



Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized

**SPECIAL FEATURE**

**SEAR**

# **RESULTS-BASED FINANCING**

## **A PROMISING NEW TOOL FOR ENERGY ACCESS**

Marco Hüls, GIZ; Marcel Raats, RVO; Josh Sebastian and Martijn Veen, SNV Netherlands Development Organisation; and John Ward, Vivid Economics



Copyright ©

2017 International Bank for Reconstruction and Development / THE WORLD BANK

Washington DC 20433

Telephone: +1-202-473-1000

Internet: [www.worldbank.org](http://www.worldbank.org)

This work is a product of the staff of the World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work and accept no responsibility for any consequence of their use. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

The material in this work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for non-commercial purposes as long as full attribution to this work is given. Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: +1-202-522-2625; e-mail: [pubrights@worldbank.org](mailto:pubrights@worldbank.org). Furthermore, the ESMAP Program Manager would appreciate receiving a copy of the publication that uses this publication for its source sent in care of the address above, or to [esmap@worldbank.org](mailto:esmap@worldbank.org)

**Cover photo:** © Arne Hoel | World Bank

# RESULTS-BASED FINANCING

## A PROMISING NEW TOOL FOR ENERGY ACCESS

Marco Hüls, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Marcel Raats, Netherlands Enterprise Agency (RVO.nl)

Josh Sebastian and Martijn Veen, SNV Netherlands Development Organisation

John Ward, Vivid Economics

### INTRODUCTION

As donors search for ways to promote energy access in the developing world, a new tool being piloted in the sector is results-based financing (RBF). It offers incentive payments on the basis of results achieved to businesses that deliver pre-specified outputs—such as the number of new electricity connections or advanced cookstoves that are sold. By doing so, it tries to overcome market failures that constrain private sector delivery of modern energy services.

So far, the global community has had limited experience with the RBF in the energy sector, but a number of programs and initiatives are under way to explore how to pilot and mainstream RBF into their activities. This paper focuses on how the RBF works in theory and in practice, with a special focus on a project to spur solar market development in Tanzania.

### DEMYSTIFYING THE RBF

What exactly is meant by results-based financing? Unfortunately, a tough question to answer, given that different organizations use different definitions to mean the same thing and also use the same term to describe different things. Nonetheless, one approach that is becoming increasingly commonplace is to define a broader category—results-based approaches—according to three key characteristics:

- Payments (or at least some portion of them) to a recipient are made contingent on achievement of previously agreed results.
- The recipient is given discretion as to how results are achieved.
- Verification of the achievement of results is undertaken by an independent third party before disbursement takes place.

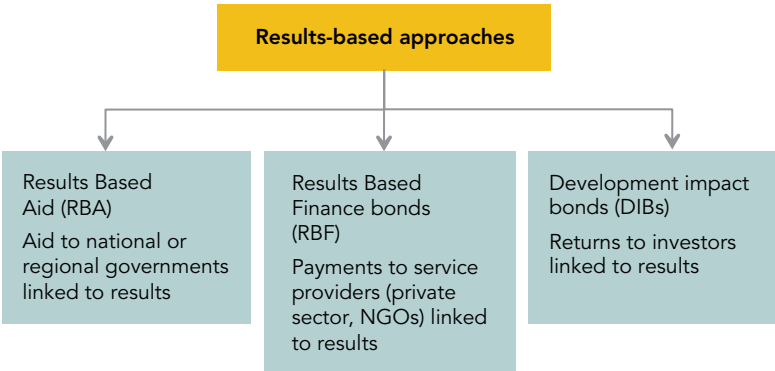
Within the family of results-based approaches, it can then be helpful to distinguish between different recipients. As figure 1 shows, RBF refers to a situation in which results are provided by, and payments made to, service providers such as the private sector or non-governmental organizations (NGOs), while results-based aid (RBA) refers to cases

where the results are delivered by, and payments made to, national or regional governments. There is also growing interest in using development impact bonds (DIBs) as a mechanism where private sector investors receive differential returns on financial instruments depending on the results achieved.<sup>1</sup>

RBF represents a fundamentally different approach to supporting the private sector and other service providers in delivering energy access objectives. Of fundamental importance is that it changes the allocation of risk, placing more delivery and execution risk on those who agree to try and deliver the results: if they fail to deliver the pre-specified results, they will fail to receive funds. This contrasts with conventional ways of supporting energy access objectives where payments are made upfront, before it is known whether the intervention will be successful.

This insight, in turn, helps to identify when it may be appropriate—and, just as important, inappropriate—to turn to RBF. The transfer of risk may be expected to sharpen incentives to deliver, and there are numerous cases from the energy sector and other sectors where such benefits can be seen. On the other hand, it may not be desirable or sometimes even possible for the recipient to bear the additional delivery/execution risk. The decision on whether to use RBF turns, to a significant extent, on whether the advantages of sharpening incentives is greater than the disadvantages of placing additional delivery risk on the recipient.

