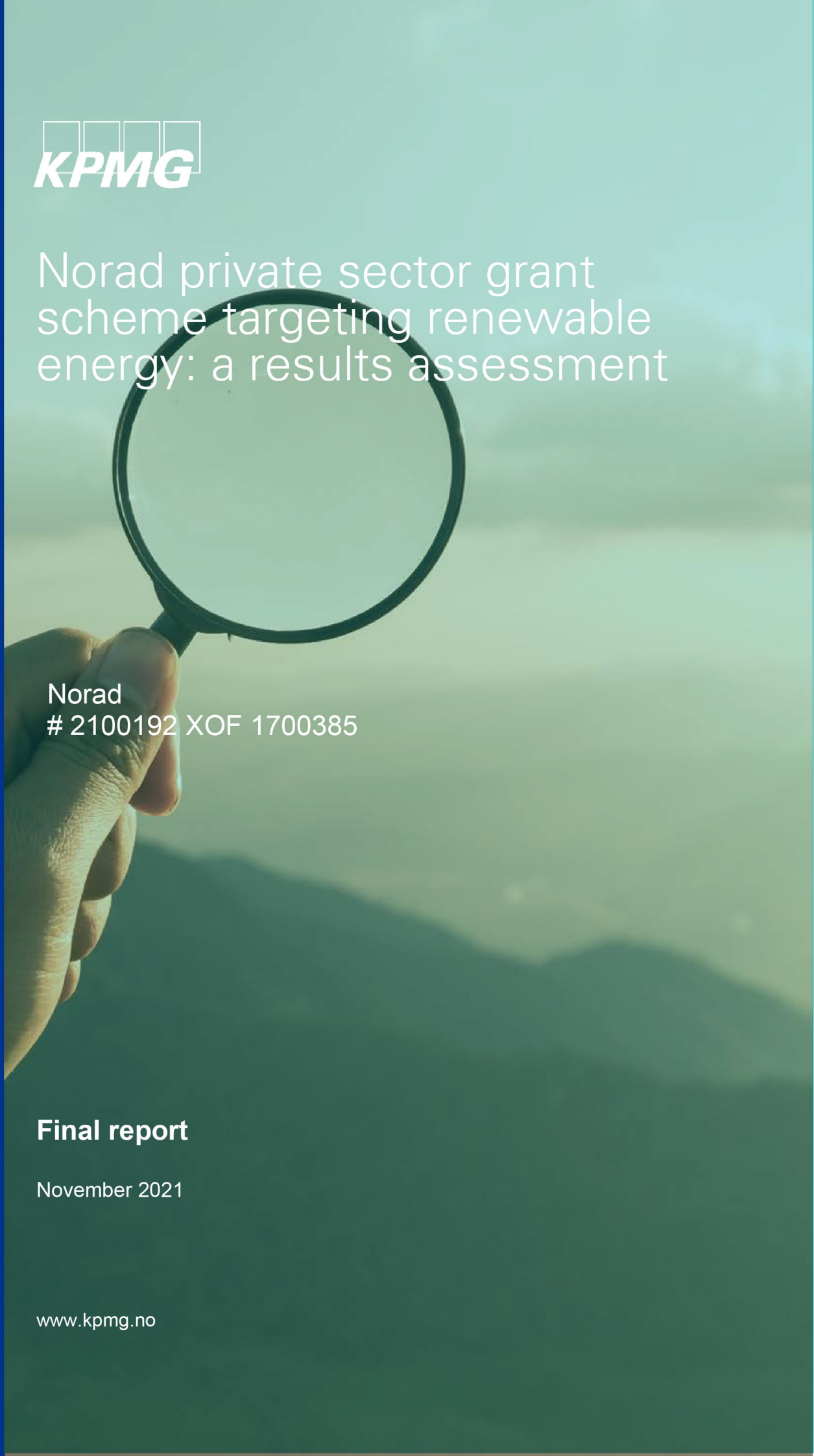
Norad privat sector grant scheme targeting renewable energy: a results assessment

KPMG

Norad Collected Reviews 06/2021

www.norad.no
ISBN 978-82-8369-123-8
ISSN 1894-518X



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Norad
2100192 XOF 1700385

Final report

November 2021

www.kpmg.no

Abbreviations

COD	Commercial operations date
ESG	Environmental, Social, Governance
ESIA	Environmental and Social Impact Assessment
IPP	Independent Power Producer
Norad	Norwegian Agency for Development Cooperation
Norfund	Norwegian Investment Fund for Developing Countries
ODA	Official Development Assistance
PAYG	Pay-as-you-go
PPA	Power Purchase Agreement
SDG	Sustainable Development Goal
SHPP	Small Hydropower Plant
SHS	Solar Home Systems
SPVs	Special Purpose Vehicles

Contents

1. Summary

1.1 Background

Norad has supported the development of renewable energy projects in ODA-eligible countries for several decades. Since 2017, the support has been largely channelled through the grant scheme *Enterprise Development for Jobs*. Among other sectors of focus, this scheme targets renewable energy projects. This assignment will be an input to Norad's reporting on results of energy-related development assistance. The main purpose is to identify and assess results of Norad's private sector support scheme and is limited to energy projects only.

Between 2010 and 2020, Norad entered into agreements with 38 companies for 78 projects through 102 grant applications.[1] The grant scheme is a risk reducing measure for companies and provides up to 50% of project costs. Norad's granted support is about 382.7 MNOK, with corresponding disbursements of NOK 188.3 MNOK. Disbursements are made against actual expenditure. Norad supports mainly early phase project development, prior to financial close and investment decisions, and does not support the implementation of the renewable energy project itself. Norad can also support training, and underlying investments (transmission and distribution etc) as well as subsides for risk premiums to facilitate project development, but historically the main support has been for (pre-) feasibility studies, market scoping, and project development work.

1.2 Key findings

The results in this survey are based on responses from 25 companies for 59 projects through 86 grant applications, of which 59% are in Africa and the Middle East and 29% are in South and East Asia. The main reason for why the data is not available for all projects is because some companies did not respond to the survey while others reported that they were unable to report due the current Covid-19 situation or left out information for some of the projects and applications in their portfolios.

There are material results of 13 commissioned projects under the grant scheme. Norad has contributed to 709 MWs of expanded capacity in developing countries, realised through the allocation of NOK 188 million in Norad support.

Projects that are yet to be commissioned and are still in the process of active project development account for 32% of the portfolio (19 of 59 projects). Within this group of projects, some companies report to be in good position for their projects to reach financial close within five years. The potential value of those projects amounts to 647 MW installed capacity, 2,860 GWh annual generation and a mobilization of 18.7 BNOK.

