



KfW Development Bank

»»» Evaluation update

Evaluating the role of financial cooperation in enabling private sector investments in renewable energies

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Executive Summary

Fostering sustainable development along with CO₂ emission reductions requires harnessing the renewable energy potential to a larger degree. Energy provision is one key prerequisite to foster economic growth and economic participation. It is explicitly included in the Sustainable Development Goals as well as the United Nations Sustainable Energy for All initiative. At the same time the Paris Agreement sets the goal to keep the increase in global average temperature well below 2°C, preferably to 1.5°C, as compared to pre-industrial levels. One particular mean to this end is strengthening the role of renewable energies, since energy-linked emissions account for around 60 % of global greenhouse gas emissions (UN 2018).

Renewable energy sources are at the center of the transition towards a sustainable and less carbon-intensive environment but have not yet achieved a meaningful level. The share of renewables in global energy production is expected to grow by one fifth up to 12.4 % in 2023 (IEA 2018). The fastest growth will be in the electricity generation sector where around 30 % of the demand could then be satisfied by renewable sources. However, the predicted growth levels are not enough to reach the targets set in the Paris Agreement. Instead, renewable energy expansion would need to be at least six times faster than it currently is to ensure a meaningful transformation from a fossil fuel based to a renewable energy based economy (IRENA 2018). One reason for the lacking growth levels are the high costs associated with the development of renewable energy sources in developing countries. This is partly due to the high front-loaded cost structure inherent to most large renewable energy projects. Consequently, risk mitigation instruments and structures are key components to facilitate private capital investments in the renewable energy sector in developing countries (KfW 2020).

Closing the financial gap for renewable energy investments is one of the key targets of financial development cooperation actors, namely Development Banks like KfW (DBs) and Development Finance Institutions like DEG and OeEB (DFIs). Both institutions can act as intermediaries between private capital and the developing countries to crowd in the amount of capital needed while reducing the risk private enterprises face. The DBs' mandates primarily focus on financing public entities to lift constraints like structural barriers that private investors often face in developing countries. Examples include an unfavorable policy and regulatory environment or capacity constraints of key public stakeholders. DFIs focus on directly financing private sector projects using their own or borrowed financial means. Particularly renewable energy projects in developing countries often lack risk-taking investors as well as investors that can provide technical assistance in addition to financial means. DFIs are able to provide those otherwise lacking factors to create long-term viable projects.

KfW, DEG and OeEB analyzed their own portfolios, interviewed project managers and investment teams and conducted a survey with country and regional managers on the ground in order to obtain an overview of renewable energy financing approaches and to identify synergies. In this study, KfW, DEG and OeEB compare their portfolios and financing approaches with regards to Renewable Energy (RE) investments. The idea of a joint study is

- a) to show how development cooperation with a focus on public and private partner institutions, finances different RE projects worldwide
- b) how the approaches differ and
- c) if synergies between the different institutional types already exist or can be created

Interviews with project managers at all respective institutions were conducted and complemented by a structured survey of country and regional managers working on the ground.

KfW¹ and the two DFIs, DEG and OeEB, invest in all regions worldwide with a particular spatial overlap in Sub-Saharan and Latin American countries. The portfolio overview shows that the institutions are engaged in low income, lower middle income and upper middle income countries. Due to its more political mandate, KfW has a stronger focus on African and low

¹ KfW here and in the following refers to the KfW Development Bank, as does the abbreviation development bank (DB). Note that DEG is part of the KfW Banking Group but is not linked to KfW Development Bank.

income countries, but there are also a number of countries where only DFIs are active. A large number of countries find engagements of DFIs and KfW at the same time. Emerging markets and economically more developed countries for respective regions compose the group of countries with most overlaps. More concretely, this includes all BRICS countries excluding Russia and more developed countries such as Chile and Peru in Latin America, Kenya, Ghana, Egypt and Namibia in Africa or India, Indonesia, Vietnam and Pakistan in Asia. With regard to investment volume and number of projects, the overlaps are particularly pronounced in China, India, South Africa, and Brazil: while DBs work with public institutions there, DFIs finance the private sector.

KfW as a development bank plays an important role in improving the basic preconditions for operations of DFIs like DEG and OeEB and a better-targeted cooperation could increase the benefits. A cooperation between the DBs and DFIs is beneficial and the existing structure could be further deepened. Although no interviewee wants a cooperation for the mere purpose of a cooperation, interviewees at the respective institutions pointed to several common interests: Firstly, market framework conditions such as political stability and a reliable regulatory framework are essential preconditions for successful investments into renewable projects at all stages. More concretely, the existence of transmission lines and well-equipped off-takers (capabilities and financial management) are the foundations for private engagement. This links directly to the respective mandates of KfW, DEG and OeEB. Therefore, the mandates of the institutions are interlinked and better market regulatory frameworks and public infrastructure (supported by KfW) are contributing to more investment protection for private sector sponsors (clients of DEG and OeEB). More regular exchange between the institutions will contribute to the implementation of the private investments needed to reach the targets of the Paris Agreement.

In the survey, country and regional managers at KfW Development Bank and DEG highlighted the increasing importance of RE projects and pointed to an even larger need for mobilization of private investments in the upcoming years. Around 80 % of the respondents reported that renewable energy is a topic with high (41 %) or some (39 %) relevance for policymakers in the partner countries they work in. There is a particular focus on higher middle income countries where renewable energy is actively supported by policymakers (87 %). Around 68 % of the respondents assume that private investment in RE projects will either increase or strongly increase in the next three years. This presents a great opportunity for cooperations between DBs, DFIs and private investors to mobilize private capital. Only 12 % of all respondents indicate that cooperations with other DFIs are not possible, while a large majority of 70 % agrees that such cooperations are generally possible. This hints toward the potential for a larger number of potential cooperations than currently in place. The possibility of such cooperation, however, varies by income level of the country and by region. In general, the higher a country is placed in the income category, the more likely it is that such cooperation is considered possible.

While existing cooperations in on-grid projects between DFIs and KfW Development Bank have a focus on upper middle income countries, answers for off-grid projects report a high potential for future cooperation in projects in Sub-Saharan Africa and low income countries. Overall, 32 % of the respondents at KfW Development Bank report that on-grid projects with private investors or DFIs have already been finished or are still ongoing in the countries in which they operate. Another 18 % are currently preparing such projects and another 32 % acknowledge a general possibility but with no concrete plans. Those respondents that confirm projects have already been conducted or are ongoing are more likely to be found in higher middle income countries (41 %) and in Latin America and the Caribbean (50 %) compared to low income countries (26 %) and South and East Asia (20 %). Regarding cooperations on off-grid energy projects, only around nine percent of the respondents mention that projects are ongoing or were finished in their respective countries with the vast majority of 48 % reporting potentials for future collaborative projects. The highest potential for projects is found in low income countries (70 %), where also the lowest share of ongoing or finished projects is reported and in the Latin America and Caribbean region (56 %), as well as in Sub-Saharan Africa (57 %). Given that experience with off-grid projects involving private enterprises in Sub-Saharan Africa is rare, this result offers potential to better involve private enterprises.²

² See Bensch et al. (2018) for one example of an impact evaluation involving private enterprises.

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1. Motivation

The Sustainable Development Goals (SDGs), the Paris Agreement, jointly with the Nationally Determined Contributions (NDCs), set ambitious targets to reduce CO₂ emissions for the purpose of sustainable development. Energy provision is seen as one of the key prerequisites to foster economic growth and economic participation. It is explicitly included in the Sustainable Development Goal 7 (“Affordable and Clean Energy”) and is the basis for the United Nations Sustainable Energy for All (SEforALL) initiative. Both put a particular emphasis on the role of renewable energies as they are asking to double the share of renewable energies within the energy mix.

