



Results-based Financing for Energy Access

How to design and implement projects:
Lessons from the field

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1 Introduction

1.1 Background

The Energising Development (EnDev) programme is a global energy access partnership between the Netherlands, Germany, Norway, the UK, Switzerland and Sweden. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Netherlands Enterprise Agency (RVO.nl) act as the principal agencies for programme coordination. Since 2013, EnDev is piloting results-based financing (RBF) approaches to enhance energy access markets with funding provided by UK's Department for International Development (DFID).

With this publication, EnDev wants to share its experiences in implementing a broad portfolio of RBF projects in energy access markets and working with the private sector. The publication gives an overview of what RBF approaches and design features worked in which circumstances and why. The document is based on the EnDev publication "Driving Markets to Scale" (2016), summarising EnDev's first lessons learned with RBF. It has been enriched with new experiences gained by the project teams over the course of the first five years of implementation as well as with findings from the Mid-Term Evaluation (MTE) of the RBF Facility, prepared in 2017 by a consortium led by Particip GmbH.¹ A number of recommendations for RBF project design and implementation were developed. These may serve as guidance for future RBF project implementers.

The document is structured in the following way: Section 1.2 gives an overview of what is understood by results-based financing. The second chapter provides the reader with an overview of the EnDev RBF Facility portfolio and its results achieved so far. Chapter 3 presents the most important aspects to consider when designing RBF projects with the objective to transform energy access markets. It looks at setting project objectives, at the importance of market intelligence and reflects on the question whether and under which circumstances RBF is the right tool to apply. Chapter 4 is dedicated to the most crucial aspects of implementation of RBF projects. These include the selection of participants, the appropriate design of incentives, the verification and the overall management and budgeting of RBF projects. Experiences from concrete EnDev projects complement the recommendations given in chapters 2 and 3. The last section summarizes the most important recommendations for designing and implementing RBF projects for energy access.

1.2 What is results-based financing?

Results-based financing (RBF) is a mechanism whereby a donor disburses funds to a recipient once a pre-agreed set of results has been achieved. This approach involves three key principles: firstly, payments are made only after the results have been achieved; secondly, the recipient may independently choose how to achieve these results; and lastly, independent verification of results is the trigger for disbursement. RBF is therefore fundamentally different from more traditional approaches in development where funding is provided in advance to finance inputs and activities. It allows to increase the accountability of both the donor and the recipient by providing verifiable evidence that the agreed results have been achieved.

RBF, like any other results-based approach in development, is motivated by the assumption that it will incentivise the recipient to align its actions more closely with the objectives of the programme funded by the donor. It aims to address what economists term the 'principal-agent' problem deriving from asymmetric information. A principal (in the development context most commonly a donor) delegates a certain task to an agent who receives payment from the principal for fulfilling that task. The agent, be it a partner government, implementer or the private sector, often has more information about the specific task and can use this asymmetry to further its own interest to the detriment of the principal's interest. That is – the agent may be doing the defined task, but may not necessarily achieve the desired results. Due to their relative lack of information, principals have very few means of ensuring that their agents always act in their interest. If, however, the principal aligns the reward an agent receives with the principal's desired results, he will overcome the problems caused by information asymmetry.² By tying funding to results, the focus and efforts of the agent shifts away from processes and towards results. This shift in focus requires the agent to address the bottlenecks and challenges that hinder the achievement of results and will thereby allow structural change to occur.

Meanwhile, also the financial risk associated with the non-delivery of results shifts from the donor to the recipient. The recipient, in return, is given flexibility in how to achieve the desired results, which can encourage innovation. Recipients' autonomy may also prompt them to improve their existing delivery infrastructure, which makes sustainable, long-term change more likely.

In line with that logic, results-based approaches can help to address typical market failures such as externalities, information asymmetry, market power concentration, coordination failures and the failure to produce public goods.³

In the last 10 years, such approaches have become increasingly common in fields as diverse as health, education, forestry and energy, as is the case with EnDev's RBF Facility. Results-based approaches can target governments or public institutions for the delivery of public goods (mostly referred to as results- or output-based aid – RBA or OBA). However, it can also target the private sector or civil society organisations. In such contexts, the term RBF is more commonly used.

Depending on the degree of risk-sharing between the funder and recipient, payments can be made for final outcomes, intermediate outcomes or outputs. Most RBF approaches financially reward progress in an incremental way. For example, the number of electricity connections or tonnes of CO₂ saved can be rewarded proportionally as progress is made.⁴ This approach to financing results means that RBF has the potential to create competition among recipients, i.e. by rewarding the fastest movers. It thereby increases efficiency and effectiveness compared to traditional development approaches. EnDev's RBF Facility aims to bring energy access markets to scale by building on this approach.

¹ The full version of the MTE Report can be downloaded at <https://endev.info/content/Downloads>.

² World Bank Group; Frankfurt School of Finance and Management. 2017. Results-Based Climate Finance in Practice: Delivering Climate Finance for Low-Carbon Development. World Bank, Washington, DC.

³ Vivid Economics. 2013. Results-based Financing in the Energy Sector: An Analytical Guide. Energy Management Assistance Program (ESMAP); Technical Report 004/13, World Bank, Washington D.C.

⁴ SIDA 2015. Results Based Financing Approaches (RBFA) – what are they?



2 The EnDev Results-based Financing Facility

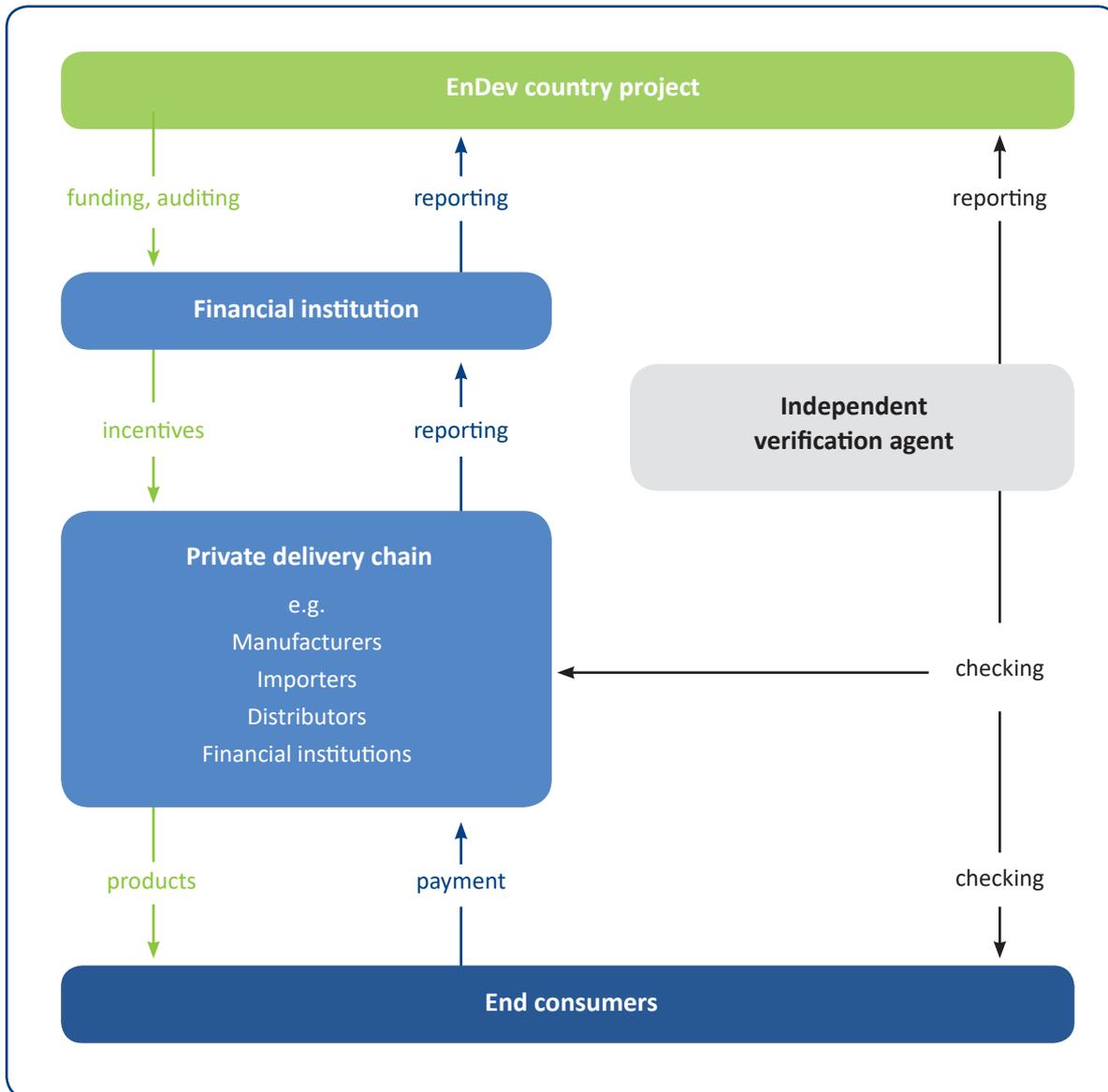
2.1 The Facility at a glance

EnDev's RBF Facility aims to increase access to clean energy in low-income countries by providing financial incentives to private businesses. The key objective of the Facility is to overcome market failures and barriers constraining the private sector to deliver modern renewable energy services to the poor. Through the financial incentives, the Facility provides elevated returns to the companies on serving these markets for a fixed period. The underlying hypothesis is that this will in turn attract private investment in more efficient production and distribution systems. It will thereby help move suppliers and sector financiers along the learning-experience curve and help move products along the cost-reduction curve – via economies of scale whether through investment in more efficient production or bulk purchase and distribution. EnDev's RBF approach, therefore, is about speeding up market growth and triggering a lasting market transformation.