1. **Key outcomes and impact:**
    - **Investment** – Following Norad support, investments for 13 commissioned projects to date amount 6.4 BNOK. The majority of investment has gone towards solar projects (92%). A handful of countries have benefited from the investments: 61% in Egypt, 21% in Ukraine,10% in Mozambique, 3% in Uganda and 3% in Indonesia. This corresponds to 14% of investments in low-income countries, 83% in lower middle-income countries and 3% in upper middle-income countries.
    - **Financing** – The reporting on financing of commissioned and yet-to-be commissioned projects is incomplete and it is difficult to read too much into the data (see section 2.3 on data limitations). The main sources of financing are reported to come from Development Finance Institutions and sponsors' own sources. Regarding commercial sources of financing, mobilization has been somewhat limited which can be attributed to the often high commercial and political risk among jurisdictions supported, which limits the long-term local or international financing available. As a result, triggering commercial financing is

[1] The reason for why there are more applications than projects is that some companies have received support for several of the phases of the project cycle, for instance pre-feasibility and feasibility.

somewhat limited across the portfolio beyond the project owners own financing, which in many cases is significant. In certain cases where commercial financing has been accessed, for instance in Pakistan, it has proved catalytic.

- **Energy outcomes** – Following Norad support, commissioned projects lead to 709 MW generation capacity created and 1,591 GWh generated annually. In terms of off-grid unit sales (cookstoves, SHS, etc.), 108,643 units were sold based on five off-grid companies that provided unit sales.

- **Employment outcomes I** – Employment outcomes amount to 7,622 direct and 1,267 indirect jobs created.

- **Employment outcomes II** – The proportion of local jobs was 65% and 14% female jobs.

2. **Norad's value addition:** Some points from the case studies offered added nuance to the value-addition provided through Norad grant support, including flexibility of support, enabling new and emerging market entry, a dependable partner, building developer credibility in the market, and reducing regulatory, political, or financial bottlenecks in particularly challenging investment contexts.

3. **Risk-mitigation approach of Norad**: The risk appetite of the grant scheme appears balanced. Norad's strategy in supporting the feasibility stage could be considered, in project terms, high-risk, high reward. When considering the size of grant, averaging 2.4 MNOK for commissioned projects, the successful cases outweigh those disbursements that did not materialize in a commercially viable operation. And in those cases where projects did not materialise, the project development efforts, including market scoping, capacities built and jobs created, and visibility among counterparts, were seen as value adding for other potential opportunities by IPPs.

4. **Tailoring Norad's support:** The grant scheme is mainly focused on early-stage development, which is beneficial when considering that the risk profile of projects are at their highest and project development and progression is at its most challenging and uncertain. For more results, a more holistic model of support that leverages multiple agencies and instruments could be considered. And there are cases that illustrate this approach well, for instance, the combination Norad-Norfund-Embassy support is perhaps a model worth investigating further having yielded results in certain utility-scale cases.

5. **Mobilization effect:** The likelihood of projects moving from (pre-)feasibility stage to commercial operation is fluid and subject to many externalities beyond the control of the developer. Norad's support is just one of many necessary interventions. It is therefore logical that some Norad-supported projects never materialize or that some of the companies supported go out of business. The mobilization effect of the 6.4 BNOK of investments is not directly attributable to Norad as Norad is only contributing to a selected stages of project development. In order to gauge the degree to which Norad grant support was catalytic in mobilising co-financing for the project, a simple metric was used for respondents to rate the mobilization effect of the project. There is an indication that Norad's support is catalytic, but the method has to be refined moving forward to more accurately capture the mobilization effect.

6. **Reporting:** There are clear results of the grant scheme, however capturing them in a systematic way is challenging for a variety of reasons related to the nature of project development, questions of contribution/ attribution, methodologies for data capture etc. This makes quantitative statements of material results difficult.

1.3 Reporting recommendations

1. **Reporting expectation management** – Reporting should be introduced in some fashion either through a clause in the agreements or in another way to enable Norad to receive reports on outcomes beyond the phase it supports.

2. **Methodology** – Propose methodologies for data collection of agreed indicators, especially for how jobs should be measured and tracked and advise companies on how to collect material information for reporting to Norad.

3. **Self-reporting introduction** – create the space for companies to report on impact, for instance through the Norad Results Portal or dashboard for private sector development support on the Norad portal.

4. **Mobilization effect and contribution/ attribution** – Clarify and perhaps introduce contribution/ attribution proxy metrics for the added-value of grant-based support as Norad's mobilization effect, the degree to which its funding is catalytic is not directly attributable to Norad.

2. Introduction and methodology

2.1 Background and scope

Norad has supported the development of renewable energy projects in ODA-eligible countries for several decades. Since 2017, the support has been largely channelled through the grant scheme *Enterprise Development for Jobs*. Among other sectors of focus, this scheme targets renewable energy projects. This assignment will be an input to Norad's reporting on results of energy-related development assistance. The main purpose is to identify and assess results of Norad's private sector support scheme and is limited to energy projects only.

Between 2010 and 2020, Norad entered into agreements with 38[2] companies for 78 projects through 102 grant applications.[3] The grant scheme is a risk reducing measure for companies and provides up to 50% of project costs. Norad's granted support is about 382.7 MNOK, with corresponding disbursements of NOK 188.3 MNOK. Disbursements are made against actual expenditure. Norad supports mainly early phase project development, prior to financial close and investment decisions. Norad can also support training, and underlying investments (transmission and distribution etc) as well as subsides for risk premiums to facilitate project development, but historically the main support has been for (pre-) feasibility studies, market scoping, and project development work.

2.2 Approach and method

Approach. The assignment was carried out through a survey that captured project-level information from Norad's agreements with 38 companies. The survey was complemented by semi-structured interviews with nine companies, which allowed for the compilation of project case studies.

Data collection. Data was gathered using two main instruments:

- ✓ *Project-level questionnaire:* a survey enabled the capture of input from companies to identify whether the grant recipient is still in business; project status; factors of success/ lack of success; progress against certain indicators; sources of mobilized equity and loan investments to the extent possible; and the added-value of Norad's grant support.
- ✓ *Consultations:* consultations with Norad energy section and nine companies to input into project deep dives and tease out the nuances related to the added value of Norad support.

2.3 Limitations

This is not an evaluation as defined by Norad.[4] KPMG facilitated a process for Norad and its grant recipients to identify results of the private sector support scheme for renewable energy projects. This is therefore not an evaluation of the grant scheme nor an opinion by KPMG.

The reporting relies on the quality of responses/ data submitted by companies and their projects. Given the proposed budget envelope and breadth of scope required, the verification of reported answers was not possible although the project case studies allowed for the review of results logic with the respondents. The team managed to source some degree of information from 59 of the 78 projects in the Norad grant portfolio, accounting for 359.2 MNOK of agreed amounts (about 94%) and 168 MNOK of disbursed amounts (over 90%) i.e., the projects and applications for which data have not been received are for smaller grant applications.

In many cases, the sourcing of information proved challenging. Many agreements date back nearly ten years, and contact information was not up to date despite many attempts at sourcing. Relatedly, staff

[2] One company was listed as two separate entities, and for simplicity, these have been treated as one entity.

[3] There are more applications than projects as some companies have received support for several phases of the project cycle i.e., pre-feasibility and feasibility.

