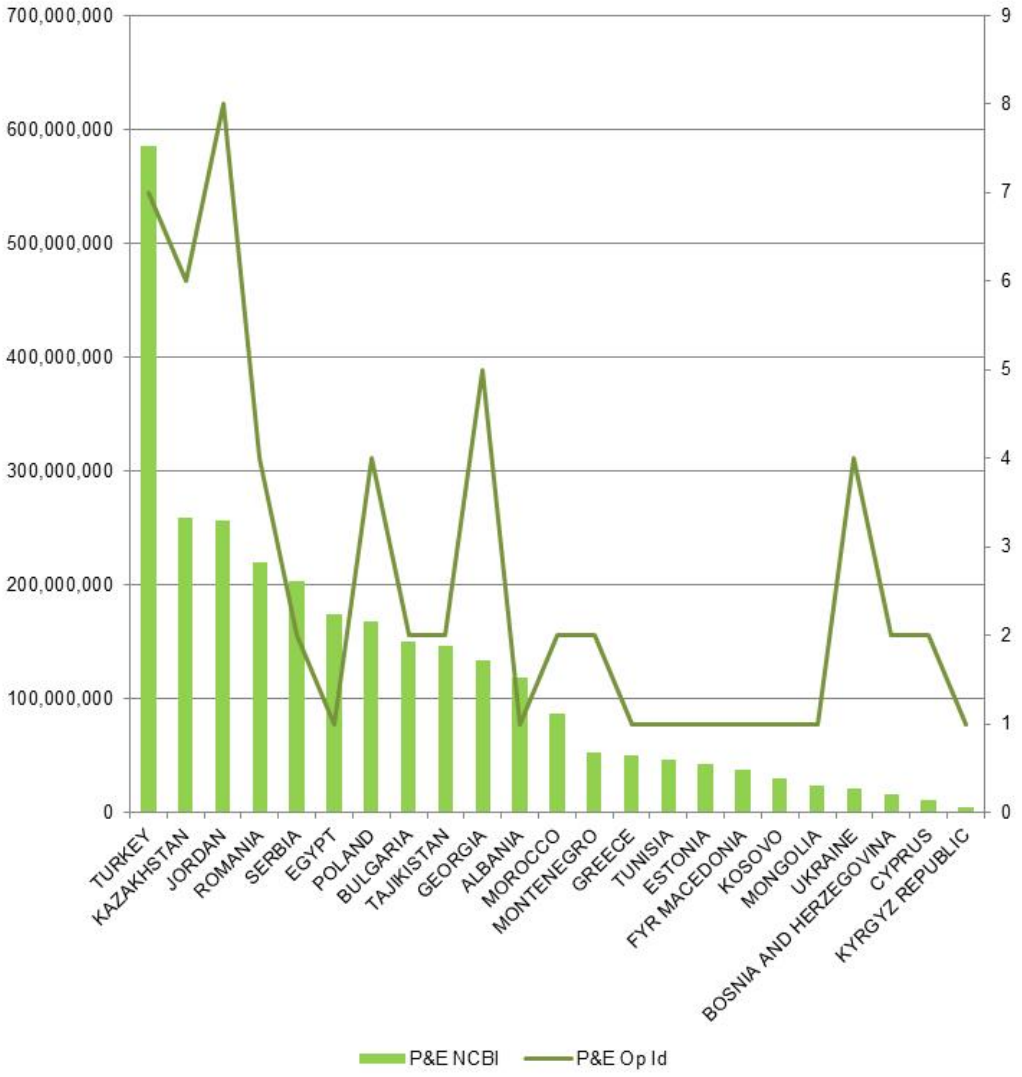
Table A. 18: Power & Energy – geographic distribution (Dec 2013-Apr 2017)