Incentive recipients are companies that sell and operate clean energy products, services or systems. In line with the key principles of RBF approaches, the companies receive payments contingent upon the achievement of agreed results. These results are defined as delivering modern energy technologies or services to customers. Recipients of incentives, i.e. companies, are free to choose how they achieve these results. Independent verification of companies' results functions as the trigger for disbursement. The delivery risk in this approach rests with the companies. The original design of the RBF Facility called for working in markets and with companies that were close-to-mature. Therefore, it did not foresee significant project engagement in technical assistance and in accompanying support measures. Rather, the focus of the Facility lies in the provision of financial incentives to recipients, mostly companies, that are identified through competitive calls and usually benefit from the RBF incentives on a 'first come, first served' basis.

In terms of project management, EnDev's RBF projects ideally involve a financial institution (FI) to manage the selection and contracting of companies as well as incentive disbursements. Not only were FIs deemed to be the most appropriate institutions to administer RBF funds; this set-up also allows the financial sector to become familiar with the targeted companies and eventually come to see an opportunity in financing them. A typical EnDev RBF project design is depicted in the next graphic.

Typical EnDev RBF project set-up

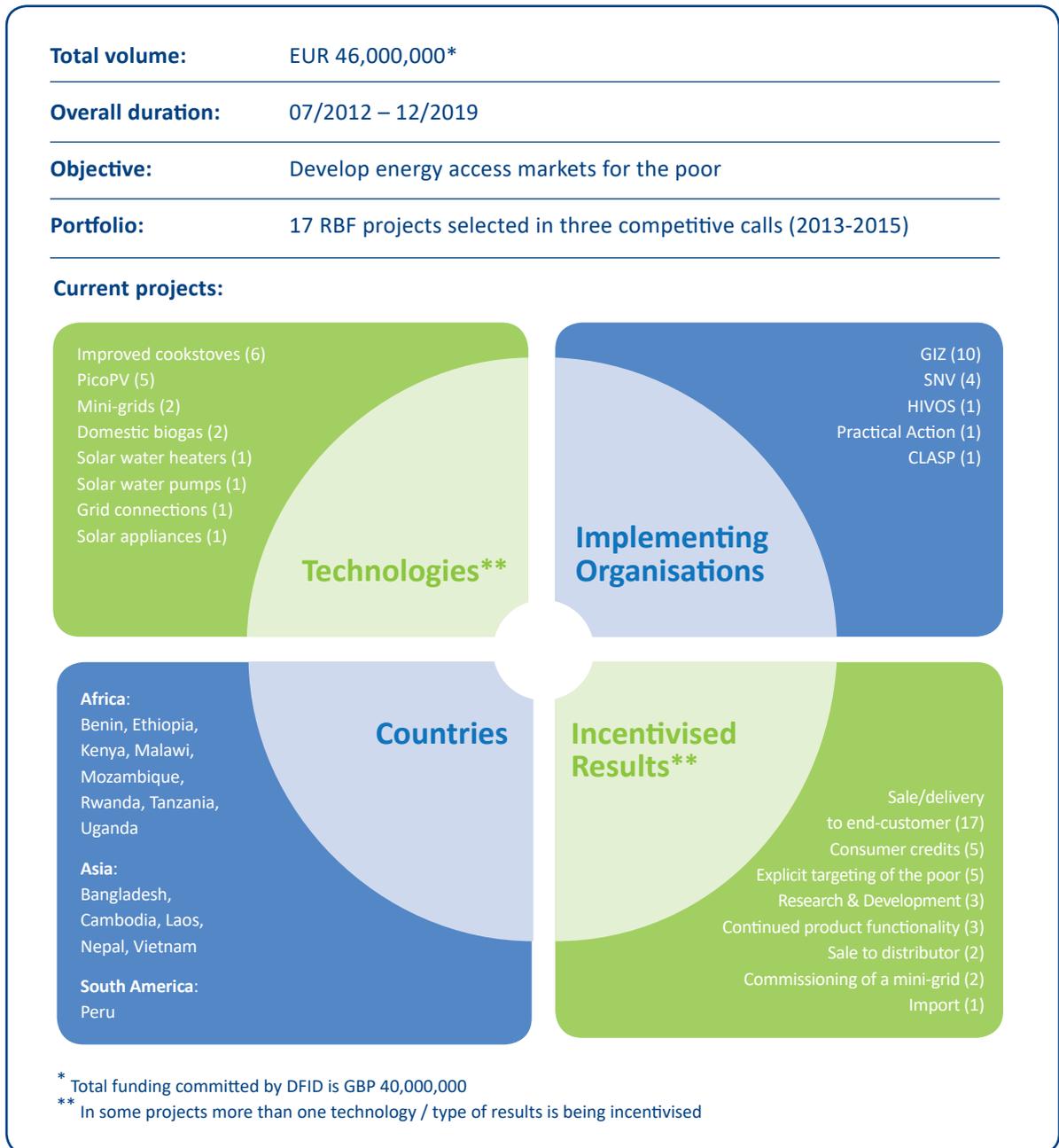


On the conceptual side, the EnDev RBF Facility seeks to establish whether the RBF approach, as applied by EnDev, offers an efficient and ‘value-for-money’ approach to promoting low-carbon energy access in developing countries. In the initial design, projects were required to limit the delivery costs (including management, technical assistance and verification) to 20 %, leaving 80 % of the budget for incentive payments. This requirement assumed that, since the financial risks lie with the private sector and not with the project implementer, delivery costs would be kept low. Furthermore, the Facility aims to draw conclusions

from lessons learned and develop recommendations for future applications of RBF interventions in the field of energy access.

These conceptual targets have resulted in a highly diverse project portfolio encompassing a wide variety of technologies and recipients. EnDev’s RBF projects have been selected through three consecutive rounds of calls, where funding proposals from EnDev country projects were evaluated. This competitive process resulted in 17 RBF projects in 14 countries. The following chart provides an overview of the RBF Facility’s project portfolio.

EnDev RBF Facility



2.2 Outcomes and main findings to date

Until December 2017, the following **key outcomes** have been achieved by EnDev's RBF Facility:

- One and a half million people have gained access to clean energy services at an efficient cost of just above EUR 12 per person.⁵
- 395,500 devices – such as solar systems, cookstoves and biogas digesters – have been sold.
- The total installed renewable energy capacity of picoPV, solar lighting and mini-grid projects combined is 890 kW.
- Reductions in emissions equivalent to 5.2 million tonnes of CO₂ will be achieved over the lifetime of the sold products.

- Close to 400 companies and entrepreneurs directly benefit from RBF projects receiving incentives.
- On average, every euro spent by the project leveraged EUR 3.6 of private investment.
- Altogether, close to 3,500 jobs have been created – nearly 1,200 of which have been for women. These new jobs include for example entrepreneurs who sell solar systems and manufacturers of efficient cookstoves.

According to the findings of the Mid-Term Evaluation (MTE), financial incentives have helped companies **address market barriers** in most EnDev RBF projects. Companies have, for example, used the additional funds to introduce new products, to build-up their inventories and distribution networks, to invest in marketing or to fund increased operations – actions that would have otherwise not been financially feasible. Thereby, they were able to drive innovation and accelerate the development of energy access markets.

EnDev experiences show that mainly specialised renewable energy businesses managed to tackle the challenge of developing effective **distribution or retail structures**. These specialised companies – rather than the retail mainstream – seem to be more willing and able to invest in the kind of advertising that energy access products still require due to low customer awareness, especially in rural areas. As a result, RBF-supported picoPV products and cookstoves are sold in large numbers primarily through companies' own retail networks rather than through mainstream retail channels. This indicates the potential difficulty of integrating these technologies into existing retail networks and into mainstream markets for energy technologies and services.

Access to finance is one of the key barriers that companies face in nascent energy access markets. Only very few EnDev RBF projects have been able to solve this challenge to date. By incentivising results in the supply chain before end-consumer delivery (e.g. paying out part of the incentives already at the import stage), some projects have managed to partially address companies' financial bottlenecks. In some projects, the financial sector provided debt financing to participating companies based on the fact that the RBF mechanism was in place, considering it as a kind of guarantee. However, only one out of six financial institutions acting as fund managers in RBF projects has so far extended credit to participating companies.

Last but not least, **end-consumer affordability** is generally a crucial barrier for market development. To address this, five EnDev RBF projects targeted micro-finance institutions (MFIs) to become recipients of RBF incentives in order to

encourage consumer lending and thereby contribute to market growth. However, this concept has not yet proven successful. EnDev's experience indicates that MFIs are not the drivers of markets when it comes to energy access products. They may complement market development efforts, but are less likely to take a leading role in an early stage. Where consumer finance is a major market barrier, working with energy companies that offer instalment-based payment plans (e.g. in the solar sector through PAYGO⁶ business models) has proven to be more successful.