The Paris Agreement, as well as an ever-growing energy demand add pressure towards a quicker transition to renewable energy. The Paris Agreement sets as its goal to keep the increase in global average temperature well below 2°C, preferably to 1.5°C, as compared to pre-industrial levels. One particular focus to achieve this is on renewable energies, since energy-linked emissions account for around 60 % of global greenhouse gas emissions (UN 2018). The International Energy Agency (IEA, 2018) highlights that energy demand in developing countries will increase by 45 % until 2040. In the same timeframe, demand in developed countries is projected to decrease by 4 %. Sustainable energy provision in developing countries will hence be central to achieve the goals set in the Paris Declaration. In the subsequent process, an increasing number of countries have strengthened the important role renewable energy production has by proposing respective indicators in their Nationally Determined Contributions (IRENA 2016).

Renewable energy sources are at the center of the transition towards a sustainable and less carbon-intensive environment, but have not yet achieved a meaningful level. The share of renewables in global energy demand is expected to grow by one fifth and predicted to reach 12.4 % in 2023 (IEA 2018). The fastest growth will be in the electricity sector, where around 30 % of the demand could then be satisfied from renewable sources. However, the predicted growth levels are not enough to reach the targets set within the Paris Agreement. Instead, renewable energy expansion would need to be at least six times faster than it currently is to ensure a meaningful transformation from a fossil fuel based to a renewable energy based economy (IRENA 2018).

Reasons for the lacking growth levels are that the implementation of renewable energy sources in developing countries is particularly costly and private capital involvement is needed. Financially, the path to reach the goals set in the Paris Declaration in time would require an additional increase in spending in the energy sector by 30 % from the currently planned USD 93 trillion to around USD 120 trillion until 2050 (IEA/OECD and IRENA 2017). The high amount needed for this endeavor to succeed can only be financed with a more profound private sector involvement encouraged by an enabling public policy environment. While the public sector’s share is unlikely to grow, OECD, IEA and IRENA (2017) note that private investments remain below their potential. One explanation is the high front-loaded cost structure inherent to most large renewable energy projects. Consequently, risk mitigation instruments and structures are important to facilitate private capital investments in the renewable energy sector, particularly in developing countries.

Closing the financial gap for renewable energy investments is one of the key targets of financial development cooperation actors, namely Development Banks (DBs) and Development Finance Institutions (DFIs). Both types of institutions can act as intermediaries between private capital and the developing countries to crowd in the amount of private capital needed, while reducing the risk private enterprises face. The DBs’ mandates primarily focus on financing public entities, lifting constraints like structural barriers that private investors often face in developing countries. Examples include an unfavorable policy and regulatory environment or capacity constraints of key public stakeholders.³ Furthermore, DBs finance the extension of publicly owned renewable energy generation capacity and transmission infrastructure. The DFIs focus on directly financing private sector projects with crowded-in third party capital. Particularly renewable energy projects in developing countries often lack risk-taking investors, as well as

³ A description of financing instruments within the financial cooperation, such as policy based lending, in the context of renewable energies can be found in Probst (2020).

investors that can provide technical assistance in addition to financial means. DFIs are able to provide those otherwise lacking factors to create long-term viable projects.

KfW Development Bank, DEG and OeEB analyzed their portfolios, interviewed project managers and identified countries with high, medium and low potential for private capital mobilization in developing countries. In this study, these institutions join forces to compare their portfolios and financing approaches with regards to Renewable Energy (RE) investments. The idea of a joint study is to show how development cooperation with a focus on public and private partner institutions respectively finances different RE projects worldwide, how the approaches differ and, most importantly, if synergies between the different institutions exist or can be created. Interviews with project managers at all respective institutions were conducted and complemented using external data. This allows to identify countries with private mobilization potential.

2. Methodology

The study provides an overview of KfW Development Bank's, DEG's and OeEB's activities in the renewable energy sector and discusses potential synergies between the institutions. The following methodologies were employed:

Desk research: Portfolio data and region-specific analysis of the portfolios. Data on renewable energy investments is collected for each institution including financial commitment size, investment countries, technologies and electricity produced in Gigawatt hours. For each institution, mapping the information is seen as the first outcome of the study. It primarily serves to discuss the relevance and potential foci of each institution's portfolio. In addition, it provides the basis to screen for potential institutional overlaps in countries and regions. These overlaps can support discussions with investment staff in the qualitative survey and inform the section on potential countries/regions, where synergies are most promising.

Desk research on specific projects with potential synergies in order to provide more insights on concrete projects. Single case studies are not part of this study. However, single project or client evaluations provided relevant background information, which were identified and displayed in specific info boxes in the text to enrich the more general findings from desk research on literature and data, as well as the survey results.

Survey I: Qualitative interview with specific investment/project management staff on all hierarchical levels and at country office level of KfW Development Bank/DEG⁴. When discussing potential synergies, the experience of the institutions' investment staff is the most relevant information source. A survey questionnaire covers questions on the extent to which already built infrastructure by financial cooperation players, like KfW Development Bank, are relevant for Development Finance Institutions, and vice versa. It also provides evidence on the importance other players have for development finance institutions during acquisitions, finance and exit. The results of these interviews are relevant for explaining the underlying mechanisms. Surveys were conducted in all three organizations covering all hierarchical levels, technologies, as well as different levels of experience. In all three organizations a sample was taken according to the criteria experience, hierarchical level, technology, and region. At KfW, six project managers with experience in the sector ranging from four to more than 20 years were interviewed and one country manager in southern Africa. At DEG, five interviews were conducted, two of which with heads of departments and three with Senior Investment Managers (acquisition and project structuring)⁵. All interviewees had long-term experience in project finance and most explicitly in renewable energies (5-20 years). They cover all DEG investment regions and all technologies, with strong limitations on investments made in grid connection and rehabilitation of energy sector infrastructure. At OeEB, six interviews took place: two heads of departments, the head of the portfolio management team, two senior investment managers who deal with most of the renewable energy projects and one senior manager of the Private Equity Department. All interviewees had between eight and ten years of experience in the area of renewable energy and covered all regions, with a specific expertise in the Europe and Central Asia as well as South Asian region. All technologies and project types (wind, water, solar, geothermal, grid connection) except for grid rehabilitation were covered by OeEB staff members.

Survey II: A regular KfW Bank wide survey, the "Trendmonitor Entwicklungs- und Schwellenländer"⁶, is used to assess the potential for collaboration, in addition to investment potential into renewable energies. A total set of five questions was asked to KfW Development Bank and DEG country office directors worldwide and provided their view on relevance of RE investments and potential for collaboration between Development Banks and DFIs. The virtual competence center within KfW Research conducts the Trendmonitor survey bi-annually. In the wake of this study, the most recent Trendmonitor had a particular focus on renewable energy. In addition to the standard set of questions, the focus of the September 2019 survey was on perceived future private investments and their potentials in the renewable energy sector. Overall, 105 participants out of 106 eligible country directors and managers completed the survey and answered questions on this topic for the country they work in. The vast majority of 92 participants worked for KfW Development Bank, while 13 came from DEG.

⁴ OeEB has no country offices.

⁵ DEG does not have a funding strategy that explicitly focuses on RE investments of Funds, therefore, these investment teams were kept out of the interviewee selection.

⁶ "Trend monitor on developing and emerging countries"

3. A view into the renewable energy portfolios of the three institutions

The first step of analyzing financing approaches with regards to Renewable Energy investments is to understand where and how these investments are realized. This allows the general assessment of the status quo and historical development of the investments by institution. Further, it enables a discussion on geographical and investment-specific overlaps of the portfolios.