[4] See: https://www.norad.no/en/evaluering/om-evaluering/ulike-typer-evalueringer-/

turnover has led to a loss of institutional knowledge in certain projects. Lastly, the companies themselves had no obligation to report back on results achieved following grant completion.

Information supplied by companies was relatively incomplete. Whilst some companies provided information on some areas requested by Norad, the majority of companies did not input comprehensively across all indicated fields. Commercial sensitivity was a factor that limited data capture, particularly in relation to the mobilization of finance for yet-to-be commissioned projects and those working towards financial close. Given these considerations, case studies were compiled to tease out the added nuances and value-addition of Norad support beyond the questionnaires.

Selected data quality and methodological issues encountered:

- Financial capacity and turnover: Many of the projects are developed through special purpose vehicles (SPVs) and therefore, it was difficult to capture the financial capacity of the companies behind the projects. Some companies entering this space also have significant assets at their disposal for investments into these projects which we were not able to capture systematically through the survey but that were reported anecdotally.

- Companies in operation: There were some consistency issues between reporting on parent vs SPV for projects with regard to capturing business continuance.

- Jobs. There were many discrepancies in terms of how respondents reported on job creation. This is in part due to the absence of standard methodologies and some companies do not track this information robustly. Some only provided jobs created at certain points in the project development. For instance, some only reported on construction jobs, not long-term employment.

- Installed capacity and annual generation: There were some inconsistencies in terms of how companies reported generation (Watts; KWh, etc.). Further, some reported on per year basis while others reported aggregate amounts over several years. These were calibrated to ensure consistency. While energy access was not included in the scope, off-grid projects are able to report on actual progress in terms of new access, while on-grid projects can only estimate potential for access but not verified new access as a result of the project.

- Financial data: Financial information was significantly omitted by companies. It was not always clear what was included in terms of breakdowns (e.g., grants versus equity). Collectively, the numbers did not always add up and thus it is difficult to do a reasonability assessment of the data provided.

- Project development timeline proved difficult to capture and was only included for selected case studies.

- Exchange rate: For currency conversions into USD, the average rate from 2016-2020 (8.59992) was used from Norges Bank. As a result, there may be slight variations to what Norad or recipients of funds have listed internally.

- Many unreported elements: In general, it was not always clear why some questions were underreported, i.e., whether it was due to lack of data, confidentiality, etc.

2.4 Disclaimer

This assessment has been prepared by and is the responsibility of the team of KPMG. It does not represent the official position of NORAD or any other stakeholder involved in the NORAD private grant scheme

2.5 Restrictions on the use of this report

This report has been prepared by KPMG solely on behalf of Norad (the client). The client's rights to the report are provided in accordance with the terms of reference between KPMG and the client and for no other purpose. KPMG will not accept responsibility or liability to any party other than to client under the terms in the engagement letter in force between KPMG and client. No other party than client can make any reliance on the contents of the report.

3. Portfolio overview and results

3.1 Portfolio characteristics

Between 2010 and 2020, Norad entered into agreements with 38 companies for 78 projects through 102 grant applications. Out of 382.7 MNOK committed, 188.3 MNOK has been disbursed. Scatec Solar AS (including SN Power AS) makes up a major share of Norad's grant portfolio, accounting for 17 (25) projects with a committed grant value of 110 (248) MNOK and disbursement value of 56 (113) MNOK. Most of the SN Power AS including Agua Imara AS projects in the portfolio were taken over by Scatec after Norfund sold SN Power to Scatec Solar in 2020.

The results in this survey are based on responses from 25 of the partners for 59 projects through 86 grant applications. The reason for why there are more applications than projects is that some companies have received support for several of the phases of the project cycle, for instance pre-feasibility and feasibility. The main reason for why the data is not available for all the funding applications and projects is because some companies did not respond to the survey while others reported that they were unable to report due the current Covid-19 situation or left out information for some of the projects and applications.

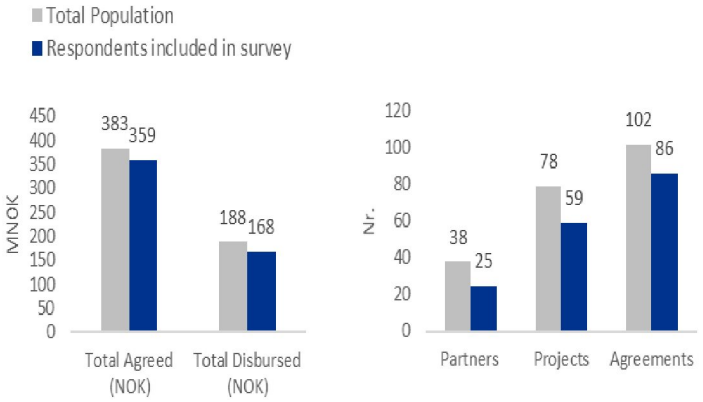

Figure 1: Overview respondents

Out of the 59 projects, 35 projects (59%) are in Africa and Middle East, 17 (29%) are in South and East Asia. In addition, there are a few projects in Europe and Central Asia, Latin America, and the Caribbean and two project labelled as global projects.