FIGURE 1 Various types of results-based approaches



Practically speaking, there are a number of preconditions that can be used, in at least a qualitative sense, to help determine the circumstances within the energy access context in which this might hold:

- Whoever is providing the funds need to be a credible and committed partner: recipients will not commit to undertake significant actions on the promise that success will bring payment if that promise is not credible.
- Those receiving the funds need to have a sufficient understanding of the scheme and the incentives it provides, and the capacity to respond to those incentives.
- With funds coming only after the attainment of energy access results, the recipient will need to be able to secure a reliable source of pre-finance: this will depend on who the recipient is, the nature of the project being undertaken and, in many cases, the nature of the financial markets in the country where the project is being undertaken.

These conditions can often be satisfied by designing comprehensive packages, in which RBF is one element, with other elements focusing on ensuring that these conditions are met. However, even if these conditions are met, there are a number of other factors that, if most or all are present, are likely to make RBF an attractive possibility, but which, if absent, point to alternative approaches being preferable. These are also the factors that can help those designing schemes think through precisely which types of results they may wish to use within an RBF scheme. They include:

- ***The extent to which the agent can control the risks that are shifted onto them.*** RBF is more suited to cases where the recipient is able to easily control the additional delivery risk it faces.
- ***The ease with which both parties can observe the relevant results ("clear line of sight").*** If attainment of the result is easily observed and verified, then the transaction costs associated with the RBF scheme will be lower. It will also make it more likely that the recipient will respond positively to the incentives created.
- ***The structure of costs involved in meeting the results.*** Some energy access solutions may require potential recipients to incur significant fixed capital investments before the result can be secured. The more costs that RBF recipients have to incur before any revenue is received, the greater the risk faced by an RBF recipient. This will increase the cost of finance for a recipient, potentially reducing the value for money proposition of the RBF scheme.
- ***The additional investment required to deliver the results does not entail a significant proportion of the agent's (potential) resources.*** It will be easier, and hence more attractive, to place the additional delivery risk of RBF on recipients who have significant resources relative to the activities needed to deliver the results. They can respond to the incentives without fear that failure may undermine the viability of their overall operation.

- ***The length of time the recipient needs to wait before receiving results based payments.*** The longer that recipients have to wait to receive results-based payments, the larger those payments will need to be in order to encourage the recipient to take action and to overcome pre-financing costs.

The nature of many energy access projects means that assessment of these factors will need to be made qualitatively, drawing on the judgement and expertise of those designing the intervention and in consultation with (representatives of) the intended beneficiaries.

## THE ENDEV RBF FACILITY

A program that is actively piloting the RBF is Energising Development (EnDev), a multi-donor energy access partnership program established in 2005 and currently financed by six countries (the Netherlands, Germany, Norway, the United Kingdom, Switzerland, and Sweden).<sup>2</sup> It promotes sustainable access to modern energy services that meet the needs of the poor—long-lasting, affordable, and appreciated by users. It is one of the first outcome-based and performance-based programs in the energy sector. By end-2016, it had reached 17.3 million people in households, almost 19,400 social institutions, and 36,600 small- and medium-sized enterprises.

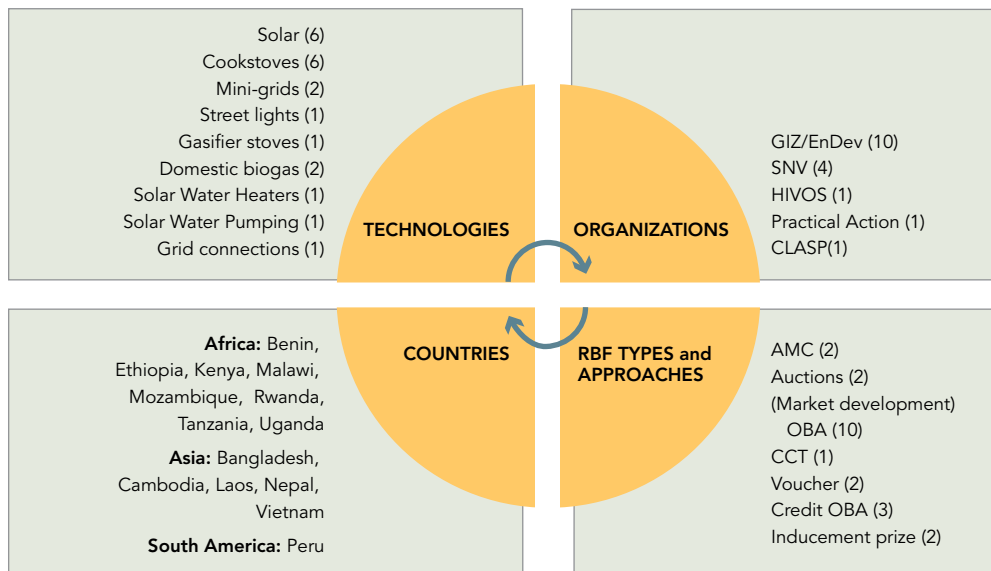
So far, EnDev country projects have successfully participated in three rounds of selection for projects that are financed by the RBF facility. Because of the significant requirements for developing the proposals and the novelty of the RBF concept, the selected countries were intensively supported by EnDev management and consultants. Currently, EnDev together with its implementing partners is carrying out 17 RBF projects in 14 countries (figure 2). The portfolio is characterised by a balanced spread of implementers, RBF approaches, technologies, and geographic outreach to Africa, Asia, and Latin America—with 5 projects that have a multi-country/regional character (figure 3). It combines (i) risky but innovative projects with a strong focus on learning and (ii) models that have already been piloted and are very likely to perform well.