Mapping the investment spheres, i.e. the regional distribution of the institutions' engagements, points to countries where synergies are currently realized or have the highest potential of being created. In the comparison of the investment spheres, three different analysis types are examined, revealing different insights:

- i) KfW Development Bank and at least one DFI are invested: The identified overlaps provide a first hint on where it is currently at least in theory possible to work together since both institutional types are present.
- ii) KfW Development Bank invested, but no DFI yet: These countries are the ones, where KfW's activities may facilitate the market entry of a DFI in the future.
- iii) DFIs invested, but not KfW Development Bank: For these countries, discussing the needs of the private sector with DFIs could provide impulses for potential future engagement by KfW, within the boundaries defined by the German Federal Government.

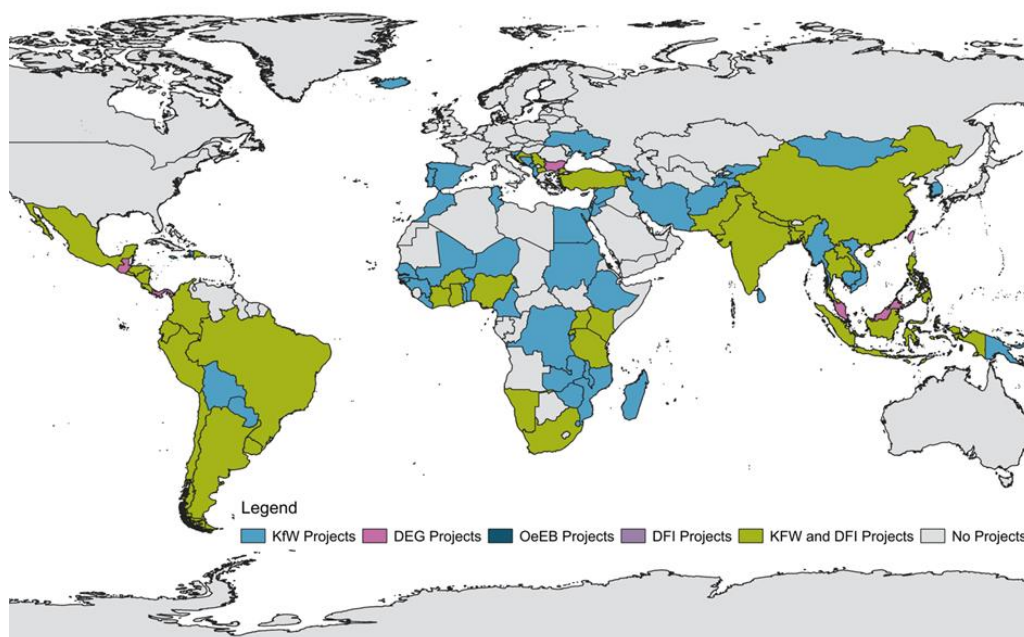
The three institutions KfW, DEG and OeEB have different preconditions for their investments. Comparing portfolios should not lead to the notion that the three institutions could select investment countries or investment foci without any preconditions. KfW's engagement depends in most cases on bilateral agreements between the German government and the government of the partner developing country. Hence, the role of the German Federal Ministry for Economic Cooperation and Development (BMZ) and its budget funds is of high importance, followed by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The DFIs' engagement, however, depends on the actual private sector related investment opportunities in a country. Another precondition is the necessity of diversifying a DFI's portfolio to manage portfolio risks well. Thus, in some countries investment opportunities are constrained by an investment limit.

The focus of the analysis is on the geographical (country) investment spheres, as technologies (wind, hydro, solar etc.) are by comparison not as relevant for joint financing opportunities. DFIs are able to finance almost all technologies, as long as it is a bankable private sector investment with a lack of commercial financing. In most cases, DFI investments are grid-connected power producers using a renewable energy technology. Partly, off-grid solutions are also financed, while an investment in transmission and distribution networks is rare. In comparison, KfW's portfolio is more diverse as non-profitability is no exclusion criterion and it is rather aligned to working with partners from the public sector. The KfW portfolio, hence, includes engagement in more upstream investments, such as distribution networks or grid rehabilitation. Furthermore, KfW is involved in power production using renewable energy sources like hydro- or solar power, and, to a small extent, off-grid solutions. As an additional financing tool, KfW invests in renewable energy via structured funds and other financial intermediaries, such as public development banks for instance, but is also becoming more engaged in framework programs such as GET Fit (i.e. top-up premiums on feed-in tariffs within a larger support scheme).

Mapping apples and pears: the DFIs' data consist of their currently financed companies (debt and equity) in 2018, while KfW displays its new commitments of the last 10 years. While KfW reports the country and the volume of the pledged investments in totals per year, the DFIs report the yearly investments. This difference in data is necessary as both data sets show what the study would like to compare: the countries where the institutions are currently active. For DFIs this is best represented by their current portfolios, while for KfW, with the dependency on bilateral government agreements, the new commitments of the last ten years are the better proxy as its time lag in data allows to identify KfW's preparatory role.

Figure 1
Portfolio comparison between DEG (DFI), KfW, and OeEB (DFI)

Project Distribution of all Institutions



Source: Data provided by DEG, KfW, OeEB until 31.12.2018.
Note: DFI Projects are those where DEG and OeEB are both active.

KfW and the two DFIs, DEG and OeEB, invest in all regions worldwide. Figure 1 displays the portfolios of the three institutions. All three partners are engaged in regions and countries with low income, lower middle income and upper middle income countries. KfW has a stronger focus on African and low income countries, but there are also a number of countries where only DFIs are active.

While the preconditions of KfW and the DFIs DEG and OeEB differ, data shows that engagements in the same countries exist. Emerging markets and economically leading countries for respective regions compose the group of countries with most overlaps. More concretely, this includes all BRICS countries excluding Russia and more developed countries such as Chile and Peru in Latin America, Kenya, Ghana, Egypt and Namibia in Africa or India, Indonesia, Vietnam and Pakistan in Asia. With regard to investment size and number of projects, the overlaps are particularly pronounced in China, India, South Africa, and Brazil. When disaggregating to pairs the number of overlapping countries between DEG and OeEB drops to zero but is still sizable for KfW and DEG with 33, while due to the low number of countries of OeEB involvement, the overlap of KfW and OeEB is minimal with 1. However, there are three countries where all three actors overlap namely Serbia, Costa Rica and India.

On a regional level, it is particularly the Sub-Saharan and Latin American countries where DFIs and KfW are active in parallel. To create an improved overview of the allocation of projects per institution and whether a co-location exists, Table 1 summarizes the portfolios of the institutions by region⁷. Additionally, it indicates if more than one institution has a project within a country. Thus, the regions with the greatest overlap in portfolios of KfW and DEG are Sub-Saharan Africa and Latin America. In Sub-Saharan Africa, there are a total of 10 countries in which DEG and KfW implement projects, while in Latin America the number is as high as 12. Furthermore, Table 2 expands the information of Table 1 and provides further information about the total number of projects allocated in each region⁸. Considering the information of Table 2, the

⁷ The data includes projects from the portfolios of KfW, DEG and OeEB, each of which can be clearly assigned to an individual country. Therefore, projects that cannot be clearly assigned to a single country, for example because they are implemented on a supra-regional basis, are excluded from the presentation.