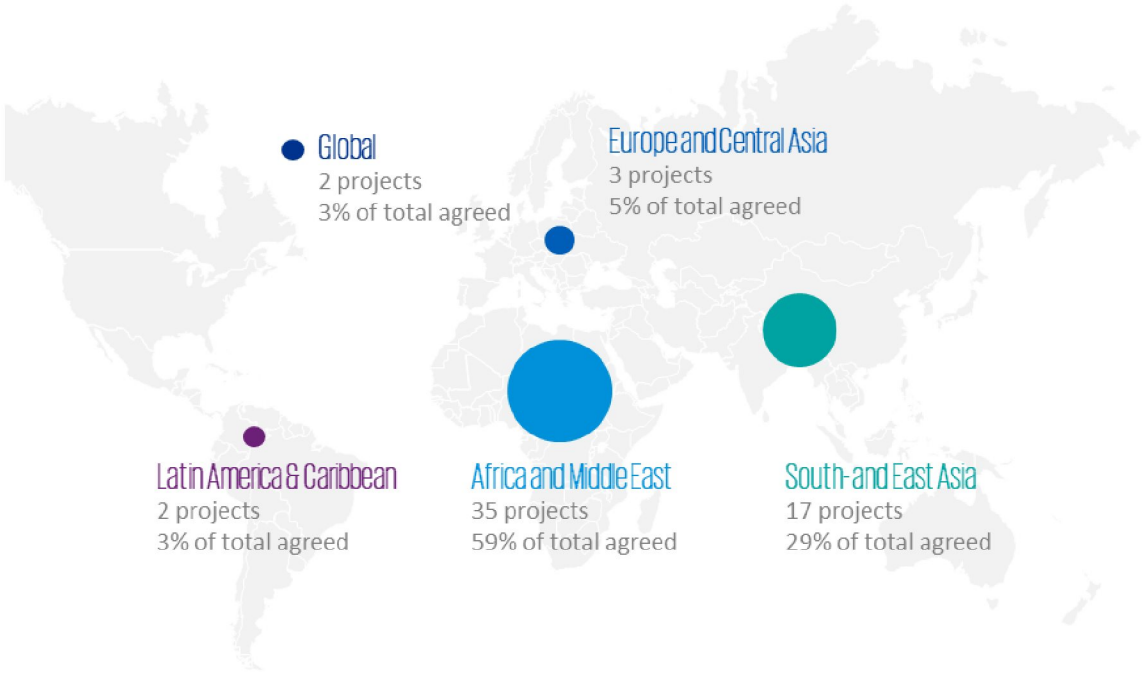

Figure 2: Overview of projects per region

3.2 Firm characteristics

- **Registration** – Out of the 25 companies responding, 24 are registered in Norway and only 1 foreign company responded.
- **Business** – Out of the 25 companies that provided data and received support from Norad, 3 are no longer in business.
- **Turnover** – Of those still in operation, the average turnover between them is 81 MNOK (9.4 USDM) in 2020, heavily skewed by two companies and does not include parent company turnover in many cases and is not a measure of the asset base of the companies (some of the companies have significant resources in holding/ parent companies that are backing the development of the projects).[5]

Figure 3: Overview of respondent firms

3.3 Results

- **Market segments** – Based on the 59 projects, the portfolio is overwhelmingly geared towards the on-grid space, represented by 46 projects (78% of the portfolio). Off-grid projects accounted for 13 projects (22% of portfolio).

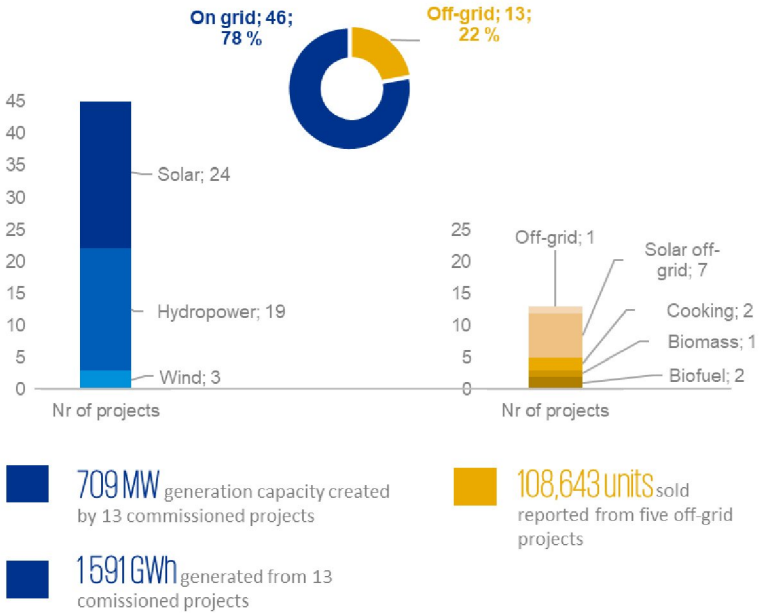

Figure 4: Overview of market segment and technology

[5] Average turnover is calculated for the companies still in operation (22 companies). Furthermore, one company did not report annual turnover. The average is thus calculated for the 21 companies in operations that provided information in the survey.

- **Technology** – Based on the 59 projects, the on-grid portfolio is predominately geared towards supporting solar PV (24 projects accounting for 41%) and hydropower (19 projects accounting for 32%) with 3 wind projects supported (5%). For off-grid, supported technologies are off-grid solar (7 projects accounting for 12%), biomass/fuel (3 projects; 5%) and cookstoves (2 projects; 3%). There were two behind the meter solar project and two T&D projects. Note that on-grid projects cover cost of energy generation only, while off-grid projects cover costs of both the energy generation and distribution to the end users.

- **Project status** – Based on the 59 projects, 13 have been commissioned (22% of reported projects), while 19 are yet-to-be commissioned (32% of reported projects) and 23 have been terminated (39% of reported projects) in the years following the closure of the grant period. The remaining 4 projects did not supply information regarding project status (7% of reported projects).

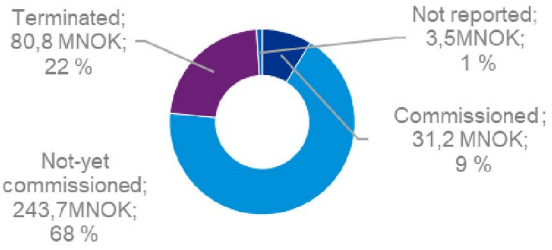

Figure 5: Project status by total agreed amounts

- **Energy outcomes** – Based on the 59 projects, commissioned projects (13 projects) lead to 709 MW generation capacity created (out of a generation potential of 3,624 MW based on the 59 reported projects) and 1,590 GWh of electricity generated annually (out of a potential 12,317 GWh from the 59 reported projects) following Norad support. In terms of off-grid unit sales (cookstoves, SHS, etc.), 108,643 units were sold based on five off-grid companies that provided unit sales.

- **Employment outcomes: jobs** – Based on the 59 projects, 27 projects reported direct employment indicators, in which 7,622 direct jobs were created under Norad grant support. These were largely driven by utility-scale projects and the off-grid market segment (i.e., field and sales agents). One project accounted for 4,010 jobs, over half the total share of direct jobs created. Regarding indirect jobs, 21 projects reported indirect employment indicators, totalling 1,267 (see section 4.3 for methodological challenges regarding indirect job creation).

Figure 6: Total reported direct jobs created.

- **Employment outcomes: proportionality** – Based on the 59 projects, 34 projects reported on local job creation, which averages 65%. 20 companies reported on the proportion of female jobs, accounting for 14%.[6]

- **Financials** – In financial terms, commissioned projects accounted for NOK 31,229,209 of Norad funding (NOK 28,913,184 disbursed), yet-to-be-commissioned projects accounted for NOK 243,740,012 (NOK 88,119,847 disbursed), while terminated projects accounted for NOK 80,780,544 (NOK 47,625,317 disbursed). The remaining 4 projects that did not supply information regarding project status accounted for NOK 3,495,178 (NOK 3,471,991 disbursed).

[6] Average reported proportion of local jobs and jobs for women per project.

- **Timelines** – Based on the six commissioned projects selected for case studies, the average time from project origination to financial close was 3,5 years. It should be noted however that there is an inherent bias in this number as it excludes projects that are not yet closed which will drive up this period.

3.4 Mobilisation effect

There are underreporting and data issues related to the investment and financing of the projects. Based on the data received we are able to report:

Investments

- **Capital investment** – For 13 commissioned projects, the respondents report that the support has led to capital investments of 6.4 BNOK. The average investment is reported to be 578 MNOK. The Scatec solar project in Egypt is making up more than half of the investment and amounts to 3.9 BNOK.

- **Technology** – The majority of investment has gone towards solar projects (92%). Hydropower projects claimed 6% of investment flows.

- **Geographic and income reach** – The investments thus far are mainly made in a handful of countries: 61% in Egypt, 21% in Ukraine,10% in Mozambique, 3% in Uganda and 3% in Indonesia. This corresponds to 14% of investments in low-income countries, 83% in lower middle-income countries and 3% in upper middle-income countries.