Region & Country	Op Id	NCBI (€)	%
South-Eastern Europe	**15**	**825,827,775**	**29.2%**
Albania	1	118,000,000	4.2%
Bosnia and Herzegovina	2	16,000,000	0.6%
Bulgaria	2	149,600,000	5.3%
FYR Macedonia	1	37,000,000	1.3%
Kosovo	1	30,000,000	1.1%
Montenegro	2	52,700,000	1.9%
Romania	4	219,427,775	7.8%
Serbia	2	203,100,000	7.2%
Southern and Eastern Mediterranean	**12**	**563,191,186**	**19.9%**
Egypt	1	173,698,405	6.1%
Jordan	8	256,168,417	9.1%
Morocco	2	86,824,364	3.1%
Tunisia	1	46,500,000	1.6%
Turkey	**7**	**585,593,773**	**20.7%**
Turkey	7	585,593,773	20.7%
Central Asia	**10**	**431,535,764**	**15.2%**
Kazakhstan	6	258,408,370	9.1%

Region & Country	Op Id	NCBI (€)	%
Kyrgyz Republic	1	4,000,000	0.1%
Mongolia	1	22,855,053	0.8%
Tajikistan	2	146,272,341	5.2%
Central Europe and Baltics	**5**	**209,501,425**	**7.4%**
Estonia	1	42,000,000	1.5%
Poland	4	167,501,425	5.9%
Eastern Europe and Caucasus	**9**	**154,523,640**	**5.5%**
Georgia	5	133,563,640	4.7%
Ukraine	4	20,960,000	0.7%
Cyprus and Greece	**3**	**60,350,000**	**2.1%**
Cyprus	2	10,350,000	0.4%
Greece	1	50,000,000	1.8%
TOTAL	**61**	**2,830,523,563**	**100.0%**

Source: EvD elaboration based on DTM

Figure A. 25: Power & Energy - Net Cumulative Bank Investment and number of projects (Dec 2013 – Apr 2017)



Source: EvD elaboration based on DTM

Table A. 19: Power & Energy – Transition Impact at approval (Dec 2013-Apr 2017)

TI	TI Risk		
	High	Medium	TOTAL
Excellent	**4**	**1**	**5**
Strong Good	**17**	**-**	**17**
Good	**30**	**3**	**33**
Moderate Good	-	-	-
Satisfactory	-	-	-
Marginal	-	-	-
SUB-TOTAL	**51**	**4**	**55**
N/A*	-	-	6
TOTAL			**61**

Source: DTM

** 6 projects does not have TI rating because either are sub-operations in a Framework or because they are an extension of an existing operation*

Table A. 20: Power & Energy – SEI/SRI/GET and Environmental Category (Dec 2013-Apr 2017)

SEI/SRI/GET Category / Env Category	A	B	C	None	TOTAL
1 - Corporate Energy Efficiency	-	1	-	-	**1**
3 – Cleaner Energy Production	3	15	-	-	**18**
4 - Renewable Energy	10	29	-	-	**39**
No SEI	-	3	-	-	**3**
TOTAL	**13**	**48**	**-**	**-**	**61**

Source: DTM

Table A. 21: Operations in Electric Power Distribution, Transmission, Control (Dec2013-Apr2017)

Country	Project	Short description	Portfolio class	NCBI (€ million)
Bosnia and Herzegovina	ISO - EMS, SCADA and IT upgrade	Corporate loan to ISO BiH for EMS, SCADA and IT upgrade	STATE	8.5
	Elektrokrajna power distribution project	Roll out of the metering system in order to reduce technical and commercial losses	STATE	7.5
Bulgaria	CEZ Distribution Bulgaria	Financing of capital investment programme in the distribution network.	PRIVATE	69.6
FYR of Macedonia	MEPSO: FYR Macedonia-Albania Transmission Phase I	Bitola - Ohrid 400 kV Transmission Line and Ohrid 400/110kV substation	STATE	37.0
Kazakhstan	Kyzylorda Electricity Distribution Project	Financing of rehabilitation of low and medium electricity distribution network in Kyzylorda Oblast,	STATE	13.1
Kosovo	Kosovo Transmission Development Project	Kosovo electricity transmission system reinforcement and development project	STATE	30.0
Kyrgyz Republic	Oshelectro Rehabilitation Project	Financing of rehabilitation of low and medium electricity distribution network in Kyrgyzstan	STATE	4.0
Romania	Transelectrica (Bond Issue)	Bank is participating in the first corporate bond issue of Transelectrica.	STATE	8.8
	Electrica Equity	Participation in an IPO of Electrica	STATE	75.2
	CEZ Distribution Romania	Senior loan to CEZ Distribution Romania	PRIVATE	62.0
Tajikistan	Cross Regional Power Trade	Finance the high-voltage transmission	STATE	100.6