⁸ As Table 2 is an extension of Table 1, the same data was used in both cases. Accordingly, Table 2 presents the number of projects that can be clearly attributed to a single country and summarizes them by region. However, in addition to the projects listed in Table 2, there are a further 106 projects that are not assigned to a single country and therefore excluded from the presentation: Most of these are implemented by KfW (58 in Sub-Saharan Africa, 3 in Asia/ Oceania, 11 in Europe/

distribution of the portfolio shows that for Sub-Saharan Africa in total 145 projects and Latin America 139 projects exist that can be attributed to the portfolio of either KfW or DEG. It is also worth mentioning that despite the overlap of KfW and DEG portfolios in only 7 Asian countries, there are a total of 147 projects in the region. Accordingly, most projects are implemented in Asia.

Table 1
Number of countries per region with acting institution

	DEG	KfW	KfW & DEG	KfW & OeEB	DEG & OeEB	All Institutions
Sub-Saharan Africa	1	21	10	0	0	0
Asia	2	11	7	1	0	1
Europe/ Caucasus	1	11	4	0	0	1
Latin America	2	4	12	0	0	1
North Africa/ Middle East	0	7	0	0	0	0
Total	6	54	33	1	0	3

Table 2
Number of projects per region with acting institution

	DEG	KfW	KfW & DEG	KfW & OeEB	DEG & OeEB	All Institutions
Sub-Saharan Africa	2	130	145	0	0	0
Asia	2	91	147	30	0	100
Europe/ Caucasus	4	135	57	0	0	29
Latin America	7	24	139	0	0	6
North Africa/ Middle East	0	130	0	0	0	0
Total	15	510	488	30	0	135

Portfolio overlaps identify potential synergies between the institutions, but KfW could have a potential role in facilitating market entry of DFIs in more African countries. The identified overlaps provide a first hint on potential collaborations. Some best-case scenarios where synergies between the DFIs and KfW have already been realized are the projects Bujagali dam in Uganda and Olkaria geo-thermal power in Kenya.⁹ Besides overlaps, Figure 1 also shows that KfW's portfolio covers more African countries than the DFIs'. The reason is that the generally low development level of the respective countries constrains private sector investments in renewable energies severely.

DFIs invested, but not KfW: A set of only 9 countries see DFI but no KfW investments. Opportunities for cooperation are limited for these countries as political reasons are in most cases the major constraint, preventing KfW to invest. This could either be due to donor harmonization efforts or political priorities set by the BMZ, KfW's major stakeholder. Yet, in case investments in those countries are desired, KfW and BMZ could consider the existing DFI expertise.

Box 1: GET Fit approach

The GET FIT approach harnesses private investors' potential to invest in the construction of new renewable energy generation capacity. It was first implemented by KfW and partners in Uganda and is currently being rolled out in several other Sub-Saharan countries. In Uganda, currently 17 small-scale power plants are under construction or have been finalized under this scheme.

There are four main components of the GET FIT approach:

Caucasus, 21 in Latin America and 7 supra-regional). The remaining projects are investments by DEG (2 in Asia / Oceania, 1 in Latin America) and OeEB (3 projects without regional classification).

⁹ For a description on Olkaria and Bujagali see Box 3.

- a) Providing technical assistance, meaning a specifically targeted assistance for feed-in tariffs implementation guidelines, standardized contract documentation and competitive procurement processes.
- b) Establishing a guarantee framework to insure against political and commercial risks
- c) Installing a results based premium payment per kWh that should incentivize the developers to enter the market
- d) Improving grid connection by giving grants and concessional loans to additionally make sure that the plants can be connected to the grid in time

All principles aimed at reducing the risk for the private developers, either by directly removing the risk or other barriers, e.g. by mainstreaming regulation and contract documents. As of 2019, a total of 9 projects had already been completed in Uganda and 8 more were under construction. Once all power plants are connected, they should increase the electricity supply in Uganda by 20 %, most importantly using renewable energies. This has the additional advantage of promoting renewable energy technologies. One of the successes of the program is that it is now replicated in other countries, such as Mozambique and Zambia but also that the government in Uganda is scaling it up.

Source: KfW (2019). Project information – Energy Supply in Uganda.

Note: Probst et al. (2020) conduct an evaluation on the impact of the Get Fit approach with regards to additionality and productivity increases.

4. Investments Staff's View: Qualitative Survey Results

The experience of the institutions' investment staff is a key source of information for discussing potential synergies. A qualitative survey with investment managers and managers of the market departments enabled this study to scrutinize the working realities of the three institutions. Further, the respondents shared their ideas for collaboration including their expert opinions of the potential to realize such collaborative ideas.

The qualitative survey conducted covered three main areas:

- 1) prerequisites for the institutions' RE investments
- 2) existing collaboration with other institutions
- 3) potential for future collaboration

The following section describes the main messages of these three survey areas.

4.1. Prerequisites for RE investments

Political stability and a reliable regulatory framework are the basis for any investment decision concerning renewable energies. All interviewees of the three institutions agreed on these two prerequisites. The interviewees did not define the relevance of political stability further - it is evident that the likelihood of a government or nation being destabilized or overthrown by violent means or nation- or region-wide violence and terrorism hinders potential investments. Political stability is thus a necessary condition of any investment decision.¹⁰

Within the regulatory framework, a bankable Power Purchase Agreement (PPA) and a good off-taker quality are the most relevant investment prerequisites. Only the DEG and OeEB interviewees went into this level of detail, but all agreed on the relevance of these two aspects. The statement best describing a PPA's relevance is: "The typical and bankable PPA is easy to finance." This shows how investors can be attracted, as the PPA is a direct function of the regulatory framework, which is the basis for any private sector RE project's business case. For instance, it defines clearly the responsibilities of the off-taker and the details of quantities and prices for the produced electricity. In case there is any severe regulatory risk, e.g. no adequate compensation scheme in case of state-driven nationalization, risk rises quickly to a point where investors shy away from the project.

Box 2: Off-taker definition

Bulk power is sold under a PPA (Power Purchase Agreement) between the contract party producing electricity (Independent Power Producer) and typically an electricity utility. This utility or this electricity buyer is the 'power off-taker' or 'off-taker'. Depending on the market, there may be multiple off-takers. In regulated markets, there may be only one in the area or country. Most of the time, off-takers are public or semi-public entities. Off-takers are so strongly depending on the regulatory framework that this study considers a good off-taker a prerequisite for RE investments.

A good off-takers' quality manifests itself in its low default risk and its ability to pay its bills regularly. As off-takers are mostly public entities, their default risk is strongly linked to the country risk. There is, hence, a liquidity risk that describes the off-taker's ability to pay its bill on time. A major delay of the only electricity buyer can risk the liquidity of the whole RE project, as the project itself then lacks income to pay its bills. Possibilities for mitigating such risks include off-taker guarantees as well as ameliorating either the liquidity or the default risk. One interviewee mentioned the case of an off-taker in Cameroon. Only by a World Bank guarantee the risk of an off-taker default decreased to a level that the related RE projects became bankable. For the interviewees, the off-taker risk is a very common bottleneck for investment opportunities.

¹⁰ See also Probst (2020).

For example, in Africa, only a handful of countries are well known for good regulation and off-takers.

The institution-specific prerequisites for KfW Development Bank and the DFIs are the guidance by BMZ and the quality of the project sponsors and the size of potential investments, respectively. For KfW DB, the guidance and political focus of BMZ is the most crucial element of investment decisions. A project's sponsor (or project executing agency) is the institution that launches and owns the specific investment project, e.g. a hydropower project. For DFIs, the quality of this project sponsor or owner, its credit worthiness, experience, financial resources, etc. are of course crucial. It determines the financial viability of the project and the technical realization. A general deal-breaker can further be the size of the potential investment and with it the ticket-sizes for investors. A ticket-size is the amount of money an investor needs. To cover internal costs, DFIs require a certain ticket-size for market-based and additional financing. The interviewees indicate that many deals are often too small for DFIs with regard to investment size in order to cover transaction costs. This also results from the fact that DFIs cannot finance one hundred percent of a deal, but less than fifty percent. With a minimum DFI ticket size of around EUR 15-25 million, the overall investment needs to be around 40-60 million EUR. For solar projects, this is often on the upper limit of such investment opportunities. The topic of environmental and social risks is also present in project appraisals. However, the interviewees agreed that today these issues are in general well managed by a good quality sponsor. In addition, KfW DB - with grant financing of the German government - in some cases is in the position to finance Accompanying Measures to strengthen a sponsor's own social and environmental risk management system.