Financing

- The reporting on financing of commissioned projects is weak and it is difficult to read too much into the data (see section 2.3 on data limitations). The main sources of financing are reported to come from Development Finance Institutions and sponsors' own sources. Regarding commercial sources of financing, mobilization has been somewhat limited which can be attributed to the often high commercial and political risk among jurisdictions supported, which limits the long-term local or international financing available. As a result, triggering commercial financing is somewhat limited across the portfolio beyond the project owners own financing, which in many cases is significant. In certain cases where commercial financing has been accessed, for instance in Pakistan, it has proved catalytic.

- It should be noted that there are issues related to the numbers reported and that Norad should work with the grant recipients to find a better way of capturing this information moving forward.

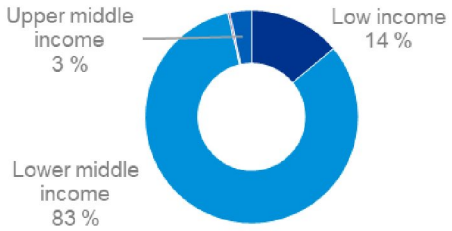

Figure 7: Sum of CAPEX per country income group for 13 commissioned projects

Mobilization effect

- In order to gauge the degree to which Norad grant support is considered catalytic by the grant recipients in mobilising co-financing for the project, a simple metric was used for respondents to rate the mobilization effect of the project. This method is simple and needs to be refined by Norad moving forward to provide more insights but provides some insight into what the recipients think about the Norad support. Out of 13 commissioned projects, 69% reported that the mobilization 'Effect is certain' and 31% that the 'effect is likely'. For projects yet-to-be commissioned 11% reported that the 'Effect is certain', 58% that the 'effect is likely', 5% reported that the 'Effect is difficult to isolate but contributed', 11% reported that the 'Effect is unlikely' and 16% left the field blank. For terminated projects, 68% left the field blank and 17% reported that the mobilization 'Effect is difficult to isolate but contributed'.

- It should be noted that there are biases in answers in this and that the case studies provide further insights into the added value and potential mobilization effect Norad support has.

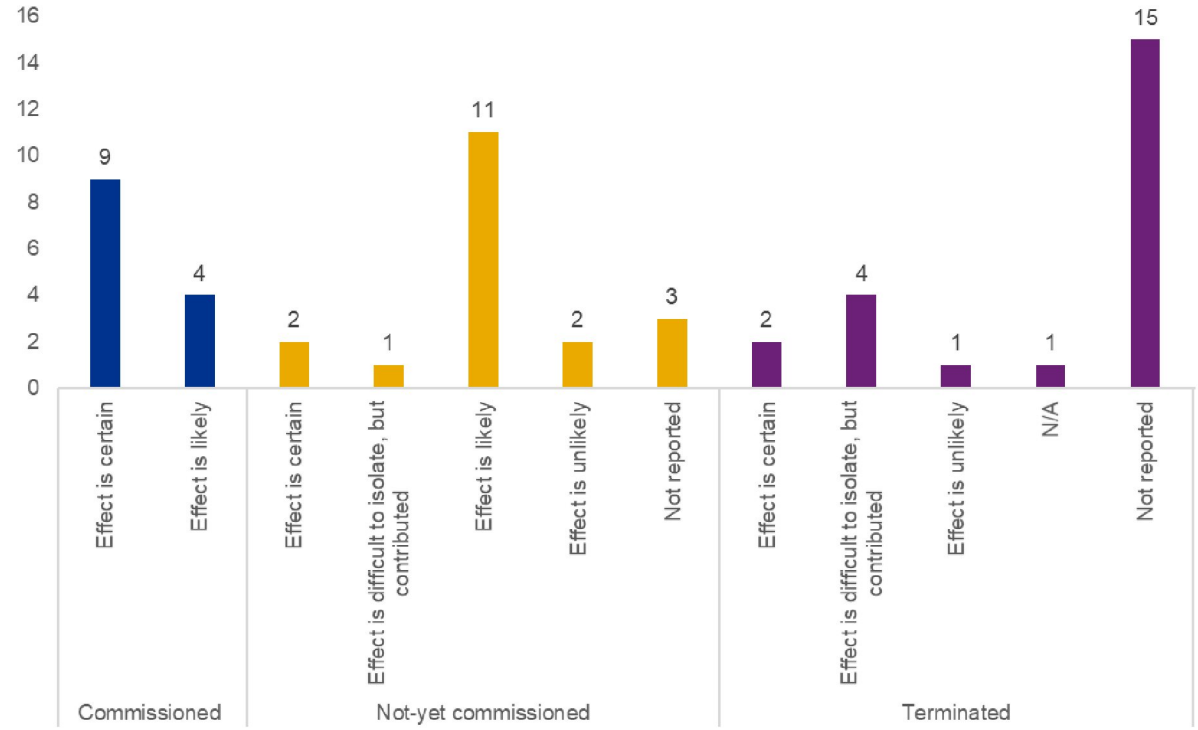

Figure 8: Mobilization effect by number of projects and project status

4. Insights and lessons learned

4.1 Drivers of success/ failure

The following section is based on selected case studies and self-reported answers via survey from 25 companies, representing 59 projects.

4.1.1 Terminated projects

Terminated projects account for 39% of the reported project portfolio (23 of 59 projects). This includes companies that are no longer in business, terminated projects, or those projects that have been shelved, and are no longer being actively developed. In all cases, there have been myriad of influencing factors that led to the decision to shelve, terminate or fold the company that are unique to each project and operating environment. There is no "one reason", though certain themes appear constant.

For one, a clear legal framework, bankable Power Purchase Agreement (PPA) and a knowledgeable and capacitated public partner are important aspects in developing power projects on Independent Power Producer (IPP) basis. However, given the focus of the Norad portfolio in emerging markets, these are rarely in place. External risks in the enabling environment, often beyond the control of the project and developer, are myriad and can often make or break a technically viable project. Some points emphasized include:

- Macroeconomic and sovereign fiscal constraints are especially challenging to predict and mitigate. For instance, whilst SN Power was conducting its feasibility studies for its Muchinga hydropower project, the debt profile of Zambia changed, resulting in potential international investors for the project becoming much more risk averse. Similarly, ZESCO's insolvency posed a significant investment risk for EcoPower's Luongo HPP.
- The absence of clear regulatory regimes in particular is seen as a key constraint. For instance, SN Power experienced challenges related to the regulatory regime regarding water rights for its Muchinga hydropower plant in Zambia. Water rights and water abstraction must be thoroughly assessed where there is competing use, which was explored in the technical study support provided by Norad.
- Malthe Winje experienced several challenges related to delays with permitting approvals and negotiations regarding the access road for Rucanzogera SPP. More emphasis could be placed on the legal and regulatory aspects that affect project development. For instance, Norad has supported Norsk Solar's Tay Thuan solar PV project over a number of years in which the legal and regulatory framework changed rapidly over the course of the agreement.
- New market entrants have also impacted the enabling environment. For instance, the entry of non-traditional developers and development partners with a different approach to financing and development have reportedly made the market for traditional multilateral/ DFI financed hydro power projects more difficult.