RBF projects exhibit varying levels of impact on the **transformation of the energy access markets** they target. Although in some countries RBF projects seem to be driving market development (e.g. in a new geographic area or for a new product), market development in other countries might more likely be attributed to other trends. Market transformation effects of RBF projects are strongest where there was no or little market activity at the start of the RBF project. In these cases, financial incentives were the key driver behind the introduction of the targeted technology in the market. Despite differences in the level of market transformation, there is evidence that most RBF projects are on track towards achieving smoother running markets, market acceleration and increased product volumes. This seems particularly true for some of the solar projects in EnDev's portfolio. However, since several projects have not yet or only recently started paying out incentives, the RBF Facility has not yet achieved to meet its milestones on number of people with new energy access. As projects are still ongoing, it remains to be seen whether overall targets will be reached and how many companies will succeed to stay in the market. EnDev will be able to assess the situation once the first RBF projects phase out their incentive payments and come to an end.

⁵ Cost-efficiency is calculated by dividing total programme costs to date by beneficiaries reached with energy access.

⁶ PAYGO in this context refers to a business model of solar companies that sell solar systems offering financing options to their clients, usually through mobile-based payments. Customers acquire the product in full after a period of 3 months to two years by paying off the system cost on a weekly or monthly basis while already making use of the solar system.



3 Preparing the grounds for RBF projects

3.1 Setting the objective

As simple as it sounds, the design of any project should start with a clarification of its objective. In the field of energy access, the immediate and most obvious desired outcome of any intervention is usually the new or improved access to modern energy products and services for households, businesses and institutions. That means offering access to clean cooking technologies, lighting and electricity for a variety of appliances with the ultimate objective of improving people's living conditions. However, project designers are faced with different options when it comes to determining the focus.

A project may choose to apply RBF to achieve **market development** through private sector engagement. This usually means that full flexibility is given to the private sector in deciding to whom the incentivised products or services are sold. In this case, companies understandably tend to pick the "low-hanging fruit" first: They sell to those customers who are easiest to reach in order to maximise the profits from the RBF incentive. Such an approach makes sense when the aim is to build a market from scratch. The focus then often lies on the product itself, introducing either a new or a better quality product into a market setting. Where these new products are not yet available, this can also involve incentivising research and development for adequate products. RBF can also work well when a market is at a more advanced stage, but still requires a push to really take-off and move larger volumes. In this case, usually a few companies are already familiar with the product or service. Yet, the market is far from mature with limited supply of products and low consumer awareness. In such settings, an RBF approach can make a significant contribution to overall market development and business expansion.

An RBF approach can also be used to increase **access to energy for a specific population group**. Poor, vulnerable or otherwise marginalised groups usually do not benefit from the intervention scenario described above, as they are not viewed as "low-hanging fruit". Products remain unaffordable or out of reach for them. Therefore, if the aim of the project is to improve energy access for vulnerable groups, it should not leave the decision of who to serve entirely up to the participating companies. Instead, the project can guide companies towards its target groups by defining the results that will be rewarded. Examples of strategies from

EnDev's RBF Facility that target disadvantaged groups include:

- Differentiating incentives depending on the characteristics of the final customers, e.g. poverty criteria or indices: Check whether a poverty classification, e.g. defined by a social government programme, already exists within a country and if the project can build upon it (see Malawi project example, below).
- Geographic targeting: Explicitly target only poor or remote regions (c.f. Tanzania project example, p. 20).
- Incentivising alternative payment schemes: If affordability is the main barrier preventing poor people from buying the product, RBF projects can choose to provide incentives to only those products sold by companies offering

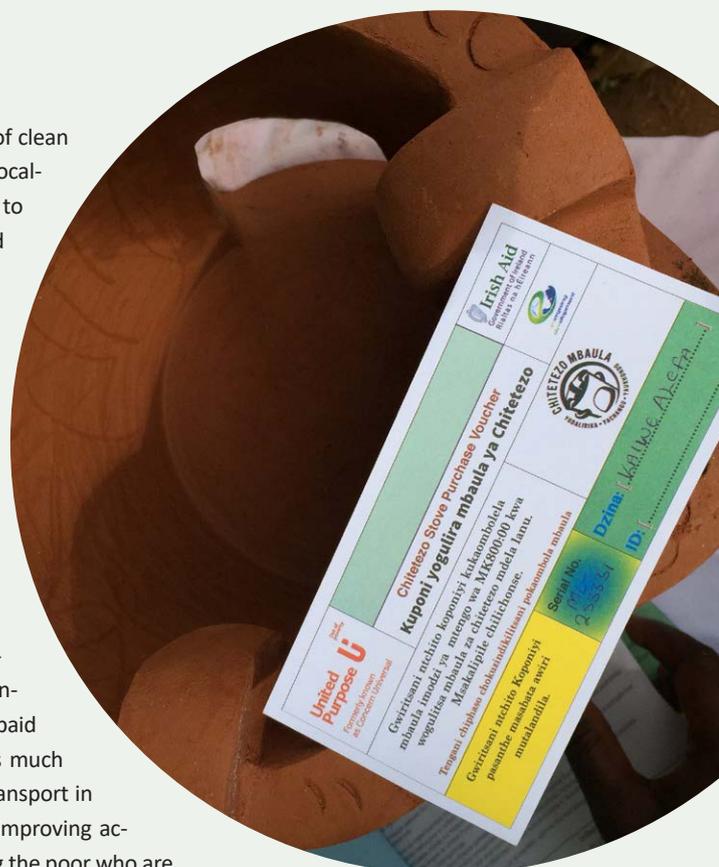
financing solutions along the lines of PAYGO. Alternatively, projects can offer results-based incentives to financial intermediaries, such as micro-finance institutions, for granting consumer loans specifically for the purchase of the product; however, to date EnDev has not reported any success with this approach (see section 2.2).

These are just some examples of how RBF can be used as a mechanism for pro-poor targeting. Targeting the poor does not necessarily contradict the objective of market development, although it does require special attention in the project design phase. Furthermore, the specific context of nascent markets must be considered when designing RBF projects. For a sustainable market development, it may be prudent for market players to first focus on establishing a solid business base before aiming for the poorest or most vulnerable customers.

PROJECT EXAMPLE

Pro-poor targeting in Malawi

In 2013, the Malawian President announced a plan to increase the number of clean cookstoves by two million by 2020. Most of the population can afford to buy locally produced improved cookstoves; yet not so the poorest of the poor. In order to reach these households, EnDev is implementing an RBF project for improved cookstoves with the social protection programme of the Government of Malawi – the Malawi Social Cash Transfer Programme (SCTP). Malawi's SCTP targets the most vulnerable 10 % of households giving them a direct unconditional cash payment on a monthly basis. The RBF project distributes vouchers to 80,000 of these ultra-poor households which they can redeem to get free improved cookstoves that they could otherwise not afford. A secondary objective of the programme is to catalyse a market for improved cookstoves for non-SCTP households in areas where markets for stoves are nascent and very thinly spread. The stove is manufactured by local producer groups who both supply stoves for the SCTP cookstove roll-out and sell to non-SCTP recipients. United Purpose implementing the project on behalf of EnDev receives incentives for each distributed stove passing on parts of the incentives to local stove producers and distributors. The incentive for the SCTP cookstoves covers all costs including the stove price paid to the producers whereas the incentive for the commercially sold stoves is much lower to cover only the viability gap, i.e. the high logistical costs for stove transport in rural areas. Using SCTP as a targeting and service delivery mechanism for improving access to improved cooking technologies has tremendous potential for reaching the poor who are traditionally left out of energy access interventions, to foster a market for improved cookstoves and to provide additional income to producer groups. For more information visit endev.info/Stoves_for_the_poor



3.2 Know your market

It goes without saying that projects should know the market they intend to sustainably develop. A thorough and comprehensive **market analysis** is highly recommended before engaging the private sector to deliver energy access product or services. EnDev's experience has shown that a systematic and in-depth market and context analysis before the project start clearly correlates with successful project performance. Incomplete context analyses or incorrect conclusions from the analyses, quickly translate into delays and a slow or even non-uptake of the incentives provided during implementation.

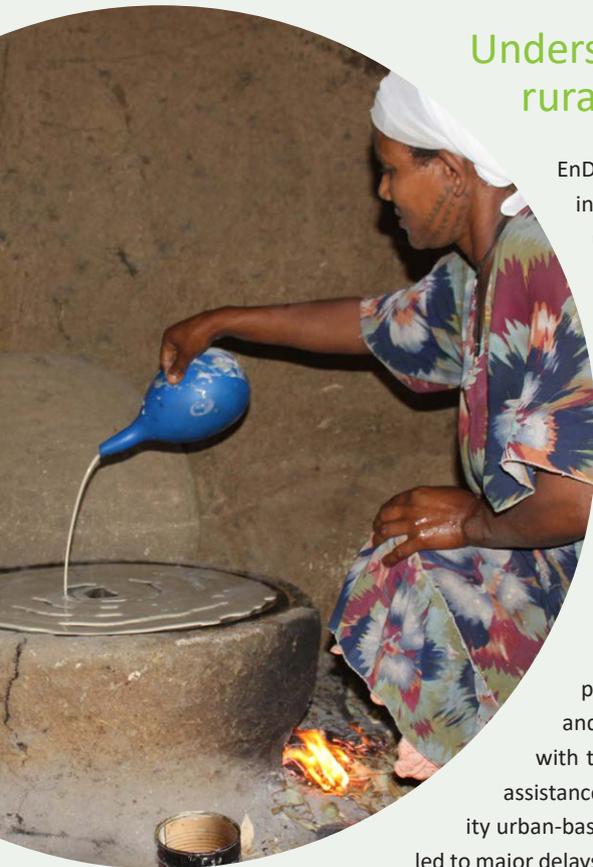
Developing markets are, by their nature, complex. It can be challenging to identify and predict all the internal and external factors that influence how a specific product market

will develop. However, it is important to identify and assess the most relevant aspects when conducting a market analysis in preparation for an RBF project. These include:

- Product availability and accessibility
- The extent of existing distribution and retail channels for the product
- Consumer demand for and awareness of modern energy technologies
- Access to finance for companies and consumers
- Legal and regulatory framework conditions
- Existing and potential sector stakeholders (companies as well as national or donor funded programmes and initiatives)
- Specific cultural factors and level of market experience of the partners that may affect distribution or consumer uptake

PROJECT EXAMPLE

Understanding the rural stove market in Ethiopia



EnDev's RBF project in Ethiopia aimed to enhance the market for improved cookstoves (ICS) in rural areas. Due to the absence of regular retail channels for ICS in these areas, the product was inaccessible for the majority of rural households. At the same time, transportation costs would have made the stoves unaffordable for rural households and hence unattractive for enterprises. The RBF project therefore offered incentives to rural-based energy and agricultural cooperatives which are well established in Ethiopia and have a broad rural network. The incentives, which the cooperatives were to receive for the sale of stoves to rural households, were calculated to cover transportation costs and other overheads as well as some profit. The assumption was that cooperatives would buy stoves from existing urban production centres and sell them to rural households. In this way, it was anticipated that the number of stoves in rural areas would increase, thus leading to higher consumer awareness in the medium-term and eventually to the establishment of more profitable market structures. However, just as the project was about to start it became clear that most cooperatives were overwhelmed by the project's requirements. Challenges included completing the application process to participate in the project and related especially to the documentation and reporting procedures for the verification of results. Familiarising all project stakeholders with the RBF concept to enable their participation required considerable time and technical assistance. Despite expectations, the cooperatives did not proactively search for reliable and quality urban-based stove providers, but relied on the project to do the match-making. All these aspects led to major delays in implementation. In hindsight, a comprehensive market and stakeholder analysis that considered these factors might have led to a different project design and better targeting of the relevant barriers

for the rural ICS market. For more information visit endev.info/content/Ethiopia

A thorough assessment of these aspects will allow RBF project developers to effectively design their projects.

Special attention should be given to the **capacities of stakeholders** to engage in the project. This refers to their technical as well as business skills. One of the major challenges that EnDev's RBF projects faced related to overestimating companies' business skills, especially those of small companies. These constraints can be as basic as submitting complete applications to participate in the project or adequately describing their own business strategy, especially among local companies and entrepreneurs (see Ethiopia project example, p. 10). As a consequence, projects spent significantly more time and resources than initially expected to get going. In some cases, capacity issues persisted during the implementation phase when companies had, for instance, difficulties in providing accurate customer records for verification purposes.

Another important aspect to address concerns the product. Is it available in the market at the required quality? Can the project's **quality requirements** even be fulfilled? In some cases, companies found it difficult to provide products to the required standard. Some companies went back and adjusted their products to meet the projects' criteria (see Kenya project example, below). This has been an important achievement of the project, but, at the same time, it resulted in serious delays, which prevented the projects from paying out incentives.

Stakeholder mapping and the analysis of **ongoing sector support programmes** are of the utmost importance for successful RBF design – or for acknowledging that enough is being done in the sector. Experience reveals that other programmes can be a boon to RBF projects as well as a threat. Where an RBF project is limited to the payment of

PROJECT EXAMPLE

Pushing stove quality through RBF in Kenya

The RBF project for cookstoves in Kenya, implemented by SNV, promotes market acceleration of higher-tier cookstoves that meet rigorous efficiency, emission and safety parameters. Incentives are offered to companies for the sale of these stoves to consumers. The stoves can either be imported or locally produced. It was the first time in the Kenyan stove sector that a project demanded that stoves be tested locally before admission to the project to ensure the stove's compliance with the set quality parameters. The RBF project worked in partnership with the Kenya Industrial and Research Development Institute (KIRDI), a national institute under the Ministry of Trade and Industry. In the beginning, most of the stoves that companies submitted performed poorly in terms of emissions and failed to qualify for the RBF project. With the feedback from the tests, companies returned to their labs to re-design, adapt and improve their stoves to finally meet the RBF quality criteria. While this process cost the project close to two years not being able to disburse any incentives, it now works: More than ten new stove types are being sold on the Kenyan market. In parallel, these developments generated discussions with the Global Alliance for Clean Cookstoves and the Clean Cookstoves Association of Kenya on national standards for stoves in the Kenyan market. The standard set by RBF has also been adopted by upcoming projects in Kenya, most recently the stoves component of the Kenya Off-grid Solar Access Project funded by World Bank. For more information visit endev.info/content/Kenya



financial incentives, programmes focusing on technical assistance can often complement its work. However, where a “competing” programme offers, for example, up-front grants to companies for the same products the RBF project targets through ex-post results-based incentives, the RBF approach will be less attractive for companies and obviously not achieve its intended goals. Even if RBF appears to be an effective and appropriate mechanism for a specific context, other existing programmes and policies may already sufficiently address the barriers identified by the RBF project. In such cases, the RBF project would not be effective and would only provide limited additional impact to ongoing efforts.

The activities of existing programmes must not only be factored into the project design, but management must also be flexible enough to react to emerging programmes and policy changes during the course of implementation (see section 4.4 on management). This also underscores the fact that market analysis and observation are not one-off tasks, but should be carried out regularly for a project to stay abreast of market dynamics. Previous experience in the country and knowledge of the sector gained by implementing organisations can clearly help to facilitate a good understanding of the context. Yet, RBF projects are rather vulnerable to changing contexts and policies. Implementation experience confirms that any market-based approach, such as RBF, remains a high-risk intervention in politically influenced markets, which are still largely exposed to public and donor interventions.

3.3 Is RBF the right tool?

Over the last couple of years, within development cooperation, increasing attention has been devoted to approaches that include “payment by results” modalities such as RBF and OBA. RBF concepts that engage the private sector have gained particular prominence. But is this always the best approach? Deciding whether RBF is the right tool depends on a variety of factors as discussed in the previous sections and particularly on the market conditions. A market and sector analysis will help to **identify barriers** that prevent the private sector from delivering

products and services to non-served populations. These barriers can be manifold and can include: a lack of effective distribution or retail systems, difficulties for companies in accessing (pre-)finance, affordability or poor consumer awareness or an unfavourable policy framework. Once these barriers have been clearly assessed, project developers should reflect honestly on whether RBF is the most appropriate instrument to overcome them. In EnDev’s experience, RBF projects have not yet been effective in overcoming businesses’ lack of access to finance. Yet, in the energy access sector, this is one of the most common bottlenecks companies face. It is unlikely that an RBF mechanism alone will help to transform the market if no financing is provided by the financial sector or other support programmes.

Another important insight comes from the experience of trying to apply the RBF mechanism in **mini-grid projects** (see Kenya/Rwanda project example, p. 13). A broad scope of challenges is usually associated with mini-grid development, which can be summarized in three categories: technical, political (tariff and grid extension) and financial issues. Mini-grid projects often require intensive technical assistance for planning, installation and maintenance. At the same time and regardless of the country, the sector is subject to a high level of regulatory uncertainties, particularly related to grid extension and tariff risks. Therefore, there is a great need for technical assistance on legal, regulatory and energy policy issues. Due to the risks and technical difficulties, financial viability of each mini-grid is a long-term challenge. Consequently, the appropriateness of RBF – which assumes little technical support and lets the companies bear the risks – for mini-grid development should be carefully considered.

The experience gathered by EnDev so far has shown that RBF rarely functions as a stand-alone development tool in energy access markets. RBF can – and should – be considered as one element of a toolbox. Additionally, the experience suggests it may work best if embedded in a broader market development programme. Therefore, a crucial aspect to consider when deciding whether to apply RBF is to look at all the barriers identified that cannot or will not be targeted by the project’s RBF mechanism. As a next step, one should determine whether these can be addressed either through accompanying technical assistance measures, e.g. capacity building for key stakeholders (if sufficient resources are available – see section 4.4) or if these barriers are addressed by other programmes in the sector, such as a renewable energy financing facility for the private sector.

Last but not least, projects should realistically judge what role the RBF mechanism can play in a complex and devel-

oping market setting. In close-to-mature markets, an RBF project may overcome market barriers in a relatively short timeframe of three to four years without much additional support. However, in immature markets it might be unre-

alistic to expect a lasting effect on market development in such a short period, but instead the approach might require more time and adequate resources for accompanying technical assistance.