4.2. Status quo of institutional cooperation between DBs and DFIs

Partnering with peers is frequent, DBs with DBs and DFIs with DFIs. Horizontal cooperation, i.e. among different DFIs on the one side and among different DBs on the other side, is common: Regular partners of KfW in that case are EIB, AFD, DFID, or the EU, while DEG/OeEB partners with other DFIs like the IFC, FMO or Proparco. In the interviews identified partnerships of DFIs with DBs, such as the Interamerican Development Bank or the African Development Bank are mainly partnerships of DFIs with the private sector arms of these DBs. For KfW DB, the interviews also highlighted that besides the fact that political will is a prerequisite for investment decision, the selection of partners is often, too. This is mostly the case for national and regional development banks with a strong focus on capacity and institution building.

Partnering of DBs and DFIs is scarce and not systematic. All three institutions have contacts with their non-peers (DFIs with DBs and vice versa) on different levels ranging from sporadic to regular meetings. Examples for successful collaboration reach from joint investment projects to interlinked or follow-on activities. A KfW DB and DEG example is the geothermal project Olkaria in Kenya, where KfW took the lead in supporting research and test drillings as well as a first investment phase, while DEG took over when the private sector got involved in increasing production capacity.

Box 3: Examples of KfW and DEG collaborations in Kenya and Uganda

Geothermal Energy in Kenya

Olkaria III is a good example of the way DEG and KfW Development Bank work in tandem. The Olkaria III project is one of the first solely privately funded and developed projects in Africa. One of its success factors is a combination of public and private financing with a risk mitigation component (Micale et al. 2015). This is, partly, ensured through KfW taking on the exploration risk of geothermal power projects, while DEG ensured the private sector involvement. Particularly for the case of Olkaria III, DEG was responsible for all of the debt financing, which increased the originally planned plant capacity by a factor of 3.7 (Financing Development 2010).

Hydropower in Uganda

Similarly to the geothermal development of Olkaria III in Kenya, the Bujagali Dam in Uganda is a Public Private Partnership. It is a 250 MW hydropower plant at the White Nile in Uganda, which is operated by Bujagali Energy under a 30-year Power Purchase Agreement. The plant currently generates around 45 % of the electricity in Uganda. The private and the government sides were brought together by KfW and DEG. With its commitment, KfW ensured

the bankability of the project. DEG was able to attract the interest from private sponsors by providing substantial capital for the private sponsors.

Cooperation of KfW DB, DEG and OeEB: scarce, partly some knowledge exchange, but no systematic cooperation in project screening or implementation. A cooperation between DEG and OeEB is valued from the OeEB side but considered comparatively less efficient from a DEG perspective due to low cooperation frequency compared to cooperation with the larger DFIs. Interviewees regretted that cooperation between KfW and DEG with regard to common financing is currently not appreciated as past projects proved to be highly successful.

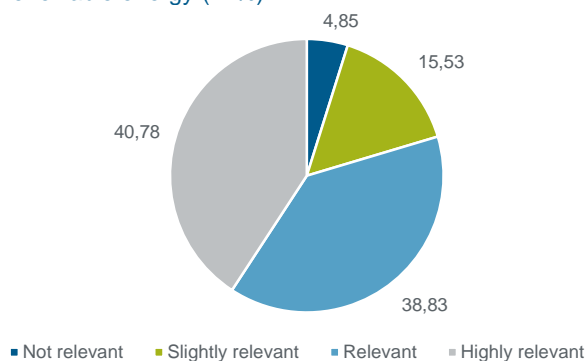
For smaller DFIs, partnering with larger players is of high value – an insight in the horizontal cooperation of OeEB's and DEG. For OeEB, partnering with other DFIs including DEG is common in projects. Out of the 16 projects in renewable energy there are 7 projects with DFIs. The experience of partnering with DEG on two of these projects is very positive, following the judgements by the interviewees. In general, the cooperation with DEG is well-regarded because of similar mindsets regarding the relation between profit, risk and development effects within projects. In addition, comparable standards including Environmental, Social and Governance requirements are important in the project appraisal phase. However, DFIs are sometimes too bureaucratic and in particular confidentiality requirements at higher management level are perceived as too strict in comparison to the so-called „friendship facility“ partners. However, this changes after the contract is signed and a good and open communication is established. In cases of restructuring of projects, it is a great asset to work with another larger DFI, because they can act as a driving force thanks to their size. The cooperation with OeEB is minor for DEG staff and due to the small amount of cooperations, the relationship is less efficient compared to the cooperation with the typical partners such as IFC.

OeEB cooperates also with KfW DB – the private sector financing in debt funds allows this horizontal cooperation. The mandates of DFIs and DBs are not fully separated. Some DBs can act with their private sector arms as full-fledged DFIs, some DBs have some products/projects, which allow to partner horizontally with DFIs. The cooperation of OeEB and KfW DB is also seen as positive, no further details were delivered by the interviewees.

5. Country Officers' view on RE relevance and collaboration

Figure 2.1

Political relevance of renewable energy (in %)¹¹

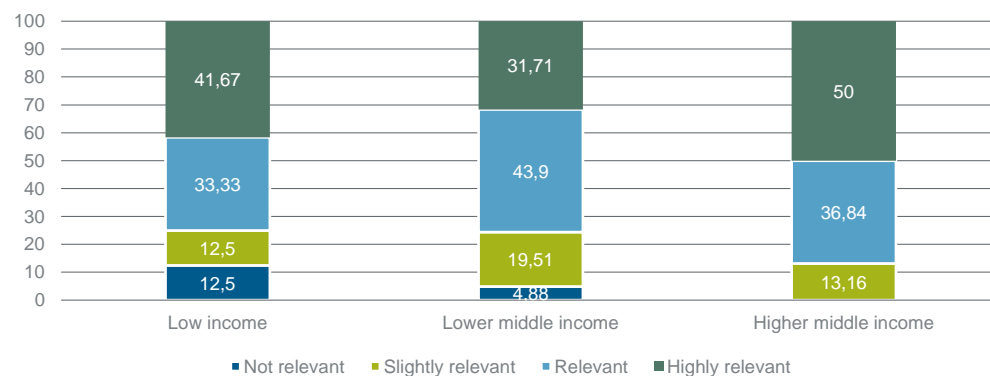


Source: Trendmonitor survey

Note: 103 out of 105 participants answered this question

Figure 2.2

Political relevance of the topic renewable energy (in %) – By income group

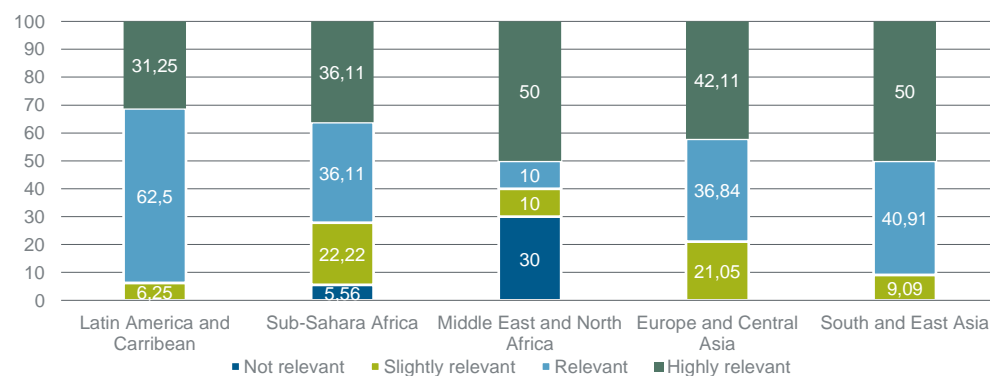


Source: Trendmonitor survey (Wave 2)