## TWO YEARS IN—ENDEV RBF LESSONS LEARNED

The cultural diversity represented in the program is a key for innovation. Sharing experiences and learning is the basis for success. For RBF in particular EnDev is gathering experiences and lessons learned regarding the feasibility and suitability of the instrument as a market development tool. Throughout EnDev RBF implementation, the program is keeping track of emerging problems, solutions, and progress in order to transfer practical lessons to similar EnDev projects and extract general learning issues for later use beyond the RBF window.

### ***Suitability of RBF for different contexts***

EnDev's experience suggests that the *RBF facility can work best if it is flexibly embedded in a larger, more comprehensive and interacting package of market or sector*

**FIGURE 2** EnDev piloting the RBF for energy access in Africa, Asia, and Latin America

NOTE: CCT = Conditional Cash Transfer; AMC = Advanced Market Commitment; OBA = Output-based Aid.

**development support.** Such a package consists of technical assistance to companies and financial institutions, along with the joint development of sector and market strategies with the main actors. RBF can fit as a prominent instrument, but seldom as an exclusive one—the situations in which RBF can act as a single driver for market development are rare, given that the energy access markets that EnDev works in typically have small and often weak private companies, within weak business and financial environments. Weak markets and market actors require considerable technical assistance and not all market development barriers can be addressed through financial instruments. Even in relatively mature markets, with strong private sector players and financial sector capacity in place, RBF is still a new modality of working for all involved, requiring technical assistance during the roll-out of RBF instruments.

In some cases, RBF schemes might be combined with existing projects that have personnel in place and provide the necessary capacity development in the energy access sub-sectors. In other cases, cooperation with technical assistance activities from other organizations has to be found—or if the need for capacity building is only very low (as might be the case in more advanced markets), it can be integrated as a commercial cost for the entrepreneurs into the RBF incentive.

- In Kenya, RBF for developing mini-grids is placed within a larger context of policy and regulatory advice and extensive technical assistance to project developers. In a regional RBF for domestic biogas, the EnDev RBF adds to the existing market development support activities of the Africa Biogas Partnership Programme.
- In Tanzania, the RBF for rural picoPV operates as a stand-alone intervention, relying on a fairly developed urban solar market and the high levels of awareness created by past donor-financed activities—although

close follow-up and technical assistance will also be required.

- In Rwanda, very much to the contrary, the picoPV RBF is operating in a nascent market. For that reason, the project is also implementing more classical interventions—such as coordinating sector actors and advising the government on a national monitoring system for picoPV sales—to track progress toward government targets and avoid double dipping.

Normally, incentive schemes are designed to encourage participants to stay in the market for a longer period, building up the confidence of market actors and allowing all levels of the supply chain to develop. The time horizon for the EnDev RBF to stay in the market is four years, including the time needed for design and inception of the country RBF structure. This is considered too short for markets to fully develop from scratch. Ideally, the RBF will lift a nascent market to the next sustainable level.

Although in all EnDev RBF projects the final trigger for disbursement is the actual and verified supply of energy service to end consumers, the aim of the interventions is to realize specific market shifts. Thus, as illustrated in figure 3 the portfolio comprises a multitude of intended shifts, resulting in a variety of specific bottlenecks addressed by the different RBF schemes. Many projects support the expansion of distribution infrastructure into dispersed areas, some address consumer (or retailer) financing constraints through the support of credit schemes at MFIs, and some support the distribution of higher quality or performance solutions. As a result, every RBF design is unique and tailor made to the specific market situation.