Country	Project	Short description	Portfolio class	NCBI (€ million)
		infrastructure in Tajikistan		
Tunisia	STEG Transmission	Sovereign guaranteed loan to the state electricity and gas utility	STATE	46.5
Turkey	SEDAS Phase II	SEDAS Phase II financing	PRIVATE	30.7
Turkey	TREDAS FINANCING	Financing of TREDAS' capital investment programme for 2016 - 2020	PRIVATE	123.2

Source: DTM

Renewable energy operations

Table A. 22: Operations in renewable energy approved Dec2013-Apr2017

Country	Project *(*sub-operations)*	Short description	Installed capacity (MW)	NCBI (€ million)
Solar power				
CYPRUS	DFF - CYPV Solar*	7.4 MW solar photovoltaic project involving three solar parks in Cyprus	7.4	6.3
CYPRUS	DFF - TPT Solar*	4.5 MW solar photovoltaic project involving two solar parks in Cyprus	4.5	4.1
JORDAN	Ma'an Solar Power Project	24 MW Ma'an Solar Power Project by SunEdison (Alcazar)	24.0	22.9
JORDAN	Oryx Solar Project Jordan*	10MW solar power project by Scatec in Jordan	10.0	10.6
JORDAN	EJRE Solar Project Jordan	20MW solar power project by Scatec Solar and EJRE in Jordan	20.0	22.9
JORDAN	Greenland Solar Project Jordan	10 MW Ma'an Solar Power Project by Scatec and Greenland	10.0	11.8
JORDAN	FRV Al Mafraq Solar PV Project	USD 36 million secured limited recourse loan to SPV in Jordan for 50 MW Solar PV power plant	50.0	32.4
JORDAN	ACWA Power Mafraq PV IPP	USD 27 million secured limited recourse loan to SPV in Jordan for 50 MW Solar PV power plant	50.0	24.7
KAZAKHSTAN	Burnoye Solar Power Plant	50 MW solar power plant in Zhambyl region, Kazakhstan	50.0	40.9