Note: 103 out of 105 participants answered this question

Figure 2.3

Political relevance of the topic renewable energy (in %) – By region



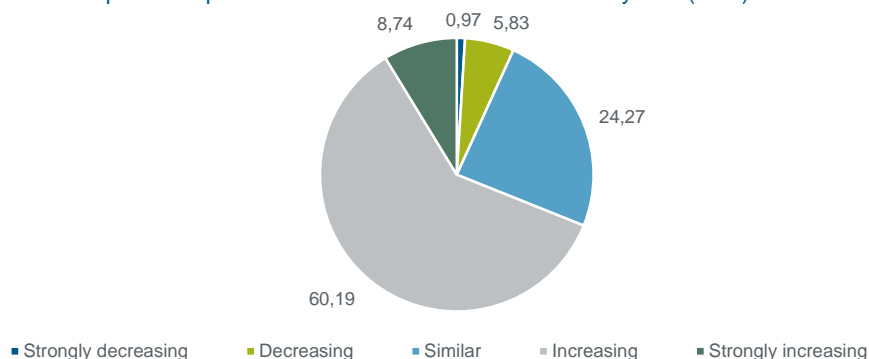
Source: Trendmonitor survey (Wave 2)

Note: 103 out of 105 participants answered this question

¹¹ The original question literally translates to: Is the topic renewable energy currently relevant in your country? With answers ranging from 1 (not relevant, politically not on the agenda), 2 (slightly relevant, only a bit of political support), 3 (relevant, some political support visible), 4 (highly relevant, active policies to promote renewable energies).

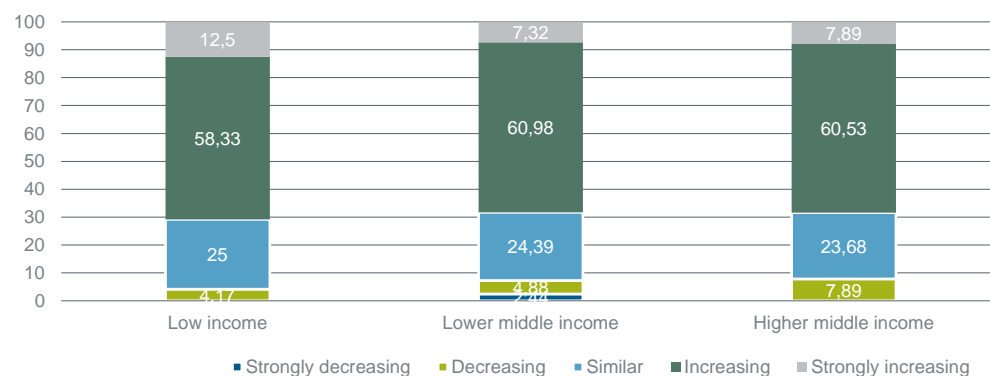
The political relevance of renewable energy is high in all countries with higher middle income status, particularly in Asia and North Africa. Around 80 % of the respondents reported that renewable energy is a topic with high¹² (41 %) or some (39 %) relevance for policymakers (Figure 2.1). Disaggregating by country income group¹³ shows that it is particularly high in middle income countries where renewable energy is actively supported from policymakers (87 %) (Figure 2.2). Likewise, an active policy towards renewable energy is most often reported for South and East Asian countries, as well as the Middle East and North African country group (Figure 2.3).

Figure 3.1
Projected development of private investments in RE in the next 3 years (in %)



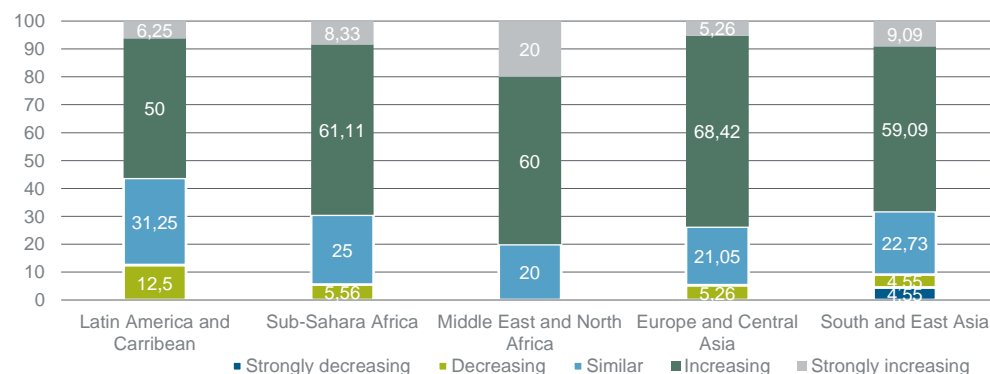
Source: Trendmonitor survey
Note: 103 out of 105 participants answered this question

Figure 3.2
Projected development of private investments in RE in the next 3 years (in %) – By income group



Source: Trendmonitor survey (Wave 2)
Note: 103 out of 105 participants answered this question

Figure 3.3
Projected development of private investments in RE in the next 3 years (in %) – By region



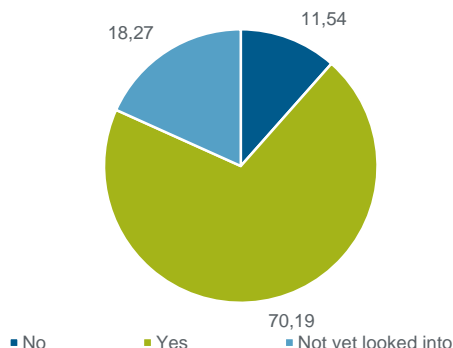
Source: Trendmonitor survey (Wave 2)
Note: 103 out of 105 participants answered this question

¹² High relevance in this case is equal to an active policy that promotes renewable energy whereas some relevance reports some policy efforts to promote renewable energy.

¹³ Income group categorization is taken from World Bank for the year 2019.

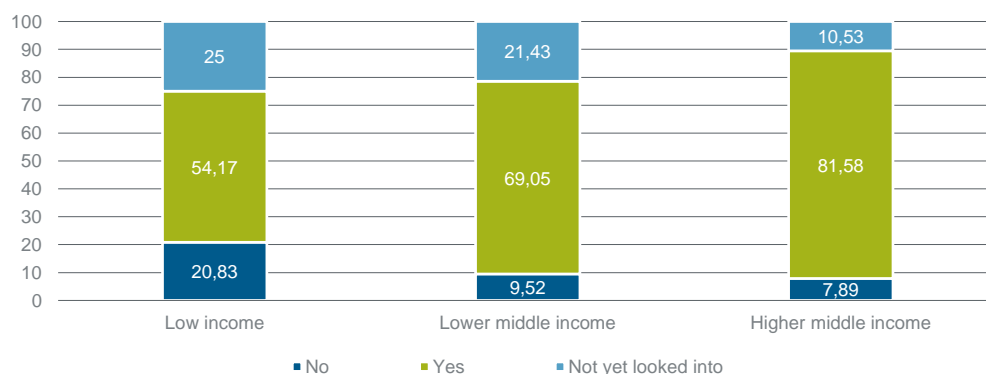
Likewise, private investments in RE are projected to increase in the next three years, according to the majority of the respondents, with no differences in income or regional sub-groups. Around 68 % of the respondents assume that private investment in RE projects will either increase or strongly increase in the next three years (Figure 3.1). Only a very small minority of seven percent expect a decrease in RE private investments. This holds across all income groups (Figure 3.2) or regions (Figure 3.3). Overall, this offers a good opportunity on cooperations between DBs, DFIs and private investors to mobilize private money.