EnDev has also found that *there is a substantial need to engage with all actors in the RBF chain—from financial institutions to private energy service providers*. This helps strengthen their capacity to work with the RBF model, to

**FIGURE 3 A snapshot of EnDev's results-based financing portfolio***Portfolio Tranche 1 (approved in 2013):*

COUNTRY	TECHNOLOGY FOCUS	EXPECTED MARKET SHIFT
<b>BENIN</b>	Solar (Pico, Street Lighting)	Ensure Quality in New Market from Beginning
<b>ETHIOPIA</b>	Improved Cooked Stoves	Urban to Rural Distribution & Market Development
<b>RWANDA</b>	Solar (Pico)	Support Growth of Nascent Market (focus on retail chain)
	Village Mini-Grids	Functional in Government Paradigm Shift (Privatisation)
<b>TANZANIA</b>	Solar (Pico)	Support Growth of Nascent Market (focus on import chain & distribution)
<b>BANGLADESH</b>	Solar (Pico)	Diversification of Existing Market (downsizing, pro-poor)
<b>VIETNAM</b>	Biogas	Last Step Towards Subsidy Free Commercial Market

*Portfolio Tranche 2 (approved in 2014):*

COUNTRY (LEAD)	TECHNOLOGY FOCUS	EXPECTED MARKET SHIFT
<b>KENYA</b>	Solar (Pico)	Market Acceleration via Building Sustainable and Affordable Credit Lines
	Village Mini-Grids	Market creation for private sector operated mini-grids
<b>KENYA</b>	Improved Cook Stove (Next Generation)	Acceleration of Market Entry via Sustainable Credit Line Creation
<b>NEPAL</b>	Improved Cook Stoves (Hood Stoves)	Fostering portable ICS technology development and marketing via design competition
<b>PERU</b>	Solar (Water Heating)	Scaling (Peri-Urban) SWH Market to Fully National Reach in Rural Areas

*Portfolio Tranche 3 (approved in 2015):*

COUNTRY (LEAD)	TECHNOLOGY FOCUS	EXPECTED MARKET SHIFT
<b>BANGLADESH / KENYA</b>	PV systems and efficient appliances	Increasing availability of quality appliances for off-grid systems
<b>CAMBODIA / LAOS / VIETNAM</b>	Advanced clean cookstoves	Making advanced cookstoves available through competitive tendering
<b>KENYA / TANZANIA / UGANDA</b>	Biogas	Increased availability of credit and improved after sales service
<b>MOZAMBIQUE / MALAWI</b>	Improved cookstoves	Integrating subsidised cookstoves in social programmes as an AMC for a commercial market
<b>SUB-SAHARAN AFRICA</b>	Grid densification	Introducing cross-country competition into a monopoly utility market

develop business plans and planning, and to understand monitoring and verification requirements.

Monitoring in the way that is required for RBF is not a standard business practice for either the financial institutions that act as central player in the EnDev RBF projects or the private companies that benefit from it. In Rwanda, the verification process for a solar RBF saw several rounds, as the initially submitted claims were found to be unacceptable or below standard: many telephone numbers were missing; or the company claimed sales that had already been reported to a different donor financed program and thus did not qualify for earning RBF incentives. As this was the first verification process, EnDev took a strong coordina-

tion role. In an iterative process, the challenges could be overcome and processes streamlined, with responsibility eventually transferred to the financial institution and to the independent verification agent. But even in quite advanced markets or with strong actors, RBF requires intensive and continued communication. Understanding RBF goals and strategy on both the company and the sector level, as well as understanding the rules of delivery and payment, is crucial for ownership and a successful RBF project. Otherwise the intervention faces the risk of misaligning with government policy, other donor programs crowding out the RBF, or companies investing, but not fulfilling, the verification demands.

Next to firm performance, the success factor that has emerged most clearly from implementation so far is the permanent, local presence of an experienced task team leader or task team that can react to local challenges, navigate the difficult negotiation phase, keep government and other donors aligned with the RBF objectives (to do no harm, at the least), and—most crucial—make sure that the (often new and difficult to understand) implications of RBF are understood by all stakeholders.

### **RBF and pre-financing**

*Given that the centerpiece of RBF is that the private sector (including the financial sector) bears the full risk of dissemination of energy access solutions, it is important to carefully think through pre-financing needs.* Pure RBF discards the possibility to provide concessionary up-front finance. Only a few market actors and financial institutions will be able or willing to come up with the necessary pre-financing on their own. EnDev's experience shows that traditional banks, for instance, show little appetite to engage in RBF, or provide pre-finance for energy access activities in general—which even with RBF incentives in place, they perceive as an overly risky endeavour. This creates the risk of the RBF making just a few already strong firms and financial institutions stronger, and eventually supports the creating of monopolies and oligopolies. Such an effect could be avoided by a careful selection of participating firms and financial institutions, and to open or strengthen commercial pre-financing channels for RBF participants—particularly for local firms that lack access to international banks and impact investors.

This difficulty has been particularly visible in the mini-grid RBF in Rwanda, as the incentives are paid upon achieving results and the costs of pre-financing are considerable. Factoring in the high interest rates for obtaining such financing, most projects require as much as 50-70 percent RBF incentives to attract the private sector—and there is a clear divide between local and international firms in terms of financing options.