In general, most companies cited challenges related to mobilizing financing and the overarching commercial viability of certain projects. Given the geographic distribution of the portfolio favoring more challenging markets, a reflection of Norad's desire to help companies by de-risking entry into more challenging jurisdictions, these markets can often be characterized as high-risk for potential investors. Reportedly, factors that affected project bankability included:

- The financial capacity of local lenders and entities
- Project profitability not reflecting the expectations of Special Purpose Vehicle (SPV) shareholders and senior lenders
- Offtaker liquidity risks and creditworthiness
- "Unbankable" PPAs
- The inability to retain profitability without continuous support from sources of concessional lending
- Some companies cited armed conflicts, political instability (domestic and in neighboring states), and terrorist incidents as factors that drove unviable risk-return ratios when seeking equity capital.

Other contributing factors reportedly leading to project termination were:

- Some companies simply decided to not pursue any potential projects following the conclusion of market scoping and feasibility work, which concluded some markets and projects were unviable

- The level of capacity of and difficulty negotiating with local authorities impacted certain companies. Cases of disagreement on the terms of a deal; the limited technical experience and expertise of approving authorities; the many parties involved and difficulty to negotiate directly with government; and, in one case, the "appropriation" of projects by local authorities, are examples.
- Changes, often sudden, in government policy were also prevalent factors. For instance, political risk related to changes in energy legislation; the inability to access foreign currency due to sovereign currency controls; uncertain and fluid policy environments; "complex" investment climates; and, in one case, the sudden provision of subsidized Solar Home Systems (SHS) by governments leading to a complete collapse of customer base were examples provided by companies.
- Unsuccessful bids or companies not being invited for further negotiations in public tendering processes were also cited.
- Project complexity and unsustainable business models was a factor in some cases. For instance, the number of partners involved leading to significant delays; unclear project structures regarding ownership and management leading to disagreements over revenue flows; and a lack of revenue attributed to lower-than-expected demand from geographically dispersed off-grid end-users.
- In the cookstoves space, local limitations such as access to local capital, adequate distribution networks and institutional stoves suited for higher usage clients outside the household market, are seen as some of the challenges to scale. Smaller, PAYG-model companies reportedly require ongoing support to cover overheads until revenue and infrastructure growth reach a certain scale to remain viable, and oftentimes compete with "cheap" local equipment for PAYG solutions.

4.1.2 Yet-to-be commissioned projects

Projects that are yet to reach financial close or commissioning and still in the process of active project development account for 32% of the portfolio (19 of 59 projects). Within this group of projects, some companies report to be in good position for their projects to reach financial close within five years. The potential value of those projects amounts to 647 MW installed capacity, 2,860 GWh annual generation and a mobilization of 18.7 BNOK. It should however be noted that these are preliminary estimates, and the projects are yet to be closed. One company is reporting that the new grant potential from Norad to cover a part of the financial cost (i.e., guarantees, lenders margins, etc.) on senior debt is critical to achieving financial close, and reportedly likely to reach financial close in the next five years.

Project Status	Number of Projects	Capacity (MW)	Annual generation (GWh)	Sum of CAPEX (NOK)
Not-yet commissioned	5 selected projects	647	2 860	18 687 796 856

Yet for the vast majority of companies, it is difficult to report whether projects will eventually close within a certain timeframe (including the aforementioned). Myriad externalities and caveats are present, for instance deteriorating political situations such as in Myanmar, Covid-19 situations in countries such as Sri-Lanka and companies that are reporting slow government tender processes and PPA negotiations.

Like others, Scatec, which accounts for a major share of Norad's grant portfolio, is reportedly also facing delays. Scatec's project development work in Indonesia has reportedly slowed due to a combination of cancelled solar tenders, limited progress on the approval of new projects and complications attributed to Covid-19. In Vietnam, the long-anticipated new government policy for solar auctions and direct corporate PPAs ("Decision 13") was delayed thanks to a change in government in 2021 and is reportedly anticipated for the second half of 2022. In Pakistan, the Sukkur project reached financial close the 19th of February 2021 with a total investment of about 100 MUSD including from three local commercial lenders[7], with reportedly catalytic support from Norad in the form of a risk premium grant which enabled the project to meet the tariff set by the Pakistani government. While Covid-19 has delayed the commissioning of the project, the project is under construction as of Q2. In Mali, the ongoing support from Norad has enabled Scatec to continue advancing towards Segou's financial close, despite domestic challenges and the ongoing pandemic, which continue to slow the development activities of the project.

[7] See: https://scatec.com/2021/02/19/scatec-reaches-financial-close-for-its-first-project-in-pakistan/

4.1.3 Commissioned projects

Commissioned projects account for 22% of the project portfolio (13 of 59 projects). In terms of those projects that have reached financial close and commercial operation (COD), several broad themes emerge as contributing factors to their success. Like previous sections however, an element of caution and perspective should be applied, as a host of factors typically come together related to the project, operating environment and relationships held with certain stakeholders that collectively drive financial close and commissioning.

Project Status	Number of Projects	Capacity (MW)	Annual generation (GWh)	Sum of CAPEX (NOK)
Commissioned	13	709	1591	6 360 656 314

For one, the importance of choosing the right partners and buyers was highlighted. Echoed by two companies, the quality of the local partner is very important. Yet it often takes time to both identify and conduct the appropriate due diligence on the partner. Further, expectations need to be clear, and partners must be able to bring access to sufficient financing themselves, or if that is not possible, are comfortable and willing to dilute the shareholding position. Similarly, having a competent and willing buyer was highlighted as critical by two companies, including the support from buyers' transaction advisors within off-takers to support the negotiations of the project and financing arrangements. Sponsors' complementary skills and commitment was also cited as key to any partnership. For instance, for its Mocuba project in Mozambique, Scatec was able to cover a lot of ground between sponsors internally (technical, financial, ESG, etc.), which de-risked the development phase significantly.

As a development partner, Norad support appears to complement the various other de-risking instruments and support mechanisms offered by other Norwegian public entities. There is evidence of a strong package of Norwegian support that enables a blended finance approach to supporting developers. For instance, Norad's support to the feasibility work for the Mocuba project was complemented by Norfund's ability to offer guarantees to support bankability, such as a contingent equity guarantee to cover potential cost overruns during the project's construction phase. In parallel, support by the Norwegian Embassy, which financed the development of a transmission line connecting the new solar plant to the grid, the upgrading of the transformer substation, and covering the equity shareholding of EDM in the project, enabled government participation in the project. Scatec highlighted the very effective "in the field" support from the Norwegian embassy in Maputo, who were reportedly instrumental in grant-support and following-up on key authorizations from the central government and relevant ministries.