PROJECT EXAMPLE

Applying RBF to promote mini-grids in Kenya and Rwanda

EnDev's RBF projects in Kenya and Rwanda incentivize mini-grid project developers in two steps: a first incentive is paid upon commissioning of a mini-grid, while the second incentive is paid for each connected household and business. With many different development actors supporting the sector in both countries, close coordination among them is essential to provide required capacity building, policy advice and financing tools (such as RBF) for successful mini-grid development. EnDev's mini-grid projects both benefited and suffered from other development partners' interventions. EnDev's RBF project in Rwanda had to deal with low quality proposals prepared by local project developers from the out-set. They faced difficulties in making realistic basic assumptions, e.g. for demand estimation and tariff setting. At the same time, the viability gap that the project aimed to bridge through RBF was extremely high, with high financing costs making the suitability of the project doubtful. Eventually both challenges were addressed through close cooperation with other donors and programmes: weak proposals are now handed over to Energy for Impact (E4I) that works with project developers to improve proposals. In parallel, the Scaling Renewable Energy Program (SREP) is starting to offer loans for pre-financing to mini-grid developers at better lending conditions than those of commercial banks, thereby overcoming the access to finance challenge. In Kenya, although the RBF project was embedded in a programme working on policy and regulations and building public and private capacity from the start, it still faced challenges. While a slow start was primarily due to difficulties in identifying a suitable financial institution as fund manager, once the project was ready to go two large donor initiatives for mini-grid development emerged. They have more ambitious connection targets, which they aim to achieve with higher subsidies and lower electricity tariffs. Mini-grid sites that EnDev had pre-selected became part of the support scheme of these two initiatives and EnDev's RBF had to select other sites in even more remote and less profitable locations (although with higher poverty impact). Although the two EnDev RBF projects in Rwanda and Kenya show significant policy impact, the high dependency on other stakeholders and initiatives questions the suitability of RBF as a stand-alone tool for transforming the mini-grid sector. Both projects require significantly higher levels of management and coordination than planned and took off after significant delays. For more information visit endev.info/content/Kenya & endev.info/content/Rwanda





4 Running RBF projects

4.1 Working with companies and financial institutions

When **working with the private sector, keep it simple**. RBF projects only succeed if private companies commit. To make sure they do, projects should present a clear business proposition and avoid technical terminology like ‘theory of change’ or ‘market barriers’. Projects should also aim for incentive structures to be simple with understandable requirements and use standardised contracts with built-in flexibility. Companies also need to be aware that RBF rewards independent and innovative thinking that leads to results. This means, it is a way of helping the companies implement their own development strategies but will not direct those strategies. Allowing partners to lead will boost their confidence and willingness to learn. However, setting up regular feedback mechanisms between the project and the companies, e.g. on the findings of the verification, also paves the way for a successful partnership and helps keep the project flexible enough to adapt to changing markets.

Projects need to **anticipate risks** that companies take and flag them with the private sector. Companies often work in a very challenging environment with unstable policy and regulatory circumstances, poor financing conditions and many demand and supply-side challenges. In RBF projects, companies only get rewards for taking on risks after they have delivered results and had those results verified. Thereby RBF might encourage companies to assume greater risks than they would usually do since they would factor in incentive payments in their business planning without having the certainty that all results will be verifiable. This, combined with difficult and changing framework conditions, can make it hard for companies to predict risk accurately. At the same time, project managers should be aware that RBF incentives constitute a security for a company’s decision to venture into new spheres. Companies decide to take the risk, because the project promises to pay the announced incentive amounts upon verification of results. Early withdrawal or reduction of funds should therefore be carefully considered, once companies have committed to the project and thereby put their trust (and finance) into it.

In summary, the project must make clear to the companies the benefits, but also the costs, expectations and risks involved. The project should ensure that the companies understand:

- The application requirements and process
- The fact that they have to pre-finance the project themselves
- Potential extra costs, like loan repayments or the impact of slow turnaround times
- Their exposure to risk if the project fails or if the market changes
- The results they need to achieve to qualify for RBF incentives
- Their administrative duties during the project – particularly around verification

To achieve all that, projects should invest time up-front to find the right partners. Especially in nascent energy access markets, simple tendering processes often will not be enough to find the right private sector actors. Proper due diligence and thoroughly looking over business plans will reveal whether companies can deliver the results the project is aiming for.

For RBF projects, **working with a financial institution (FI)** can have both advantages and disadvantages. Outsourcing various tasks to an FI, such as management of the project funds, contracting incentive recipients, verifying and disbursing incentives, can be an asset according to EnDev experience. Some of the EnDev RBF projects work with local FIs as fund managers. This has made the projects generally more efficient because the type of work is business as usual for an FI, but not necessarily for the project implementer.

A possible benefit to working with an FI is that by being exposed to the energy sector, FIs may become more familiar with the sector, gain trust in energy companies and feel encouraged to offer them financial services or even develop tailor-made financial products that foster their growth. Moreover, FIs have the advantage of having established customer networks, which they might be interested to share with the energy enterprises in order to combine the sales of financial services with those of energy products.

There are, however, also drawbacks to working with an FI. Identifying an appropriate FI can take time and not every country will have suitable FIs or their fees might be prohibitively high. Those that are suitable might not be willing to go beyond their business-as-usual operations and to engage as they deem the opportunities small and the risks high. FIs can also be held back by their lack of experience with RBF projects and processes.

In most EnDev RBF projects, expectations regarding financial sector involvement were not met. In many target countries, the financial sector is only slowly starting to target the renewable energy sector. In eight out of the 17 EnDev RBF projects, FIs are acting as fund manager. In the beginning

in most of these projects, the FI either lacked capacity and (fund) management knowledge, had limited interest in the specific renewable energy sector or was sceptical about it. RBF projects working with FIs therefore had serious delays in starting up. In some cases, it took a long time to find an FI as a fund manager. In other cases, proposed fees were higher than the cost of managing the fund in-house. Moreover, some contracted FIs needed significant technical support before they were able to handle their tasks. This meant higher costs without reducing workload.

A few recommendations can be made to address the challenge of working with an FI:

- Choose an FI with a proven interest in the energy sector. It is more likely to set up required structures and procedures and will be more interested in developing new products and services for the sector.
- Only ask the FI to do things that are part of its core business. FIs are comfortable with performing transactions, managing clients and compliance activities, but less comfortable with verification, strategic project management and communication.
- Make sure the FI knows exactly what you expect. Develop clear terms of reference that ideally include an operational manual detailing all the required steps, procedures and documents.
- When selecting FIs as fund managers, consider whether the FI disposes of sufficient (human) resources, has access to the target group and whether it has potential synergies with other relevant initiatives.
- If FIs are not sufficiently prepared, RBF projects should either plan for the FI's capacity building or consider managing the incentive disbursement process themselves.

To conclude, delegating fund management to an FI can be an advantage. However, the involvement of FIs calls for a thorough stakeholder analysis from the outset. This helps to avoid overly long identification and contracting processes. Projects may also consider outsourcing fund management to other suitable actors, e.g. to audit firms. However, EnDev has not tested this approach.

4.2 Designing appropriate incentives

There is no one-size-fits-all incentive. What works in terms of the incentive design for a project in one country may not work for another and what works for a certain period might not at later stage. How a project designs its incentives has a big impact on its outcomes and whether or not

it is successful. Therefore a project needs to carefully design its RBF structure. This includes defining:

- which results are being incentivized (what)
- with what value (how much) and
- who will be the recipients of the incentive (who).

A project's incentive structure should consider who else is offering incentives and support in the sector. RBF projects do not exist in a vacuum. Rather, other development programmes, public institutions or investors often also offer a variety of financial tools available to potential participants.

More important than the actual value of the incentive, is to make sure it addresses relevant market barriers, stakeholders and target groups. Whom and what results to incentivise to achieve the envisaged market transformation are pivotal strategic choices. Project teams must ask themselves:

- which gaps on the supply side need to be closed (e.g. import, product development, sales)
- who is most likely to close those gaps and
- what are the necessary conditions for them to do so.

Stagger incentives: If the ultimate goal of a project is to increase access to clean energy, incentivising companies that deliver clean energy products or services directly to consumers may seem like the most obvious way to achieve this. Yet, barriers to energy access are often due to market failures across the supply chain, which the market study will have identified (see section 3.2). 'Staggered' incentive structures, which disburse incentives along the supply chain, may therefore be necessary to transform the market rather than incentives that only target one single gap (see Bangladesh project example, below).

PROJECT EXAMPLE

Staggered incentives for energy efficient appliances in Bangladesh



The availability of high quality and energy efficient off-grid appliances like televisions, fans and refrigerators potentially accelerates markets for off-grid clean energy systems like solar home systems (SHS) and mini-grids. The global market for these appliances, however, is still largely underdeveloped. Both SHS companies and appliance manufacturers experience challenges related to price sensitivity of consumers, lack of information about products and other barriers to market entry. Specifically in Bangladesh, off-grid appliance manufacturers and solar companies struggled to overcome import tariffs. These were so high that international appliance manufacturers would not even invest the cost of travelling to Bangladesh to meet potential customers. Also, local solar companies often struggled to secure large enough down payments on orders from new customers to mitigate their up-front financial risks. So, the RBF project, implemented by CLASP, offers incentives in two stages: (i) to international off-grid appliance manufacturers once a contract with a local solar distributor is signed and products shipped to Bangladesh and verified and (ii) to local off-grid solar companies upon verification of sales to final customers. Through this mechanism, the project succeeded in getting 9,500 energy-efficient TVs sold and shipped to Bangladeshi solar companies, which are now in the process of selling them to customers. Unfortunately, local solar companies move at a very slow pace and are often unable to deliver the documentation required for verification of sales. There is a high risk that the second part of the incentive will only be disbursed for a small share of the imported products. For its second round, the project therefore adjusted its incentive structure linking the disbursement of the incentive to the manufacturer more strongly to the performance of the distributor. For more information visit endev.info/Solar_appliances

Go upstream: Consider incentives for capital-intensive upstream activities. This could be necessary for product development and certification where product innovation is required in a market (see Peru project example, below) or for technologies requiring high up-front investments like mini-grids. In nascent markets, incentives on importation of products might be an option to mitigate companies' financing problems for building inventory. Addressing several market barriers at once can be a valid approach to assist market transformation. However, it is highly recommended to provide at least part of the incentives for the eventually desired result – access to modern energy technologies by end-users. Otherwise, there is a risk of de-linking upstream activities from sales downstream and thus from the consumer. Moreover, when targeting different recipient groups, the overall incentive structure should be examined to ensure that it is not af-

ected by adverse feedbacks or interactions that may arise from various recipient groups.