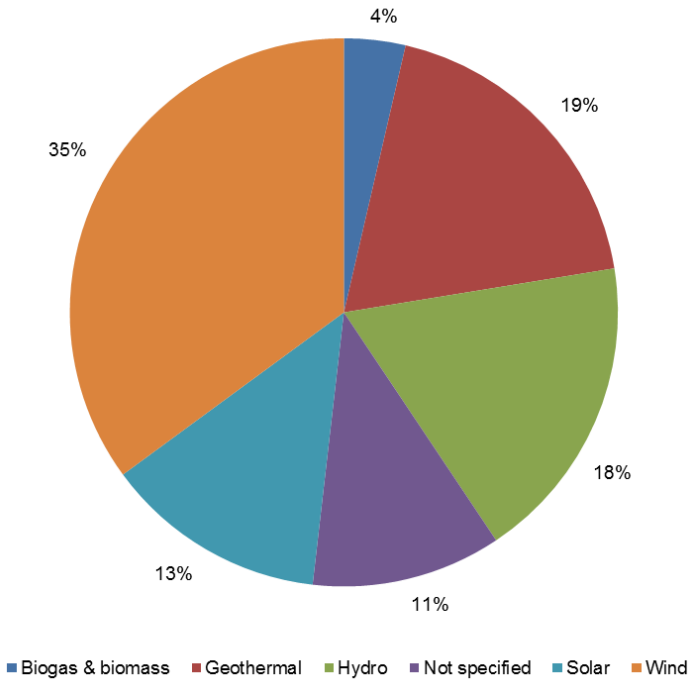
Country	Project *(*sub-operations)*	Short description	Installed capacity (MW)	NCBI (€ million)
UKRAINE	USELF: Shargorod Solar*	Financing the construction of 9.5MW solar plant in Ukraine	9.5	5.0
		Subtotal Solar	**246.4**	**181.6**
Wind power				
GEORGIA	Gori Wind Power Plant (STATE)*	Development, construction and operation of the 20 MW Gori wind power plant .	20.0	9.0
JORDAN	Al Rajef Wind Farm	82 MW Al Rajef Wind Project by Alcazar Energy Partners	82.0	63.5
KAZAKHSTAN	Yereymentau Wind Farm (STATE)	Wind farm construction	50.0	40.7
MONGOLIA	Tsetsii Windfarm	50 MW windfarm in Mongolia	50.0	22.9
MONTENEGRO	Krnovo Wind Farm	Krnovo Wind Farm	72.0	48.5
MOROCCO	Khalladi Wind Farm*	Construction of a wind farm in Morocco	120.0	51.8
POLAND	Darlowo Wind	Financing for one of the largest wind farms in Poland	74.0	41.6
POLAND	Radzyn Wind Farm	Senior debt financing for wind farm construction	39.0	22.4
POLAND	Polenergia Wind Portfolio	Portfolio of 2-3 windfarms in Poland to be constructed by Polenergia	100.0	29.6
POLAND	Banie Wind Farm	Phase 1 (50MW Kozielice wind farm) of the 192MW Banie wind farm located in North-western Poland	50.0	73.9
ROMANIA	Land Power Wind Farm	Construction of the 84 MW LP wind farm in the Tulcea region of Romania	84.0	73.4
UKRAINE	USELF: Karpatskyi Wind Farm*	Development, construction and operation of 21MW wind farm in Lviv region in western Ukraine.	20.7	8.6
		Subtotal Wind	762.0	485.9
Hydro power				
GEORGIA	RSF - TBC Bank Lukhuni 2 HPP*	Construction of 17.2 MW Lukhuni 2 HPP in northern Georgia.	17.2	5.1
GEORGIA	Shuakhevi HPP	Construction and operation of Shuakhevi HPP	185.0	82.1

Country	Project *(*sub-operations)*	Short description	Installed capacity (MW)	NCBI (€ million)
GEORGIA	Dariali HPP	Construction and operation of Dariali HPP	108.0	36.6
GEORGIA	MCFF - Bank of Georgia Pshavela SHP*	Construction of a greenfield 2.0 MW run-of-river small hydro power plant Pshavela SHP in Kakheti	2.0	0.7
MONTENEGRO	WeBSEDFF - Hydro Bistrica SHPP*	Long term loan under the WeBSEDFF to finance the construction of Hydro Bistrica SHPP.	3.5	4.2
MOROCCO	ONEE Hydro Rehabilitation (STATE)	EUR35m sovereign loan to ONEE, the State-owned utility, to finance the rehabilitation of small hydro	N/A	35.0
TAJIKISTAN	Qairokkum Hydro Power Rehabilitation Project (STATE)	Hydro rehabilitation	126.0	45.7
TURKEY	Karacaoren HEPPs	Financing of Gama Enerji's acquisition of Karacaoren HPP	N/A	40.2
UKRAINE	USELF: Aquanova Small Hydro Projects*	Development, construction and operation of small hydro power plants with total capacity of 1.7MW	1.7	2.3
		Subtotal hydro	**443.4**	**251.9**
Geothermal, biomass and biogas				
ESTONIA	Graanul Invest Phase III	Construction of two new Combined Heat & Powers (CHPs)	10 MWe, 28 MW heat	42.0
SERBIA	WeBSEDFF: BGS Biogas*	A loan of up to EUR 4.5 million for a **biogas** project of 1.95 MW capacity in Serbia	2.0	3.1
TURKEY	EFELER GPP	Construction of a 123.3MW Greenfield **geothermal** power plant	123.3 + refinancing of 47.4	182.8
TURKEY	Zorlu - Kizildere III GPP Extension	Construction of a 70MW greenfield **geothermal** power plant.	66.5	77.7
UKRAINE	USELF: Rokytne Biogas Plant*	Development, construction and operation of a **biogas** power plant with initial total capacity 2.25MW	2.3	5.1
Other alternative energy				
GREECE	Terna Energy	Corporate loan to finance the	48.0	50.0