In general, therefore, while RBF rewards only performing companies, the incentive design needs to be carefully done to not just benefit a specific type of company. If the only companies benefiting from the RBF are foreign companies, the RBF results in market distortion rather than market development, driving out potential local actors. Technical assistance is important to make sure that existing local companies are supported in both meeting the high application and construction standards of the RBF project and obtaining reasonable terms for the required pre-financing.

Several firms have borrowed money on the basis of an RBF contract and seemingly secured a right to future RBF payments. This raises the question of what to do with firms that do not meet the RBF payment triggers or suffer from the sometimes longer than expected payment and verification process typical for new RBF projects—which can easily push firms into insolvency. Although especially the former can be considered a normal business risk, which can be reduced by a careful selection of companies “at-entry” of RBF, for the latter care should be taken that RBF verification and payment cycles are in line with companies' regular financial planning. In addition, smaller

local firms will need to be able to understand the cash flow implications.

### **Verification strategies and cost**

*The complexity of monitoring and evaluation and verification should not be underestimated, especially when going into bigger numbers, and especially with moveable over-the-counter products like lanterns and cookstoves.* Striking a balance between a reasonable prevention of fraud and the costs for verification is important; projects are making use of a mix of methods of physical field checks and phone checks, accepting that a 100 percent check is too costly. Despite thorough planning, verification systems and manuals need to be adapted to the market realities after being tested in the first claims. Otherwise there is the risk of the verification result not adequately reflecting the outcomes achieved. For example, a failed phone verification of customers could actually be caused by patterns of phone ownership and usage, rather than non-performance of the participating firms. (A more detailed discussion on verification cost is included in the Tanzania example below.)

## **TANZANIA'S PICO-SOLAR RBF SCHEME**

One of the EnDev RBF programs that feeds into the above lessons learned is Tanzania's pico-solar scheme. It was instituted because innovative mechanisms are needed to spur last-mile distribution of clean energy solutions—given that out of 41.5 million inhabitants (CIA, 2015), only 36 percent of the total population and 20 percent of those in rural areas have access to electricity (REA, 2016), and a vast majority of the country is expected to remain off-grid for the coming decades. The overall rationale and intent of RBF in the Lake Zone—which covers 6 regions (Mwanza, Kagera, Geita, Shinyanga, Simiyu, and Mara)—is to increase sustainable rural consumer access to pre-electrification energy services (basic lighting and communication) via quality pico-solar technologies. After successful piloting in the Lake Zone, the RBF facility will expand to include the Central Zone of Tanzania in the course of 2016.

### **Designing the RBF Tanzania program**

The pico-solar EnDev RBF was conceived as a way for suppliers and end sellers to bolster their investments in solar distribution chain development by rewarding players with incremental sales-based performance incentives, channeled through mainstream banking. Its design is based on key outcomes of market intelligence research in the Lake Zone (with over 10 million inhabitants), which indicated strong demand for pico-solar products (with an average 35 percent of people wanting to buy) and a lack of supply (only 3.5 percent of people owning solar) (figure 4). The intent is to increase the supply of quality solar products to the area without subsidizing customers. Only IFC Lighting Global approved products and services are eligible for the RBF incentives to avoid the promotion of sub-standard and fake solar products.

The RBF program is open to the private sector from May 2014 to August 2018, with a focus on the solar

**FIGURE 4 Solar market intelligence on the Lake Zone**

pico-PV subsector (small solar home kits, lanterns, and phone chargers). The way the program works is that the private sector is paid in the form of: (i) a product bonus to end retailers, allowing them to build up stock and provide a means to scale their business; and (ii) a capital bonus to suppliers (as based on rural end retail sales volumes), off-setting part of the initial investments that those companies are making to engage in a new market -paid after verification of approved pico-solar sales to rural consumers.

Unlike a loan that is limited to a fixed, one-time payment bearing interest, the final value of the RBF secured by actors depends on their cooperation to mutually deliver results. The more solar verified as being sold, the more financial incentives suppliers and retailers are entitled to receive. If one party fails to deliver, neither party is capable of benefitting. The incentive value as earned by the companies are unique per product, based on the energy service (lumen-hours per solar day charge) per product, according to IFC Lighting Global technical spec sheets. The roster of eligible products is being updated on a quarterly basis, following approval of new products, while the incentive levels decrease in value by 25 percent per annum.

A total of 2.2 million Euros in RBF incentives are available in the Tanzania RBF facility and are to be paid to service providers in the supply chain. As such, it operates as a temporary and short-term buy down on the associated delivery costs of each unit of IFC Lighting Global approved pico-solar product sold by legitimate suppliers and retailers to rural consumers. The RBF fund in Tanzania is driven by three main sets of actors: (i) a financial institution (the Tanzania Investment Development Bank (TIB)), (ii) pico-solar import-suppliers, and (iii) end retailers. SNV's main role in this project is to broker relations among actors that ensure fair, transparent, and verifiable financial transactions throughout the management of the fund.