Furthermore, there are certain cases where Norad grant support has led to material impact in follow-on projects for certain companies in the portfolio. While some grants provided by Norad may not have led to material impact for the project in the original application, learnings from those projects, combined with grant-flexibility on the part of Norad, have yielded results in follow-on projects. The feasibility support provided to Differ's cookstoves project in Senegal is a good example. Differ was able to combine learnings from the Senegal project with its market scoping and solar home systems (SHS) sales work from its feasibility grant support in Kenya to pivot into the leading Distributed Energy Services Company in the region, currently covering Senegal, Zambia, and Malawi. Following on the original project grant in Senegal, Differ's VITALITE venture became the first-to-market player with a mobile pay-as-you-go (PAYGO) model for SHS in Zambia. This business development support has been catalytic. Since the equity seed funding from Differ the company has raised around 7 MUSD in capital and is currently raising its Series A funding to support further market expansion. Norad support to Scatec's initial preparatory work in South Africa and Ukraine are other examples, which enabled the company to undertake further projects in the countries as well. As in these cases, early phase development support can help companies reach a decision to enter into the market and identify repeat-business potential, as well as addressing regulatory, political and financial bottlenecks over time, paving the ground for more projects.

In the off-grid space, a viable business model was seen as critical. For instance, using cashew shell waste from the deshelling industry, which is sizable, stable, and robust energy "density", made it a reliable feedstock for Brynhild's cookstoves in Mozambique. Concerning PAYGO solutions, training sales agents, the development of good tracking and nudging software and continuous development of efficient money collection were seen as key foundations. An important learning for PAYGO models was prioritizing the rate of customer "churn" / default to as low as possible. This was seen as more important than keeping sales up, as defaults are expensive and soak up a significant amount of effort in terms of retrieval. Partial donor cost coverage through grants was also seen as essential in the early growth stage (Differ Senegal).

In the mini-grids space, projects are reportedly inherently riskier due to the underpinning business model for long term viability. For instance, mobilizing government support often takes more time (than C&I) and there are inherent payment risks when dealing with households and their ability and/ or willingness to pay. There may be scope for development agencies, like Norad, to support companies on understanding and mitigating risk related to scaling up household access to renewable energy in emerging markets (see Section 4.3).

Other contributing factors to project success were reportedly:

- Local presence in country to support supervision, follow-up, etc.
- Investors with a longer-term view and willingness to wait to receive returns
- financial muscle of certain companies and liquidity available to use as equity for projects
- Technical competency and management expertise
- Norad early grant support during the development phase and subsequent guarantee support as well as ongoing constructive dialogue and understanding from Norad regarding contextual and project-related risks surrounding the project
- Eksfin guarantee scheme
- Project-specific factors that made the project attractive such as favorable hydrology and a 20-year PPA
- The GetFiT programme was seen as an important contributor in Uganda (in terms of negotiated financial agreements, annual subsidy and 50% of the GetFiT premium being disbursed upon Commercial Operation Date, etc.).

4.2 Added value of Enterprise Development for Jobs support scheme

The grant scheme predominantly targets support to early-stage project development of renewable energy projects. This phase of the project cycle is characterized by a high degree of risk and uncertainty. It is important to recognize the likelihood of projects moving from pre-feasibility stage to commercial operation is fluid and subject to many externalities beyond the control of the developer. It is therefore logical that some Norad-supported projects never materialize or that some of the companies supported go out of business**.** Some points from the case studies offered added nuance to the value-addition provided through Norad grant support, including:

- **Flexibility of support**. Many companies cited the importance of flexibility on the part of Norad. For instance, bringing DFIs onboard in support of Empower New Energy reportedly proved costly in terms of reporting and Norad has been able to help them shoulder some of those costs; Norad had reportedly shown understanding of the situation of Norsk Solar in Vietnam and provided flexibility in supporting the development of a bankable solution.

- **Enabling new and emerging market entry.** Funding provided to Empower New Energy was used as “core funding”, which allowed an emerging company in the C&I market flexibility in terms of which opportunities to pursue across new markets; support to SN Power enabled the company to enter into new markets and assess more difficult and higher risk-reward investment opportunities; without Norad support, Norsk Solar reports it would have abandoned its ambitions in Vietnam after the completion of the first feasibility study, which yielded non-bankability for non-recourse financing.

- **A dependable partner**. Many companies noted Norad’s role as a dependable partner. One company lauded Norad for its effective support products and efficient processing of applications, enabling a project to move forward by unlocking government funding to cover a portion of the costs of an access road; Another company reportedly used Norad grants on other projects and returned for additional support after it’s good experience with the support facilities offered by Norad; A third company expressed positive experience in dealing with Norad, from constructive dialogue to quick turn-around time regarding decisions.

- **Building developer credibility in the market**. Support from Norad (and Norfund) reportedly created credibility in the market for Empower New Energy while Norad support added credibility in terms of stakeholder relations, and comfort to the project owners for Norsk Vind’s project in Tanzania. In general, Norwegian government support in dialogue with host governments is mentioned as important by recipients to Norad, especially smaller companies without track record.

4.2.1 Risk relief measures

The vast majority of support is designed to provide risk relief at early-stage development. Support to EcoPower has reportedly enabled the sponsor to undertake feasibility studies and provide risk relief at early-stage development of the project; support to Scatec reportedly was instrumental for the initial development phase for the Mocuba project by financing feasibility studies material to the project, including identification of land, interconnection solutions, topographic studies, grid studies and environmental and social assessment (ESIA); support from Norad reportedly helped mitigate development risk arising from the long development timeline and changes in the regulatory framework and PPA during the development phase of Scatec's Benban project; support to Malthe Winje's Rucanzogera SHPP project reportedly enabled the company to reduce risk for lenders and equity investors.

Different combinations of support by Norad enables companies to manage different types of risks. Empower New Energy reported that the introduction of guarantee premium support from Norad was welcome as the cost of risks premiums are reportedly high for smaller transactions (averaging around 0.5 MUSD). Scatec reported that while Norad's guarantee scheme is still under development, the part of the scheme dedicated to guarantee support for the purpose of reducing the financing cost for renewable projects in emerging markets has already proved to be of significant value for its Sukkur project in Pakistan, in which Norad helped reduce funding costs through a risk premium grant cover. This enabled Scatec to meet the tariff set by the Pakistani authorities to realize the project. The Sukkur project is thus a testimony to the scheme's efficient use of development aid funding; the 40 million NOK in support catalysing an investment of 100 million USD. Norad's early-phase support for feasibility studies (through the "Support scheme for enterprise development in developing countries") also played a crucial role. Norad thus contributed to reduce risks both in the development phase and in the financing, which together contributed to the success of the project. This shows the value of combining different risk-reducing measures strategically to enable more renewable energy projects in developing countries.

The risk appetite of the grant scheme appears balanced. Norad's strategy in supporting the feasibility stage could be considered, in project terms, high-risk, high reward. When considering the size of grant, averaging 2.4 MNOK for commissioned projects, the successful cases outweigh those disbursements that did not materialize in a commercially viable operation. Scatec's projects in Egypt and Mozambique are good examples of unlocking other sources of significant capital where Norad contributed small amounts. Freyer Holding's development and construction of the Nkusi hydropower plant in Uganda is another example where Norad contributed both to risk relief in the development phase and with support for power lines.