Country	Project (*sub-operations)	Short description	Installed capacity (MW)	NCBI (€ million)
		development, construction and operation of renewable energy power plants in Greece		
TURKEY	Akfen Yenilenebilir Enerji Co (f. Project Green)	Acquisition of a stake in a portfolio of electricity generation assets.	N/A	105.1

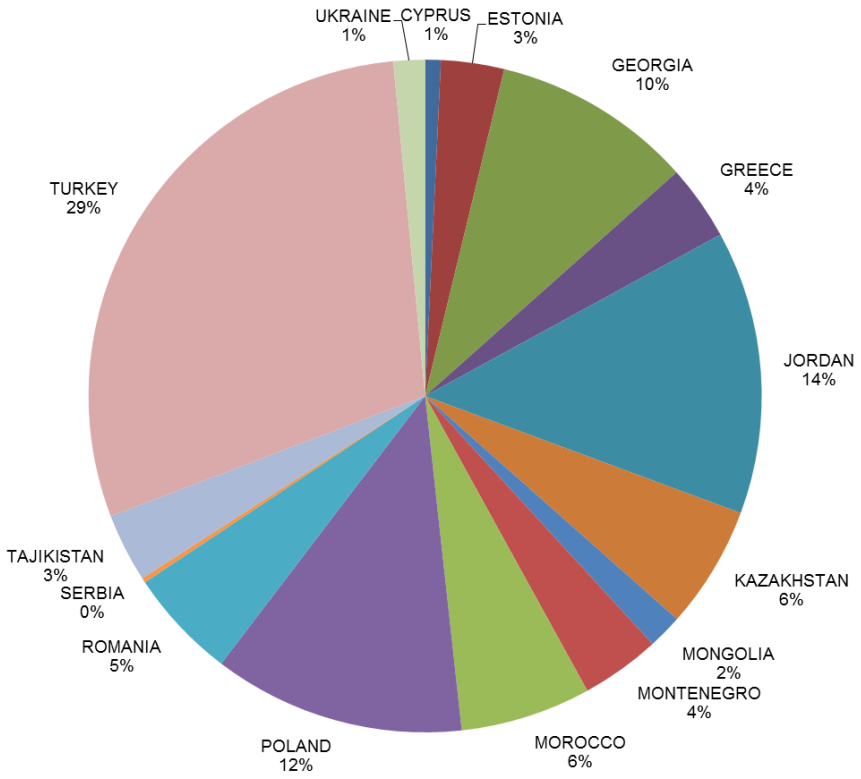
Sources: Installed capacity from EBRD Energy Business Group; NCBI from DTM

Figure A. 26: EBRD's investments (volume) in renewable energy projects (Dec 2013-Apr 2017)



Source: EvD elaboration from DTM

Figure A. 27: Cumulative EBRD investments in renewable energy by country of operation (Dec 2013-Apr 2017)



Source: EvD elaboration from DTM

Transactional TCs

Transactional TCs include resources marked in the data provided to the evaluation team mainly for: **project preparation, project implementation support, and capacity building**.

The evaluation team has considered only the transactional TCs linked to investments part of the population under consideration (investments approved from December 2013 until April 2017). The information provided below does not include all other TCs implemented by the EBRD in the period under review, but related to investments approved before December 2013 or not approved yet.

Table 1: Natural Resources operations – transactional TCs per country

Country	€
Greece	1,352,465
Ukraine	583,218
Regional	82,465
Mongolia	72,306
Egypt	56,195
Kosovo	17,060
TOTAL	**2,163,709**

Source: EBRD databases

Table 2: Natural Resources operations – donor distribution of transactional TCs

Donor	€
Not available	1,585,000
Ukraine Multi Donor	292,918
EBRD SSF	157,290
Japan	57,131
EU	56,195
ETC Fund	15,175
TOTAL	**2,163,709**