#### **Putting a value on RBF “energy service units”**

At the end of the day, the instrument that makes its way to the private sector will ultimately be monetary in nature—which means that it must strike a balance in incentive values so that they are lucrative enough to stimulate the

investment of the private sector without over-subsidizing or distorting markets. At the same time, the fund aims to account for the performance of the solar products, as products with a stronger energy output tend to have a stronger impact at the household level, while higher investments are needed from the private sector to deliver these larger products and services to rural markets.

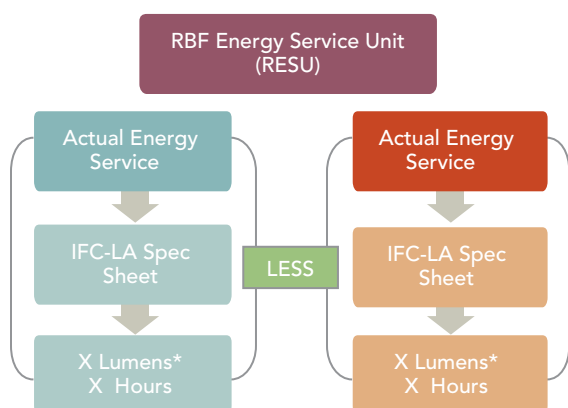
By this logic, the RBF incentive per pico-solar product in Tanzania is based on an energy service calculation that considers both the brightness (lumens) and duration (runtime per solar day of charge) of light that the product is capable of providing. The resulting “lumen-hours per solar day” performance of the pico solar product is considered to be quantifiable as a number of “energy service units.” An annual monetary value (Euro cents) is applied to each qualifying energy service unit that is payable to the private sector in the form of RBF Product Incentives.

All pico-solar products—and the associated performance values and standards used to determine the number of energy service units a product is capable of providing—are based on publically available information from IFC-Lighting Africa. The RBF incentives are further calculated to ensure a “minimum energy service unit,” which is set according to the Minimum Performance and Standard Targets of 100 lumen-hours per solar day (25 lumen light output, 4 hour run time/day solar charge). The energy service units available are thus based on the actual energy service units of the product less the minimum energy service units. The resulting difference is considered to be the RBF Energy Service Units (RESUs) for a specific Lighting Africa approved product (figure 5).

Each RESU is assigned an annual monetary value as defined by the RBF program in the form of Euro cents (RESU rate). RBF Product Incentive values are further balanced by a maximum threshold or “RBF Incentive Cap.” This cap has been put in place to ensure the intent of RBF incentives as a tool to reasonably offset, not fully absorb, costs associated with developing distribution chains (that is, rural sales agent engagement) and that the incentive values do not exceed retail market prices of pico-solar products. To further limit market distortions and actor dependency risks, the value of RBF incentives decreases at an annual rate of 25 percent—which also stimulates com-



**FIGURE 5** How “energy service units” are determined



panies to move quickly and achieve results.

The true intent of the RBF in Tanzania has been to stimulate the investment of suppliers to set up operations in untapped last-mile markets. While the presentation of the incentives is on a cost per unit basis, the actual use is to offset the start-up costs of initiating viable distribution chains. For developers and practitioners, these final points have proven to be the most seriously needed for consideration in evaluations of incentive values. It is critical that assessments of incentive values go beyond unit cost comparisons to include a fuller accounting of the wider range of delivery costs necessary to actually get products to rural markets, along with potential cost burdens of meeting the unique reporting compliance standards required to make claims against the RBF Fund. Without these estimations, the valuation of RBF incentives can risk not being lucrative enough to stimulate sufficient uptake among players in the private sector.

### Managing transaction costs

While considerable attention in an RBF scheme is focused on how much a firm could potentially earn, there is also the inherent reality that complying with the terms and conditions of an RBF instrument will naturally also come with costs—for both implementers and the private sector.

For the private sector, the first set of expenses relate to the pre-financing aspects of initiating sales. As a post-financing instrument, an RBF instrument by its very nature has little ability to provide for initial investments in stock, human resources, or operational set-ups. While these considerations will vary significantly in their actual value (depending on the specific business model and scale that firms are capable of undertaking), their costs should be well anticipated and not underestimated. Thus, practitioners and developers need to assess the availability of pre-financing in local markets or funds available to firms. There are also the realities of ensuring that sufficient investments are made by firms to capture process and administer the necessary data flow to compose RBF claims. RBF implementers managing the scheme can help offset cost incursions in these areas by providing standard reporting tool formats and content definitions (like clear location definitions).

There is no magic formula for realizing detailed estimations of transaction costs for either RBF private sector players or implementing practitioners. The reality is that delivery costs in reporting and verification are most often directly proportional and move in parallel to the size of RBF claims prepared by the private sector. Instilling regular feedback mechanisms with firms on progress and implementation in between received claim cycles can further enable significant means for adequate cost estimations and budget preparations.