Consider the demand side: Most EnDev RBF projects have so far focused on incentivising the supply chain for energy products. However, important market barriers can also be on the demand side. By incentivising consumer finance mechanisms for example – whether delivered through financial institutions or the companies themselves – the demand-side barrier of affordability can be addressed (see also section 2.2).

Target quality: Financial incentives can also be used to drive markets specifically for high quality technologies. Quality criteria need to be clearly defined if incentive disbursements are linked to them. Projects should consider efforts required for quality verification in order to keep verification manageable (see section 4.3).

PROJECT EXAMPLE

Fostering research and development through RBF in Peru

For many years, fixed improved cookstoves (made of brick, adobe, etc.) have been a common feature of rural households in Peru. However, this type of stove does not fully cover the demand in remote areas and for population with high mobility. Several barriers hinder the industrial-scale production and broad commercialisation of these stoves. These include high investments to train builders in the installation of cookstoves, the unreliable quality of individual cookstoves and logistical challenges to reach rural clients. The RBF project in Peru therefore set up a development contest for product innovation of portable improved cookstoves (PICS) that do not require any installation. The aim was to motivate small and medium enterprises to invest in research and development of PICS that satisfy the needs of rural markets and that can be adapted for the production at scale and offered at a competitive price. The stoves also had to comply with set requirements regarding efficiency, security, weight, material and cost. The project offered incentives to stove manufacturers in three phases for (i) development of prototypes, which were evaluated by an independent testing institute, (ii) elaboration of business plans and product certification and (iii) commercialisation of the stoves. Six companies qualified and successfully progressed through the entire process and now manufacture and sell portable cookstoves in Peru. For more information visit fidecop.com.





Focus geographically: Some EnDev RBF projects have provided incentives to companies for sales of energy products or services only in specific regions of a country that were underserved (see Tanzania project example, p. 20). This geographic targeting was successful in attracting companies to establish business in these regions, which they would otherwise not have done or would only have become involved in at a much later stage. As mentioned in section 3.1, geographic signalling can also be used for pro-poor targeting if whole regions are considered relatively poor.

While the effectiveness of incentives depends more on who and what is incentivised, it is still important to talk about the level at which incentives are set. Generally, it is important to make sure that the incentives are high enough to make participation attractive for companies. The minimum incentive level should be somewhat higher than the costs companies incur in participating in the RBF project to provide some premium on top of the profits they would make under business as usual. The risk that the incentive is too high, on the other hand, has proven to be negligible and corrective action during implementation phase can mitigate this risk. It is important to inform companies right from the beginning that incentive levels might be adjusted over the course of the project. This will, at the same time, encourage fast-movers as they can benefit from higher incentives. Projects should consider defining caps for the overall amount of incentives disbursed to an individual company in order to avoid the development of oligopolistic market structures.

EnDev has gained experience with two price-finding mechanisms: firstly, projects can use market analysis and stakeholder consultation to estimate the viability gap, i.e. how much additional income will make the business case profitable and therefore trigger a company to enter and stay in the targeted market. Once introduced, projects should monitor the uptake and adjust the incentive where necessary. A second approach involves market driven mechanisms, such as auctions, to determine incentive levels. Auctions can provide a high degree of insight and market transparency (see Cambodia project example, p. 22). There is the expectation that with increasing market maturity the incentive value will decrease over time and eventually not be needed anymore. However, auctions and tenders require that the participants are fully aware of their internal cost structures. If they are not, their bidding strategies might not lead to sustainable growth outcomes. From an implementer's perspective, one needs to also factor in the costs of administration and management of auctions, which might potentially outweigh their benefit.

It is also crucial to note that setting incentives is **not a one-off activity**. Energy markets are part of larger political and economic systems and subject to pressure outside a pro-

ject's control. If the economy booms, purchasing power grows along with demand and incentives could become superfluous. But if, for example, the price of raw materials like cement or steel goes up, incentives set at the start of an infrastructure project, such as a mini-grid or biogas project, could become inadequate. Therefore, RBF projects must constantly track how the market develops, analyse trends and respond accordingly. Such changes will probably affect most projects sooner or later, so the project design should allow the adjustment of incentives. Such revisions also offer learning opportunities. This being said, it is important to strike a balance between quick adjustments by the project on the one hand and reliability and predictability for the companies on the other. It is crucial that projects communicate both incentive structures and changes to participating companies in a transparent and timely manner.

Right from the beginning, a project's incentive design should include an appropriate **phasing out strategy**. RBF projects that aim at market development want to achieve a self-sustaining market with higher levels of sales and turnover than prior to the RBF interventions. So these markets will have to function without RBF incentives eventually. Therefore, incentive levels should be reduced over time as the market matures. This phasing out of incentives should be planned at the design phase already. Projects should present the phasing out process to participants from the beginning, so they can anticipate it. Some of the EnDev projects decrease the incentive level annually over the course of the project. As it takes time to phase out incentives and project duration is limited, slow phase-out may be difficult with typical project durations of three to four years – especially when considering a relatively long set-up phase.

4.3 Verifying results

Verification is a specific requirement for all RBF projects. The success of an RBF project relies on knowing if and when to pay incentives for the results companies claim to have achieved. Without robust verification processes, it is impossible to know if they have really achieved those results. There is yet another rationale for a strong verification system: RBF incentives entail the risk of fraud, where companies claim sales they have not actually made. Verification of results uncovers fraud and discourages it from the start. In EnDev's RBF Facility, it is required that verification is carried out by an independent verification agent (IVA).

Typical **ways to verify results** include calling customers, which requires companies or retailers to collect customers' phone numbers or physically verifying that a household bought the targeted technology through a field visit, which

requires the customer's address. Having access to (correct) customer addresses or phone numbers is not always a given in an environment where no systematised physical addresses exist, not everybody owns a phone or where numbers change frequently. Tracing items sold is also made more difficult where energy products are portable (such as small solar lights or cookstoves) and may have been moved to another location. Phone verification is much cheaper and faster than field verification, so that more sales can be verified in less time for less money. Field checks, in contrast, provide more accurate information as verifiers can see the product in the household for themselves, also enabling them to check for quality of the installation or service as well as the product usage by customers. Therefore, both of these methods have their merits and should be part of an effective and efficient verification system.

Verification systems should aspire to **satisfy statistical evidence requirements**. This means that customers to be verified should be randomly sampled from the claim a company has made.⁷ In order for a sample to be representative of a claim (at a set error margin and a set level of confidence that the error margin is correct) it needs to be a certain size, which can be calculated. The larger a claim, the smaller the percentage of the claim that must be drawn into the sample and vice versa. However, depending on the budget, some projects might not be able to verify large samples to the required statistical level.

⁷ A claim is understood as the sum of results (such as product sales) submitted by a company to the RBF project for which they demand financial incentives.

PROJECT EXAMPLE

Geographic targeting in Tanzania



The Tanzania RBF project, implemented by SNV, aims to improve access to small solar systems for households in rural areas of Tanzania's Lake Zone. At the start of the project, the solar market in the country was already sizeable and companies were familiar with the products. However, solar suppliers and importers faced a consistent bottleneck at the end of the rural distribution chains. The incentive offered by the project therefore specifically aimed to strengthen distribution from the suppliers to the end retailers in the comparatively underserved rural areas of the Lake Zone, which has very low access rates to the national electricity grid. The incentive includes a product bonus to the end retailer and a capital bonus to the supplier. Neither of these incentives payments can be earned without verified performance of the other party. The incentivized products range from solar lanterns and powerful solar lights that can charge phones and radios to solar home systems that can run a TV. Incentives are paid for each solar system sold to a rural consumer. Up to 40 Euros depending on the energy service level of each system were paid to suppliers in the first year and reduced to a maximum incentive value of 30 Euros in the third year. After the launch of the project, companies moved into the region relatively quickly and, from the first year onward, sold significant numbers of lanterns to end-customers. By mid-2017, 15 companies had engaged with the project, stating that they would not have ventured into the news areas without the incentive. Eight of the 15 companies account for 23 new offices and sales hubs in the region, which engage close to 600 retailers and agents. For more information visit endev.info/content/Tanzania

Energy access products tend to be marketed in areas with limited accessibility, which means it takes a lot of time and money to verify sales physically. Verification strategies should thus be developed in response to the type and value of technologies (portable technologies like solar lamps vs. installed technologies like biodigesters) and the size of claims and ease of verifying claims (influenced by geography, phone coverage, etc.).

Projects must also define whether they want to limit their verification system to getting the most basic data required for the disbursement of incentives or whether they want to use the data collection exercise to capture additional information. The first option implies that projects should aim at rationalising data sampling, data collection and management to achieve basic verification as cheaply as possible. The second option implies extra costs to acquire more knowledge about the achievement of developmental objectives, which can be used for project steering and knowledge management. Additional data can include information on correct usage, frequency of use of a product or problems encountered as well as general customer satisfaction. EnDev experience showed that feeding back this information to the companies was very much appreciated. Market intelligence in relatively new markets is usually not readily available and constitutes a barrier for business development. Whether projects limit themselves to most essential data collection or opt for a more extensive one will basically depend on project resources and management priorities.