Source: EBRD databases

Table 3: Power & Energy operations – transactional TCs per country

Country	€
Tajikistan	7,577,486
Kazakhstan	2,785,922
Albania	2,705,640
Egypt	1,918,049
Kosovo	1,880,000
Morocco	1,595,000
Tunisia	1,274,000
Kyrgyz Republic	1,096,410
Turkey	397,598
Serbia	324,130
Georgia	276,790
Ukraine	212,999
Bosnia and Herzegovina	94,970
Jordan	66,320
Cyprus	47,500
Regional	11,400
TOTAL	**22,264,214**

Source: EBRD databases

Table 4: Power & Energy operations – donor distribution of transactional TCs

Donor	€
EBRD SSF	8,188,118
Austria	5,476,212
Italy	2,197,640
SEMED Multi Donor	1,728,965
CIF	1,445,978
Japan	1,000,000
UK	998,920
EU	397,598
Norway	396,000
GEF	231,283
Not available	138,500
Germany	65,000
TOTAL	**22,264,214**

Source: EBRD databases

Non-transactional – policy dialogue

For the purpose of tacking stock of policy dialogue activities carried out in the framework of the ESS, the evaluation team has considered data provided by EBG, E2C2, LTT, ESD, and EBRD TC databases. As in 2013-2014 the EBRD has modified the way in which TC information are captured, the evaluation team has done its **best effort** to consolidate those information and assumes that what has been provided covers the almost the entirety of activities carried out. A snapshot of the policy dialogue activities is provided below.

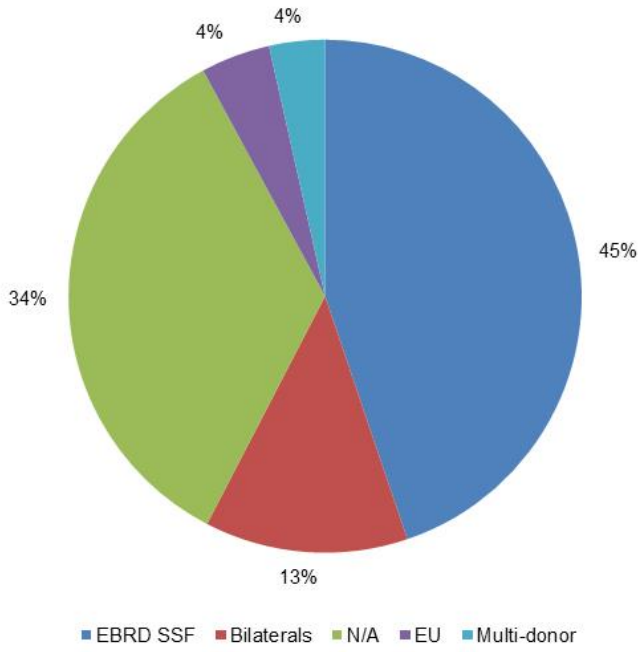
Additional policy dialogue activities carried out by the Bank in the sector and not funded by donors has complement the data – in particular from the country visits in Jordan and Kazakhstan. Information about those activities are not captured systematically in any EBRD system.

Table 5: Energy related technical cooperation activities marked as non-transactional (2013-2017)

Country	€ committed	Number of TCs
Egypt	4,577,360	10
Regional	2,605,015	9
Kazakhstan	1,248,083	5
Turkey	1,043,479	6
Montenegro	877,212	4
Kyrgyz Republic	770,000	1
Mongolia	765,000	5
Bulgaria	750,000	1
Tajikistan	679,952	3
Georgia	667,999	4
Morocco	530,000	4
Jordan	471,450	2
Ukraine	398,840	3
SEMED	350,100	2
Moldova	349,900	2
Romania	300,220	3
Bosnia and Herzegovina	249,280	2
Albania	210,860	1
Poland	199,575	3
Tunisia	194,990	2
Belarus	180,000	1
Kosovo	157,205	1
FYR Macedonia	150,000	1
Serbia	139,990	1
Croatia	61,652	1
TOTAL	**17,928,162**	**77**

Source: EvD elaboration based on EBRD documents and databases

Figure 1: Donors for energy related technical cooperation activities marked as non-transactional (2013-2017)



Source: EvD elaboration based on EBRD documents and databases

Grants

Data about non-TC grants (concessional co-finance, incentive payments, investment grants) are not systematically captured in EBRD databases. This is a Bank wide issue that EvD has raised in multiple occasions, never addressed in full. Therefore data about non-TC grants provide rely on the documentation shared by different teams.