### Verifying results

In order for suppliers of pico-solar products to earn these RBF incentives, quality products and services need to be provided to customers. Each RBF claim is subject to verification (on paper, by phone and in the field), which is coordinated by SNV and involves independent verification agents.

The feedback from verifiers provides significant insights into aspects of sales and product services—insights that are not necessarily related to compliance with project rules. An important takeaway for practitioners and potential developers of RBF instruments is that verification should be implemented as more than just “policing”, but also as a value added service to the private sector. Implemented in this way, verification not only confirms quantitative outcomes but also positively influences the quality of achievements. A wealth of practical experience has been gained in the realities of verification.

### Results to Date

The first 18 months of operation of the RBF instrument in the Lake Zone has clearly acted as a stimulus to initiate private sector investment into the region. Where previously there was the stable presence of only a single legitimate solar provider servicing the market, there are 8 additional firms now actively engaged. Direct, salary based employments by these firms have reached well over 300 employees, along with a continuously growing roster of district and village level sales agents, promoters, and technicians, whom at present number over 200 people.

As a whole, firms have cumulatively submitted claims (both verified and in processing) valued at 320,000 EUR and achieved an initial sales and service outreach to more than 12,000 rural households—effectively placing the benefits of solar energy within reach of more than 45,000 people. Whereas at the outset of the program there were only 3 legitimate pico-solar product options available to consumers in the area, product diversity has expanded to more than 15 types of entry and small solar home system devices, all of which are approved by Lighting Global.

Of particular note in the delivery of these services to rural consumers has been a high diversity in the business modeling that each firm has chosen to apply. A total of 10 firms<sup>3</sup> have successfully applied to the RBF Fund, 8 of whom are entering the Lake Zone for the first time. These firms not only use traditional retail outlets but also village level agents and rural micro-finance institutions (MFIs). Of particular note has been the increased adoption and application of Pay as You Go (PAYGO)-based business models by 4 participating firms, which enable consumers to acquire

larger systems that are purchased in monthly instalments with mobile money.

The initial success in the operation of the RBF scheme has acted as a catalyst for local firms to leverage additional financing to support further scaling of their last mile operations and/or diversification of their services to larger domestic and institutional solar installations. Solar companies participating in the Tanzania RBF scheme have been able to realize grant- and loan-based financing to values cumulatively exceeding 500,000 EUR. In this way, the RBF has enabled local companies to keep up a competitive pace alongside much larger companies who have access to more substantial investment and equity-based financing.

### Lessons learned in Tanzania

What special lessons can we learn from Tanzania's pico-solar project so far? Certainly, a number of critical pre-conditions emerge:

**A favorable business climate.** To a large degree, the RBF is only a complementary instrument, catalyzing market development if certain pre-conditions are given. A favorable business climate with appropriate policies and regulations should be in place to ensure a level playing field. In Tanzania, the presence of exemptions in taxes and import-excite duties on solar goods, limited fossil fuel subsidies on kerosene, and broad public sector endorsement and support of solar as an important contributor to the off-grid energy mix for more than a decade, have together helped create a conducive market environment for solar. There must be a solid degree of market maturity and sufficient private sector capacity to ensure that the key players view the RBF as a tool for innovation and scaling, and can financially initiate or leverage the RBF instrument.

**Private sector buy-in.** While RBF in Tanzania has operated in a manner that liberates the private sector and acts as an enticement to engage in accelerating rural solar distribution, private sector buy-in and contribution throughout all stages of the lifecycle of an RBF scheme has proven to be a mandatory pre-condition in order for firms to fully take the plunge into absorbing additional risks inherent to developing new markets. As private sector transactions are

not mandatory under an RBF modality—and given that RBF implementers can only play a facilitating role with limited ability to control implementation speed or success—it is essential that all aspects of an RBF instrument are transparent, realistic, and relevant to the private sector.

**Well thought-out design.** Market intelligence is an important first step in the design of any RBF scheme to ensure that specific opportunities and bottlenecks are fully considered. RBF implementers also need to be prepared to adapt themselves to private sector ways of working by promoting the RBF instrument as a business proposition. And implementers and developers need to pay keen attention to making as much use as possible of existing market systems and tools so as to build upon conceptual understanding already present among all players—in effect, embedding the RBF scheme in a complementary fashion within existing and understood market dynamics. Successive rounds of private and financial sector consultations and RBF design re-adjustments have proven to be critical for the acceptance and positive response from these players when the RBF scheme was eventually launched.

As a result, the roll out of the RBF instrument in Tanzania has not come as a surprise to the private sector; rather, it has articulated itself in the market as a response to address constraints that were identified by key sector players. This approach has acted to strengthen private sector trust and ownership in the resulting RBF instrument and highlights the risk to outsourcing market intelligence research and RBF design to external players or third parties that will not be closely involved in subsequent RBF implementation.