As much as possible, projects should **align the verification system with companies' internal reporting** practices. If reporting practises are not effective, the project can support the companies to reach a level that satisfies the information requirements of the RBF project for verification purposes. However, changing processes comes at a cost, which companies need to offset through either profit or the incentives. Companies in the solar sector working through a PAYGO approach, for example, commonly have a good customer database already in place. In cases like this, projects can easily integrate RBF verification requirements. However, many other companies working with energy access technologies do not have the necessary information management system in place to facilitate the tracking of sales and the support of the verification process. As a result, setting up the claim and verification procedures can be an especially resource-intensive (time and money) exercise as experienced by many of EnDev's RBF projects. A good strategy for shortening the verification learning cycle includes well-documented guidelines, standardised procedures and refresher trainings for IVAs and participants. In general, piloting of verification instruments is recommended before full roll-out.

Right from the set-up of the verification system, the project should consider how to deal with non-verified results. When doing so, it is important to **distinguish between the types of non-verified results**: results that cannot be checked because the customer is not reachable (e.g. due to wrong phone numbers, non-presence of customer), energy products that have been delivered but do not meet the pre-agreed quality requirements or false claims, i.e. cases where the customer does not exist or did not buy the product. The last example clearly disqualifies the company from receiving incentives; the project may also decide to exclude the company from the project completely. Where customers are not reachable the project may, for example, set an acceptable threshold for the number of customers to be reached and penalise the company if it fails to reach the threshold by reducing the incentive. For quality issues, the project may decide to give the recipient a chance to bring products up to standard and resubmit the claim. This usually applies to systems that are not ready-made, but require installation, such as fixed stoves, biogas digesters or larger solar home systems. If the project allows re-submission, additional verification costs should be considered.

Within many EnDev RBF projects, verification costs remained high also after the system had been set up. For example, initial sales in some RBF projects were relatively low, resulting in small claim sizes per incentive recipient and accordingly larger sample sizes. A range of strategies may help **reduce verification costs**:

- Bundle smaller incentive claims into larger ones. Ideally, a minimum threshold for claim sizes submitted by companies should be set. Alternatively, a maximum number of claims is defined that can be submitted within a set period, obliging firms to "gather" all their sales in that period.
- Be pragmatic when sampling. Consider accepting higher error margins in verification to reduce sample sizes. This means that the probability of falsely accepting or rejecting the claimed sale of a unit increases, yet on average incentive payments remain correct. This being said a maximum error margin should be defined to not overly compromise with scientific sampling. EnDev currently accepts a maximum error margin of 10 % in projects incentivizing high volume and low value technologies.
- Reduce sample sizes in response to previous verification results. This means that the sample size for a given company is reduced if no errors were detected during the verification (via phone and/or field visits) of previous claims. A similar option involves assigning risk cat-

egories to companies based on verification results, so that sample sizes grow/shrink as companies are downgraded/upgraded to a different category.

- Reduce field visits. If incentives for the targeted technology do not cover quality standards or if through phone calls sufficient information can be collected, the number of field visits can be reduced. If previous claims by a company do not include any false sales or other errors, the number of field verification visits may also be reduced and more random spot checks may be added. Another way of rationing field visits is to select the sample according to geography, i.e. choose a limited number of regions where a random sample of beneficiaries can be visited to reduce the logistical burden.

Modern digital technology can aid verification greatly. The EnDev RBF biogas project in Vietnam, for example, has introduced an online platform for claim submission (see project example, p. 23). This has simplified data management considerably: The portal carries out automatic completeness checks and warns participants if information is still missing. When it comes to phone or field verification, verifiers can make use of tablet-based questionnaires to record customer responses. These tools help to improve data quality, thus facilitating verifiers' work. Lastly, geocoding and geographic information systems (GIS) can be used to map beneficiary households and link these with pictures of the products and their warranty numbers. When putting beneficiary data online, privacy rights and data confidentiality laws must be respected.

PROJECT EXAMPLE



Auction-based price finding mechanisms in Cambodia

In Cambodia, the EnDev RBF project implemented by SNV aims to build sustainable markets for clean gasifier cookstoves to replace traditional biomass cookstoves. EnDev offers staggered incentives, paying one part to companies for the import of high quality stoves, the other to retailers selling the products to consumers. An auction is used as a dynamic market-based price finding mechanism and as a market aggregation platform. The RBF project fosters business relationships between international gasifier manufacturers and local distributors in an effort to aggregate the number of local stove buyers/distributors to a critical mass for bulk purchases. This approach prevents stove manufacturers from having to build these relationships themselves, thereby reducing their entry risk in a new, unknown market. The international manufacturers receive a guaranteed price for their products, which are sold through bi-weekly SMS-based stove auctions. Here, local distributors bid for small quantities of stoves with the 'lot' going to the highest bidder. The difference between the auction bid price and guaranteed price is covered by the RBF incentive, with the assumption that local demand for the new products will increase over time, leading to an increased willingness to pay higher prices and thus reducing RBF incentives. From a management perspective, it should be noted that setting-up and running the auction (currently being held twice a month) demands a considerable effort. Nonetheless, the project has been successful in kick-starting markets for a new generation of cleaner cooking devices in all three countries where such technologies were virtually absent at the project start. For more information visit thestoveauction.org

Importantly, if a project intends to use digital technology, it must consider whether participants or verifiers need training and capacity building before they are able to use the technology effectively. Moreover, access to hardware as well as the reliability and stability of the internet connection, may influence the effective use of digital technology. Project teams should look at the circumstances in their country or region and decide which technologies are practical and offer benefits to the project.

4.4 Management and budgeting

A crucial aspect to consider in the management of RBF projects is the **choice of the implementing organisation**.

A recommended approach is to work with an independent institution that is trusted by the private sector to select companies based on fair and transparent criteria during tender calls and to pay out incentives reliably and as agreed with little delay.

Adaptive management is another critical factor for making a project successful. Continuous market analysis and close knowledge of stakeholders, products and customer preferences are of utmost importance. Direct and regular interaction with the participating companies and stakeholders can provide important insights into the current market situation. Project management should therefore commit sufficient attention to stakeholder relations. Most EnDev RBF projects have adapted their initial approaches based

PROJECT EXAMPLE

Digital verification system in Vietnam

EnDev's RBF project in Vietnam builds upon the work of an earlier Vietnamese Government programme. This programme established a strong domestic demand for biogas, which was achieved through consumer subsidies, amongst other means. The supply side was still highly dependent on government support; biogas companies lacked knowledge about marketing and sales, had limited experience of how to operate a commercial business and had a rather passive attitude to business. In 2013, EnDev started the RBF project, which aims to foster transformational change by incentivising supply side actions in order to close market barriers and discontinue consumer subsidies. Incentives are paid to biogas entrepreneurs based on the successful installation of biogas digesters that meet specific quality criteria. The project's verification system hinges on a mobile GPS data-collection tool. Enterprises use it alongside the construction and installation process to validate their work by providing data about the customer as well as the construction or installation progress. The data is linked to the spatial coordinates and is uploaded via a tablet or mobile phone to an online platform. During verification independent quality controllers use the app to upload information about the quality of the digesters. If required quality standards are met, the project transfers the incentive to the biogas entrepreneur's bank account. By introducing the requirement for entrepreneurs to upload pictures of the construction process at different stages, the project prevents the submission of claims for digesters that were built before the eligibility period. Challenges of the tool include the risk that it might exclude some entrepreneurs who lack digital know-how from participating in the project. Therefore, projects that use digital technology should ensure that participating companies have received the necessary training. For more information visit endev.info/content/Vietnam



on implementation experience – mostly in terms of the incentive structure, adjusting incentivised results, recipients or incentive levels. In most cases, this adjustment process has required considerably more time and resources than originally foreseen.

Due to adaptations that have been made at project level, the final interventions now vary significantly across the EnDev RBF Facility portfolio. Individual tailoring has resulted in a rising level of complexity, which has also increased transaction costs. There seems to be a trade-off between tailoring to local conditions on the one hand and the simplicity and transparency of design and processes on the other. This tendency to become more and more heterogeneous should be kept in mind when managing a whole portfolio of RBF projects. For EnDev, managing an RBF Facility with 17 projects therefore calls for flexibility not just

at the project level, but also at the overall RBF Facility management level. In that sense, it is a strong advantage that the RBF Facility can draw on established EnDev structures with its coordination, monitoring and support systems, which provide an effective backup for adaptive management at the project level.