Figure 4.1
Cooperation with other DFIs in RE possible? (in %)¹⁴



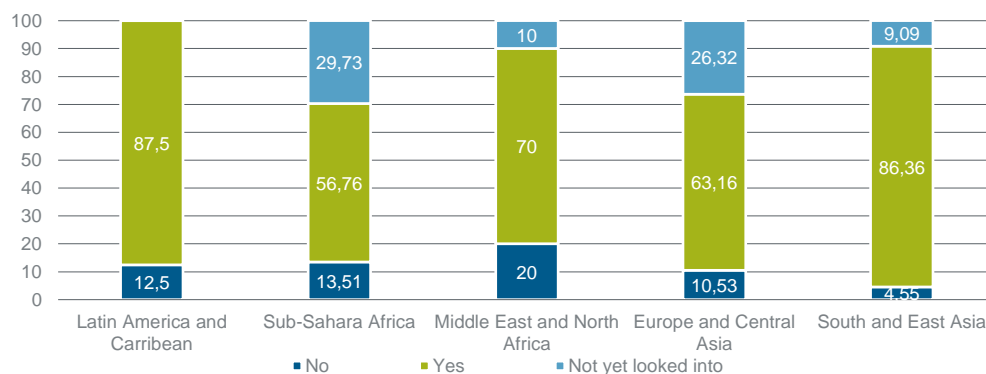
Source: Trendmonitor survey
Note: 104 out of 105 participants answered this question

Figure 4.2
Cooperation with other DFIs in RE possible? (in %) – By income group



Source: Trendmonitor survey (Wave 2)
Note: 104 out of 105 participants answered this question

Figure 4.3
Cooperation with other DFIs in RE possible? (in %) – By region



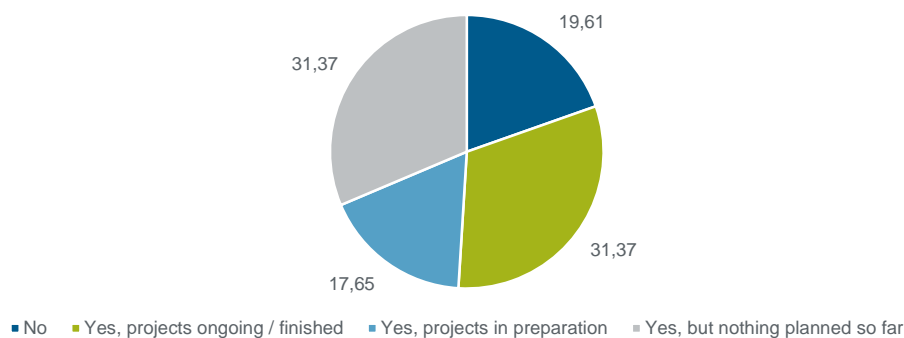
Source: Trendmonitor survey (Wave 2)
Note: 104 out of 105 participants answered this question

¹⁴ The original question literally translates to: Is there a possibility for KfW or DEG to cooperate with other DFIs concerning potential investments in renewable energies? Potential responses were: 1) Yes 2) No 3) Not yet looked into.

Cooperation with other DFIs are in almost all cases possible in general but have an increasing likelihood for upper middle income countries and a lower likelihood for Sub-Saharan African countries. Only 12 % of all respondents indicate that cooperation with other DFIs are not possible with a large majority of 70 % agreeing that such cooperations are generally possible (Figure 4.1). This points to a larger number of potential cooperations than currently in place. The possibility of such cooperations, however, varies by income group and by the region. In general, the higher a country is placed in the income category the more likely it is that such cooperation is possible (Figure 4.2). Not surprisingly, Sub-Sahara Africa, which has the most low income countries, is hence also the region where the least number of respondents (57 %) report possible cooperation (Figure 4.3). The results highlight the different preconditions DFIs and KfW face.

Figure 5.1

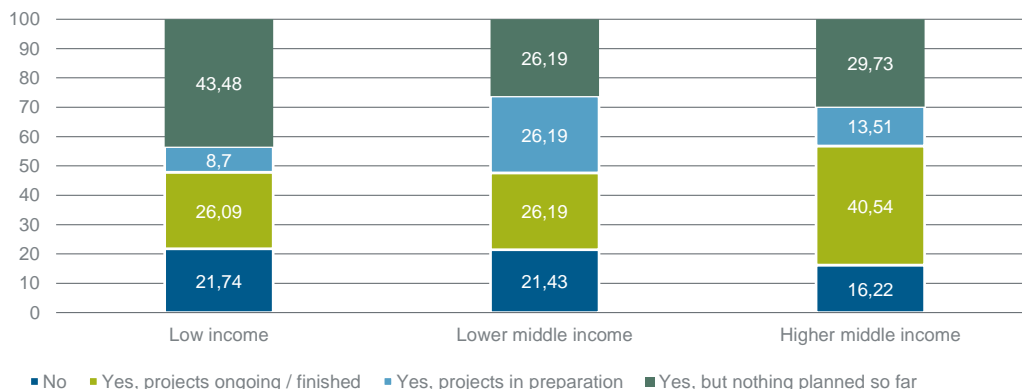
Cooperation in on-grid projects with other DFIs or private enterprises possible? (in %) ¹⁵



Source: Trendmonitor survey
 Note: 103 out of 105 participants answered this question

Figure 5.2

Cooperation in on-grid projects with other DFIs or private enterprises possible? (in %) – By income group



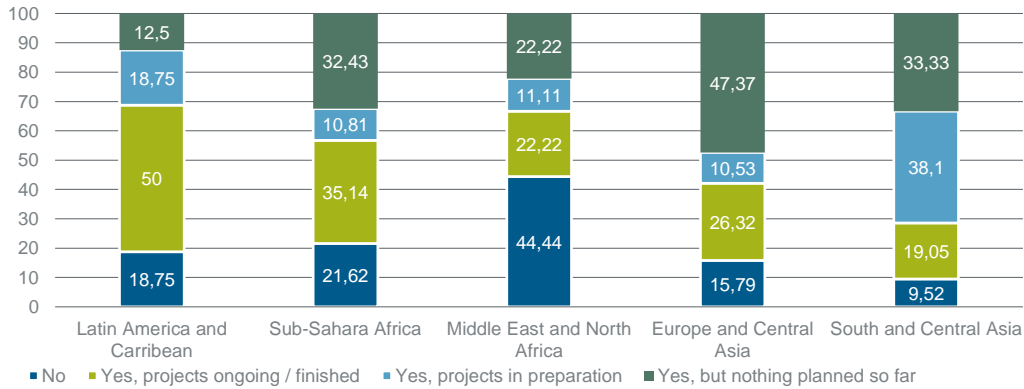
Source: Trendmonitor survey (Wave 2)
 Note: 103 out of 105 participants answered this question

Particularly looking at cooperation in on-grid projects shows that only in few cases a cooperation is not possible, also confirming that in upper middle income countries projects are more likely to have already been conducted. Overall around 20 % of the respondents exclude potential possibilities with other DFIs and private investors when it comes to on-grid investments (Figure 5.1). More concretely, 32 % report that projects are already finished or still ongoing, 18 % are currently preparing such projects and another 32 % acknowledge a general possibility, but with no concrete plans. Those respondents that confirm projects have already been conducted or are ongoing are more likely to be found in higher middle income countries (41 %) and in Latin America and the Caribbean (50 %) compared to low income countries (26 %) and South and East Asia (20 %) (Figure 5.2 and Figure 5.3).