Table A. 23: Non-TC grants linked to EBRD operations supply-side of energy approved Dec13-Apr17

Op Id	Operation	Country	Concessional co-finance €	Incentive payment €	Investment grant €	EBRD finance €
46274	MEPSO: FYR Macedonia-Albania Transmission Phase I	FYR MACEDONIA			12,000,000 (European Western Balkans Joint Fund)	37,000,000
45236	Wissol Petroleum Georgia	GEORGIA		375,418 (FINTECC/GEF)		22,855,053
45618	Yereymentau Wind Farm	KAZAKHSTAN			18,000,000 (CIF)	40,685,453
46570	Burnoye Solar Power Plant	KAZAKHSTAN			13,780,000 (CIF)	40,859,819
46770	Kyzylorda Electricity Distribution Project	KAZAKHSTAN		1,056,000 (GEF)	963,585 (FINTECC)	13,077,467
47118	Oshelectro Rehabilitation Project	KYRGYZ REPUBLIC			1,000,000 (EU IFCA)	4,000,000
47949	Tsetsii Windfarm	MONGOLIA			702,675 (Japan)	22,855,053
47297	Khalladi Wind Farm	MOROCCO	9,643,984 (CIF)		9,380,220 (CIF)	51,824,364

Op Id	Operation	Country	Concessional co-finance €	Incentive payment €	Investment grant €	EBRD finance €
41553	Qairokkum Hydro Power Rehabilitation Project	TAJIKISTAN			9,801,297 (PPCR)	45,710,107
45303	USELF: Aquanova Small Hydro Projects	UKRAINE	1,000,000 (CTF)			2,300,000
45543	USELF: Rokytne Biogas Plant	UKRAINE			2,030,000 (CIF)	5,060,000
47355	USELF: Karpatskyi Wind Farm	UKRAINE	4,000,000 (CTF)		3,000,000 (CIF)	8,600,000
48147	USELF: Shargorod Solar	UKRAINE	1,900,000 (CTF)			5,000,000
		TOTAL	**16,543,984**	**1,431,418**	**70,657,776**	**299,827,316**

Source: EBRD Banking and non-Banking teams

Annex 8 People interviewed

Table A. 24: Interviews related to the EBRD's engagement in the energy sector in Jordan (24-28 Sep 2017)

Institution	Position
EBRD client	
ACWA Power	CEO
AES Levant Holdings BV Jordan	Operation & Maintenance Director
	Health, Safety & Environment Manager
Alcazar Energy	Senior Advisor to CEO & President of the Royal Association for the Conservation of Nature
	Site Engineer (Al-Rajef)
	Owner's Engineer for Lahmeyer (Al-Rajef)
	Site Engineer (Ma'an)
	Site Representative
EJRE - European Jordanian Renewable Energy Projects	CEO
FRV	Managing Director Middle East
	Head of Structured Finance and M&A
Scatec Solar	CFO Jordan, Assets Manager
	Electrical Engineer for Israr Engineering (Ma'an and Oryx)
Government & Institutions	
Energy & Minerals Regulatory Commission (EMRC)	Deputy Chairman of EMRC & Vice President of MedReg
Ministry of Energy and Mineral Resources (MEMR)	Secretary General
National Electric Power Company (NEPCO)	Managing Director
Other stakeholders	
EcoPeace Middle East	President, Jordanian Director
	Deputy Director
Energy Sector Capacity Building (ESCB)	Resident Advisor
	Chief of Party
EDAMA - Energy Water and Environment Association	Chairman
	Vice Chair
EU Delegation	Programme Manager, Energy Environment and Climate Change
National Energy Research Center (NERC)	Manager of Energy Efficiency and Solar Thermal Energy
Overseas Private Investment Corporation (OPIC)	Managing Director, Asset Management
	Director, Structured Finance
Royal Association for the Conservation of Nature (RSCN)	Bird Researcher
USAID	Project Management Specialist Economic Development & Energy Office
PFIs & Private Equity	
Arab Bank	Vice President, Head of Project & Structured Finance
Catalyst Private Equity Fund	Managing Director
	Finance Director
Jordan Kuwait Bank (JKB)	Project Finance & Syndications Manager, Credit Department