As stated in the introduction, RBF approaches are expected to be more efficient than traditional development approaches. This has also been the case for EnDev's RBF projects, which initially targeted an 80/20 budget division between incentive payments and delivery costs (including management, technical assistance and verification). This requirement assumed that delivery costs could be kept low since the financial risks lie with the private sector and not with the project implementer. As a result, all EnDev RBF projects faced the permanent challenge of constrained

PROJECT EXAMPLE

Adjusting project design following the earthquake in Nepal

The Nepal RBF project originally aimed to build a market for hood stoves. With the 2015 earthquake, however, many homes were destroyed, making the goal of expanding the number of hood stoves, which are built into houses, impossible to achieve. Next to the general devastation caused by the earthquake, the market was severely affected by the population's loss of purchasing power, aid organisations and the government stepping in with free or highly subsidised cookstoves and very long delays in house rebuilding programmes. This meant that the project had to adapt in several ways: First, the focus of the project broadened from built-in hood stoves to portable stoves, which are cheaper for consumers. Second, the project withdrew from districts that received stove subsidies from the government and other organisations. Third, the RBF project provided additional support to stove producing companies to help them overcome the immediate financial impact of the earthquake and to maintain supplies. Although hood stove sales are still low, the RBF project is on course to reach its goals through the sale of portable stoves, companies requesting RBF support as they expand into new districts. For more information visit endev.info/content/Nepal



management resources and of integrating third-party resources or programmes effectively. It was found that such a “hands-off” approach was not feasible for most of the EnDev RBF projects. Delivery costs are significantly higher than 20 % in most cases, primarily due to technical assistance needed to support relative weak local market structures and actors.

It is therefore essential to foresee sufficient budget for technical assistance, especially in immature market settings when participating companies lack relevant knowledge and capacities. Limited budgets for technical assistance and management can result in serious delays to project implementation. In EnDev’s RBF projects, technical assistance was often carried out with the help of the regular EnDev programme and thus was not covered by funds from the RBF Facility. On the one hand, this shows

the advantages of piggy-backing RBF on a pre-existing programme; yet, it also shows that budgets within an RBF project should consider such expenses if the project is a stand-alone project. Since the state of development and capacity constraints vary among markets, there is no one-size-fits-all rule. The scope and quality of cooperation with other relevant initiatives and therefore the TA requirements may differ. EnDev’s RBF experience points towards spending around 40 % of the budget on project delivery in proportion to total costs. This may differ between RBF projects, but project designers should bear in mind that their project might follow a similar spending pattern and should plan budgets accordingly.

PROJECT EXAMPLE

Adjusting incentive structures in Benin

The EnDev RBF project in Benin aims to develop markets for different solar technologies. In the beginning, importing picoPV systems was a long and cumbersome process for companies. EnDev decided to address this by offering incentives. The total incentive level for certified solar systems amounted to 50 % of the Free on Board price – 20 % paid after importation and 30 % paid after the product sale. Over time, as companies gained more experience and importing difficulties decreased, EnDev decided to adapt the incentive structure and reward only the sale to end-customers. This decision was made to ensure that the systems were sold commercially to the end-consumer, as EnDev discourages the free distribution of solar systems. During implementation, the project experienced difficulties finding an appropriate contracting model with companies. Originally, EnDev entered into contracts with companies giving them the opportunity to claim incentives up to a certain maximum amount. These amounts were then ring-fenced in the project’s budget for the duration of the contract. Since most companies failed to deliver on their contracts, but the project’s overall budget was already committed and could not be reallocated, new contracts with other companies could not be agreed. To provide greater flexibility and to prevent a delay in implementation, the project plans to introduce a contract model, which clearly states that a fixed share of the budget is available to all firms and that a “first come, first served” principle applies when submitting incentive claims. Although these and other changes have required the commitment of considerable resources, they have greatly helped to improve the project’s effectiveness over the course of implementation. For more information visit endev.info/content/Benin





5 Summary

of the most important recommendations

The 17 RBF projects implemented under the EnDev programme have produced valuable lessons. These cover each stage of a project, from planning, budgeting and designing incentive structures to recruiting companies and outside support as well as verifying results. Energy access markets vary from country to country, as do the economic and policy context and the level of economic development activity underway alongside RBF projects. Hence, there is no single 'blueprint' for a perfect project – but there are ways to increase the likelihood of success.

Be clear about what you want to achieve

RBF project design will vary depending on the project's focus, i.e. whether you aim to support overall market development or to improve access to energy services and technologies for a very specific – possibly vulnerable – customer group. While the two objectives are not exclusive, the latter one requires special attention and targeting.

Tune in to the market and the economy

The more a project understands the market and its context, the better it is at anticipating how a market might develop and what effect an RBF project could have. That, in turn, makes it more likely that a project will set the incentives rightly to stimulate and sustain the market.

Be aware of existing or planned programmes in the sector and try aligning your project

It is not unlikely that the targeted sector is also supported by other national or international programmes. A sound RBF project should complement these and identify which market barriers remain unaddressed or where it can improve present outcomes.

Incentives: 'What' and 'who' matters more than 'how much'

Setting the right incentives is one of the most crucial parts of RBF projects. Be clear about the bottlenecks you want to address and offer the incentives to the right actors ('who') for the right result in the supply chain ('what'). Be thorough when setting the incentive value, but know you can adjust it if needed. It is more important to capture companies' interest through attractive incentives in the beginning and subsequently reduce them stepwise than starting too low and thereby losing the opportunity to get companies to participate.

Take the time to find a fund manager

A good fund manager can be the bridge between the RBF project and a long-term, sustainable market. Finding one might not be easy but it may be worth taking the time to search for a financial institution or another actor with a genuine interest in energy access markets.

Be willing to invest in technical assistance if needed

Experience has shown that technical assistance and capacity building often need to complement incentive payments to ensure companies' participation, to enable their expansion and to trigger lasting market transformation. Make sure to allow for sufficient resources for technical assistance from the beginning to get the project going.

Be pragmatic about verifying and clear about paying

Results matter. Projects – as much as companies – need to have a verification system that is reliable and cost efficient. That means balancing phone and field verification as much as sampling according to scientific standards and costs. It is essential to make criteria unambiguous and to be straightforward about how companies will receive their payments. Using digital media can greatly simplify the process by improving data management and quality.

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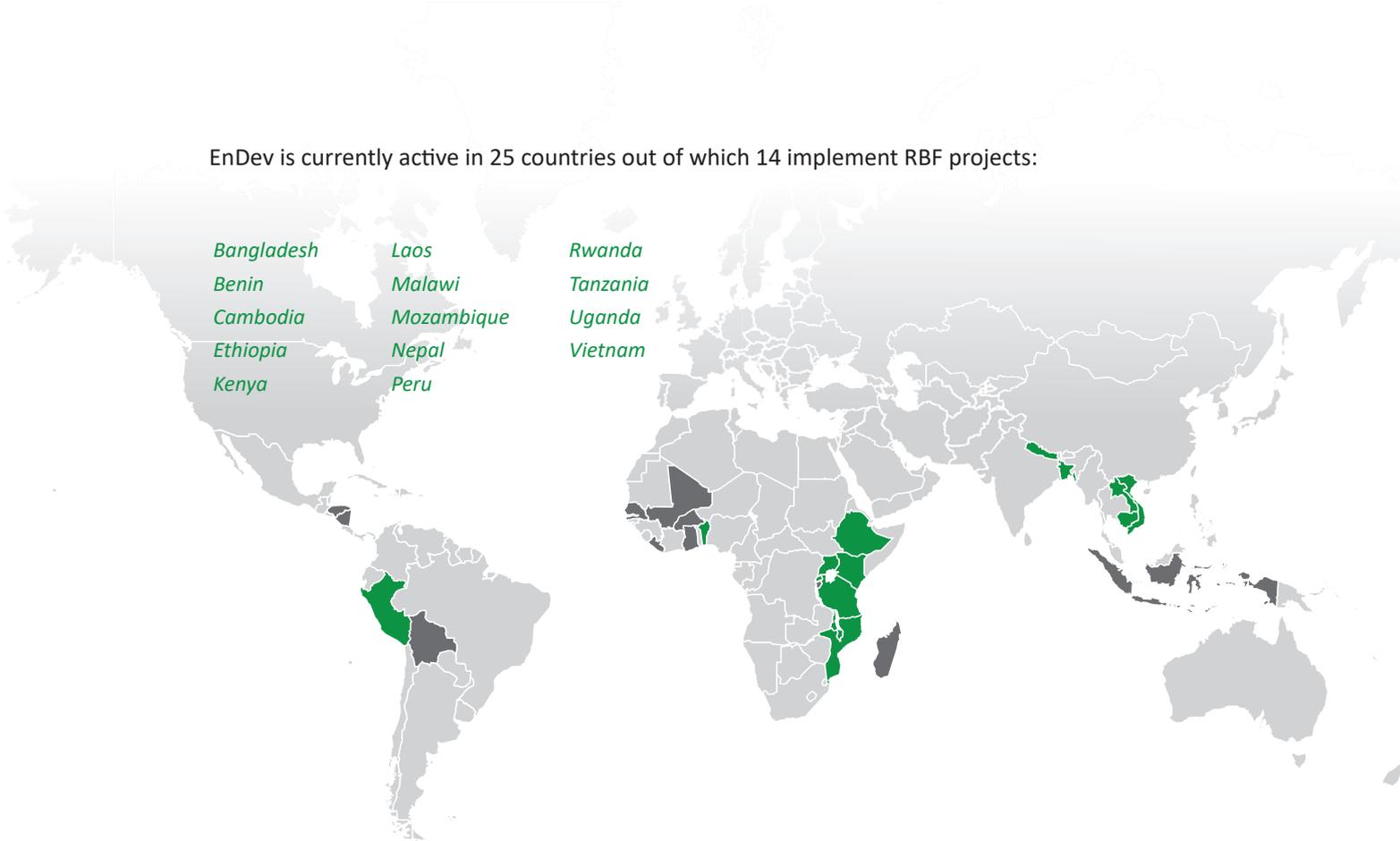


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EnDev is currently active in 25 countries out of which 14 implement RBF projects:

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