¹⁵ The original question literally translates to: Do you see potential in your country for KfW, respectively DEG, together with other DFIs and private investors to support governmental or semi-governmental utilities in on-grid projects? Possible answers were: 1) No 2)Yes, projects already ongoing or finished in the past 3) Yes, projects in preparation, 4) Yes, potential is there but nothing planned so far.

Figure 5.3

Cooperation in on-grid projects with other DFIs or private enterprises possible? (in %) – By region

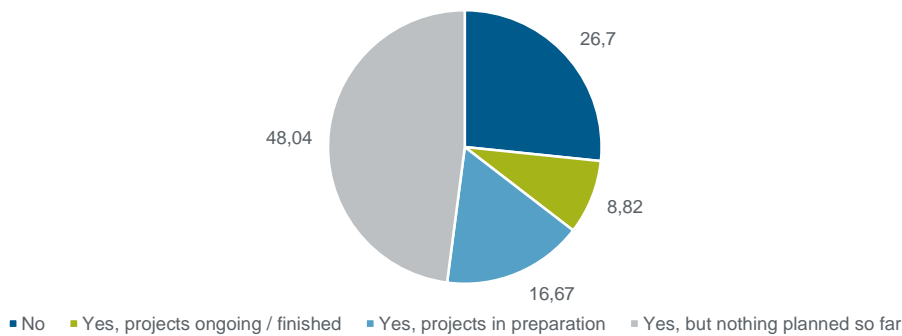


Source: Trendmonitor survey (Wave 2)
 Note: 103 out of 105 participants answered this question

Results for off-grid projects report a high potential for future projects particularly in Sub-Sahara Africa and low income countries. Only around nine percent of the respondents mention that projects are ongoing or were finished in their respective countries with the vast majority of 48 % reporting potentials for future projects (Figure 6.1). Around a fourth (26 %) reports no potential for cooperation with private capital or other DFIs regarding off-grid projects. The highest potential for projects is in low income countries (70 %), in which also the lowest share of ongoing or finished projects is reported (Figure 6.2).¹⁶ Highest potential for projects by region are reported for the Latin America and Caribbean Region (56 %), as well as in Sub-Saharan Africa (57 %) (Figure 6.3). Given that experience with off-grid projects involving private enterprises in Sub-Sahara Africa is rare, potential for involving private enterprises in off-grid projects in Sub-Sahara Africa is still widely untapped. The different results for off-grid in comparison to on-grid in Sub-Sahara Africa also point to a comparably low population density in Sub-Saharan Africa. It essentially requires the implementation of off-grid projects.

Figure 6.1

Cooperation in off-grid projects with other DFIs or private enterprises possible? (in %)

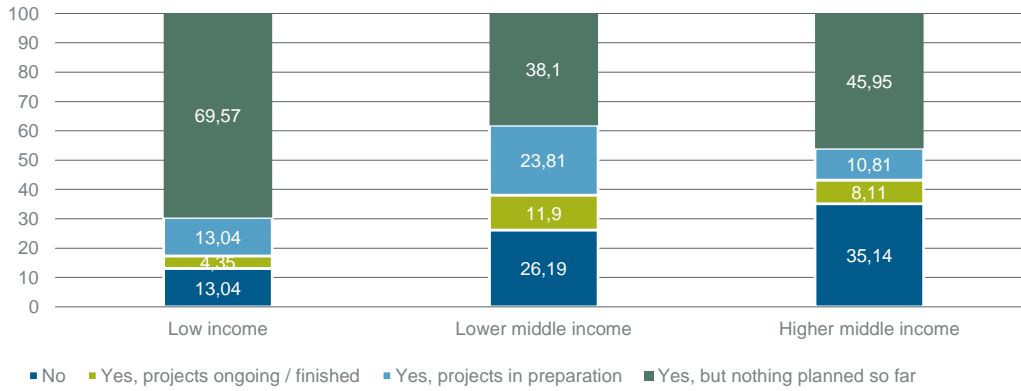


Source: Trendmonitor survey
 Note: 103 out of 105 participants answered this question

¹⁶ 4 % in low income countries compared to 12 % in lower middle income countries and 8 % in higher middle income countries.

Figure 6.2

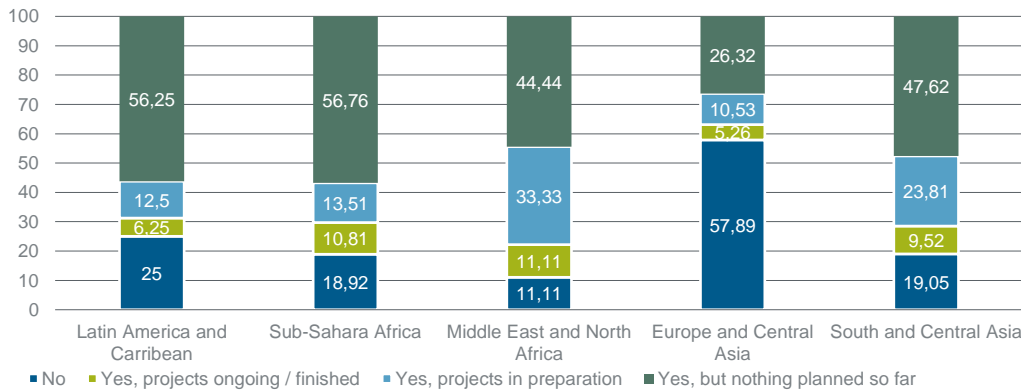
Cooperation in off-grid projects with other DFIs or private enterprises possible? (in %) – By income group



Source: Trendmonitor survey (Wave 2)
 Note: 103 out of 105 participants answered this question

Figure 6.3

Cooperation in off-grid projects with other DFIs or private enterprises possible? (in %) – By region



Source: Trendmonitor survey (Wave 2)
 Note: 103 out of 105 participants answered this question

6. Conclusion

KfW plays an important role in improving the basic investment conditions for DEG and OeEB, but a better-targeted cooperation could increase the benefits. The cooperation between the DBs and DFIs is certainly needed, but could be further proliferated. All interviewees pointed out that market framework conditions such as political stability and a reliable regulatory framework are essential preconditions for successful renewable projects. More concretely, the existence of transmission lines and well-equipped off-takers (capabilities and financial management) are the foundations for private engagement. This links directly to the KfW mandate and the DEG and OeEB mandates. Therefore, the mandates of the institutions are interlinked and better market regulatory frameworks and public energy infrastructure (supported by KfW) are contributing to more investment protection for private sector sponsors (clients of DEG and OeEB). More regular exchange between the institutions can contribute to the promotion of the private investments needed to reach the targets of the Paris Agreement.

This study mapped for the first time the overlap between DEG and OeEB as DFIs and KfW as DBs engagement. This study is a first attempt to map existing and potential cooperation. While there are several limitations to it, such as low number of projects, different portfolio recordings in DFIs and KfW DB but also a focus on a small subset of development financing and project worldwide, the study succeeded in identifying several bottlenecks. In addition to overcome this bottlenecks, it would be desirable to complement the portfolio data with information from other institutions within the development community and also consider their experiences. This could help to base the decision-making on an even sounder evidence basis.

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Annexe

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Disclaimer

The views expressed in this publication are those of the authors and do not necessarily reflect those of the institutions.

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