Initial results of this front-runner in EnDev's global portfolio of RBF initiatives look promising. Nevertheless, longer-term impacts, like its eventual effect on the sustainability of the outcomes realized in Tanzania—that is, companies continuing to provide and expand their energy products and services outreach—will be measurable only in the coming years after the RBF project has come to its close. Replication and scaling of the initiative, whether more widely in Tanzania and or in other country contexts, will need to continue to facilitate the careful observation of best practices in RBF design, implementation, and administration gained to date.

### NOTE

1. For more information on how RBF and RBA can be used to promote energy access and other energy sector objectives, please see the guides developed by Vivid Economics and ESMAP at [www.esmap.org/node/1328](http://www.esmap.org/node/1328)
2. At the global level the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH acts as a lead agency for the coordination of the program, in cooperation with the Netherlands Enterprise Agency (RVO.nl). Implementation at country level is shared by GIZ and other implementation partners (such as SNV, Practical Action, MAEVE, ADES, HIVOS, and CLASP). The RBF facility embedded in EnDev is funded by the UK.
3. Ensol, Global Cycle Solutions (GCS), Off Grid Electric, Sunny Money, Zara Solar, Mobisol, Lotus (with Tigo), Simu Solar, Sollatek and Ongeza; dealing in products and services from manufacturers including Green Light Planet, Omnivoltaic, d.Light, Fosera, Azuri, Niwa, Mobisol and M-POWER.

## REFERENCES

Energising Development (EnDev) website: <http://www.endev.info/>

Mumssen, Y., Johannes, L., & Kumar, G. (2010), *Output-Based Aid: Lessons Learned and Best Practices*. Washington D.C.: World Bank Group.

Results-based Financing on Energypedia: [https://energypedia.info/wiki/Results-Based\\_Financing](https://energypedia.info/wiki/Results-Based_Financing)

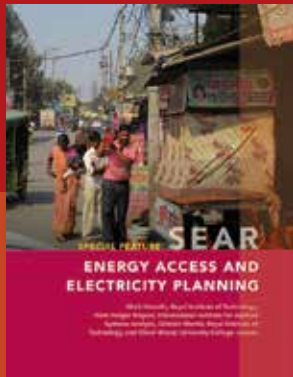
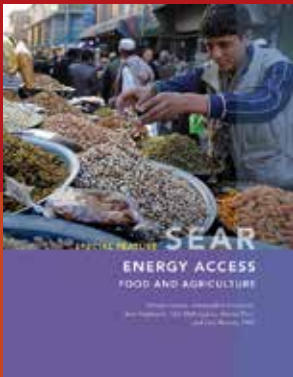
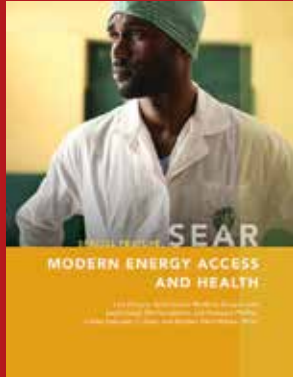
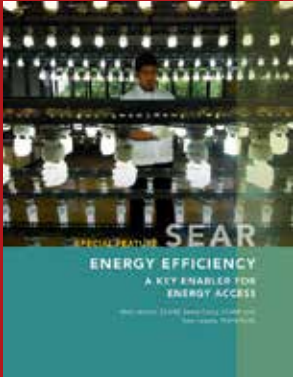
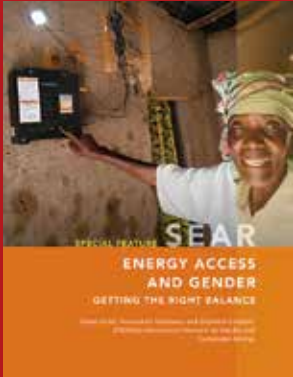
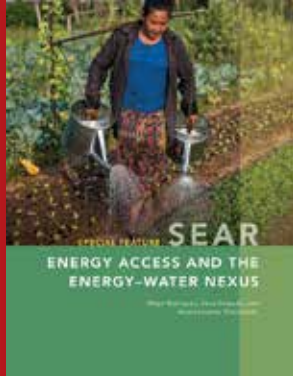
Result-Based Financing for low carbon energy access (RBF): <https://www.gov.uk/guidance/result-based-financing-for-low-carbon-energy-access-rbf>

SNV, *How Results Based Financing is spurring solar market development in Tanzania*,

<http://www.snv.org/update/how-results-based-financing-spurring-solar-market-development-tanzania>

World Bank (2011), *Implementation Completion and Results Report on a Grant in the Amount of US\$0.85 Million Equivalent to the Naandi Foundation for a Andhra Pradesh Rural Water Scheme Project*. Washington D.C.: World Bank Group. September 19th.

# SPECIAL FEATURES



To download the State of Electricity Access Report, overview, and Special Features, visit:

<http://esmap.org/SEAR>