Institution	Position
EBRD	
SEMED - Amman (Jordan)	Director, Regional Head of Eastern Mediterranean
SEMED - Amman (Jordan)	Associate Banker
SEMED - Amman (Jordan)	Associate Banker
Economics, Policy & Governance	Principal Economist, Sector
Economics, Policy & Governance	Analyst, Economics

Table A. 25: Interviews related to the EBRD's engagement in the energy sector in Kazakhstan (16-20 Oct 2017)

Institution	Position
EBRD Clients	
Burnoye Solar 1	Chief SPP Burnoye
KazTransGas Aimak	Deputy of General Director
Kyzylorda Electricity Distribution Company (KREC)	Deputy Head
KEGOC	Managing Director for Finance and Accounting
	Head of Business Initiatives and Projects Department
Intergas Central Asia - ICA	Deputy General Director
Samruk Energy	Senior Manager of Corporate Finance
	Head Portfolio Management Department
	Head Transformation Office
	Director of Human Resources Department
Government and Institutions	
Financial Settlement Center (FSC)	General Director
Committee for Regulation of Natural Monopolies and Competition Protection (KREM)	Deputy Chairman
Ministry of Energy	Head of RES Department
Other stakeholders	
Centre for Sustainable Production and Consumption (CSPC)	President
ForteBank	Deputy Chairman of the Management Board
International Finance Corporation (IFC)	Senior Energy Specialist
KPMG	Partner, Power & Utilities
	Manager, Deal Advisory
	Partner, Head of Management and Risk Consulting in Kazakhstan
	Associate Director, Head of financial management and treasury group
	Manager, Deal Advisory
USAID	Energy Projects Coordinator, Economic Development Office
	Project Management Specialist, Economic Development Office
EBRD	
Kazakhstan	Director, Head of Kazakhstan
	Associate Director, Head of Astana

Institution	Position
ERCCA	Director, Head ERCCA
	Associate Director, Senior Banker
	Associate Director, Senior Banker
	Principal Banker
	Principal Banker
	Associate Banker
	Analyst
	Analyst
Russia	Associate Banker
Economics, Policy and Governance	Associate Director, Lead Economist Central Asia
	Analyst

Table A. 26: Interviews in EBRD HQ related to the EBRD's engagement in the energy sector

Department	Position
Board of Directors offices	
EIB	Director
Spain	Director
Sweden	Director
	Alternate Director
	Adviser
Switzerland	Director
	Adviser
Client Services - Banking	
Energy, Russia, Caucasus & Central Asia	Director, Head of Energy Russia Caucasus & Central Asia
	Associate Banker
Energy & Natural Resources	Director, Strategy
	Principal Banker, Policy & TC, Energy
	Principal, Adviser to MD
Natural Resources	Director, Head of Natural Resources
Power & Energy	Director, Head of Power&Energy Utilities
	Associate Director, Senior Banker
Poland – Energy coordination	Associate Director, Senior Banker
Energy Efficiency and Climate Change	Deputy Head of E2C2
Client Services – Policy and Partnerships	
Country and Sector Economics	Director, Sector Economics and Policy
	Principal Economist, Sector
	Principal Economist, Sector
Country Strategy Coordination & Results Management	Director
	Associate Director, Deputy Director
Vice President Policy and Partnerships	Associate Director, Advisor to VP
Finance and Operations	

Department	Position
Financial Strategy and Business Planning	Associate Director, Corporate Planning
Risk and Compliance	
Environment & Sustainability Department	Associate Director, Head ESD Operations
	Associate Director, Senior Environmental Adviser
Risk Policy and Analytics	Director, Risk Policy & Analytics
Central Services	
Legal Transition	Principal, Principal Counsel
	Associate