The limitation of the grant scheme is its focus on early-stage development. While Norad is providing risk-relief measures through other schemes (i.e., guarantee scheme and covering portions of the risk premium), expanding Norad support to further stages of the project development cycle to supporting bringing projects to financial close, may be better served by other Norwegian agencies and schemes (e.g., Norfund and Eksfin, which can offer concessional financing, equity contributions, etc.). There is evidence that a combination of support can work well based on some of the feedback, notably for Scatec's projects in Mozambique and Egypt. In several cases, other support facilities for project feasibility have also been accessed (e.g., AfDB's SEFA, GCF) while others are in the process of being supported (e.g., ATI's RLSF) by Norad which could provide further recourse to risk-relief for developers. This merits further enquiry, which could suggest multiple drivers e.g., the size of Norad grants are insufficient, the desire of developers to spread support and access other competencies outside of Norad, different support mechanisms and products covering different risks across project development, and/or a combination of factors).

4.3 Results and reporting

There are material results of the grant scheme, in that 709 MWs of expanded capacity in developing countries has been realised through the allocation of NOK 188 million in Norad support. However, capturing material results can prove challenging due to a combination of aspects related to the fluid nature of project development, questions of contribution/ attribution, and the absence of relevant and systematic reporting. Accounting for material results for the *Enterprise Development for Jobs* scheme, in the form of MW, GWh, jobs created or household connections, are dependent on the successful commissioning of a project occurring long after the grant period, for instance.

As such, an added complexity to results-reporting is the contribution/ attribution effect of Norad support. While 69% of companies with commissioned projects reported that Norad grant support was "certain" (31% as "likely") to have been catalytic in mobilising co-financing, there is nuance to unpack and reporting bias to be mindful of. It may be unrealistic to claim direct attribution of Norad support in unlocking

additional financing on a 1:1 basis, given the overwhelming focus on pre-feasibility support and myriad externalities in the market.

Given the nature of grant-support and lengthy project-development cycle, the systematic monitoring of results is challenging. While grant agreements may hold results frameworks under the grant for which companies are held accountable, to monitor the impact of the project *beyond* the life of the grant is complicated by the length of project development, whether projects ended up materializing following support, and the fact there is no obligation on the part of companies to report to Norad on project-level results beyond the life of the grant.

Further, there appear to be no universal indicators or set methodologies for their collection. Some companies collect data in relation to job creation, the key indicator and justification of support under the *Enterprise Development for Jobs* grant scheme. While the distribution of employment varies per technology and will typically fluctuate based on the stage of project development, direct job creation can often be higher during the construction and installation phase.[8] The broader challenge is that the priority of grant recipients is the successful development of an energy project, which ultimately will lead to increased job creation in other sectors. However, capturing indirect job creation is challenging and there appears to be no set method for its collection, and in most cases, is not directly captured by companies (particularly utility-scale projects). For most companies interviewed, collecting and accounting for jobs created directly and indirectly tied to the project posed a challenge. Many recognised the ambiguity in how to create a robust methodology to measure this indicator, particularly for *sustainable* job creation over the project lifecycle.

Another challenge is that companies collect different data points than what might be considered material to Norad's objectives under the grant scheme. Given the priority of developing a successful, commercially viable energy project, companies may not be collecting the data that Norad considers essential. Donors sometimes use MW installed as a key parameter in grant decision-making, whereas indicators that measure actual new access, improved energy services and energy efficiency solutions might be better lines of enquiry for some market segments of the decentralized energy space. In the off-grid space, using MW as the sole measure of impact is not always relevant. For instance, Differ works to minimize the MW installed per installation for a given energy service level by using more efficient technology in its SHS systems; had the company used outdated or inefficient solar cells or other inputs, it would have much higher MW created but at the expense of the end-user. New access to energy actually provided is notably absent in terms of data collection by Norad, given the SDG 7 objective of universal access by 2030.

Fundamentally, setting targets and agreeing indicators between Norad and the companies will be difficult given the fluid state of project development in the lead up to financial close and subsequent commissioning. There are numerous externalities that affect the development and commercial viability of a project. Having set indicators may be difficult as the project continues to develop through engagements with governments, potential investors, and many other stakeholders. Only typically following financial close is there more clarity about the nature of the project, and therefore what results might be expected from its operations. For example, Empower New Energy received support to conduct market studies (pre-feasibility work) across several countries. As these studies are unattached to any given project, it would be difficult to track the impact of grant support for undefined projects. Developing more stringent focus on, and clearer criteria for, selecting the right projects for grant support, especially for IPP projects could be beneficial.

A final challenge is the commercial sensitivity of project-specific information. Listed companies must maintain the confidentiality of information and are sensitive to any information that may prejudice the commercial interests of the company or its affiliates. This can often conflict with the public disclosure policies of Norad. Disclosures, which should be encouraged, must also respect commercial sensitivities, particularly for those projects that have not yet reached financial close. A balance must be struck between what can be shared in public fora versus what should remain strictly internal information for Norad to use in further refining its provision of support mechanisms to the private sector.

Ultimately, Norad will rely on the goodwill of supported companies for systematic collection should it choose to proceed in a more systematic direction. Norad could consider including language under the grant windows in which it reserves the right to request results beyond life of grant for a particular project. However, it is unlikely a legally binding commitment beyond the life of a particular grant is possible. Another route may be to invite supported companies to contribute with stories on the Results Portal, in which companies could showcase certain project-level results they are comfortable with sharing publicly. Norad could profile this as an effort it is leading to support the private sector towards SDG goal attainment.

[8] See cases examples in IRENA (2019): Renewable Energy and Jobs Annual Review 2019

5. Case studies

A selection of nine cases for deep dives were selected for providing added nuance. In consultation with Norad, projects were selected to reflect a mix of companies, technologies, and delivery system (on-grid; off-grid) present in the portfolio of support. Project status and commercial sensitivity were drivers around case study selection.

5.1 Differ Group – VITALITE

Country

Malawi
Senegal
Zambia

SPV

VITALITE Group (VG)

(comprised of VITALITE Senegal (VS); VITALITE Zambia (VZ); VITALITE Malawi (VM))

Technology & Capacity

100 MWs

(Combined instillations across all three markets)

Sponsor(s)

Differ AS

Financing mobilised

Equity: USD 500,000

Debt: USD 4,500,000

Grants: USD 2,000,000

Project gearing

35 : 65

Norad grant

USD 99,186

(NOK 853,000)

NOK 853,000 disbursed

Findings

Project Origination

- Founded in Senegal in 2013, VITALITE is a community sales and service company focused on the sale and distribution of clean cookstoves and solar home systems for rural households in Senegal, Zambia and Malawi.
- As of 2021, it has sold over 100,000 cookstove and SHS units. Collectively, installations total 100 MWs across all three markets, having reduced about 250,000 tonnes of CO2 emissions to date according to UNFCCC methodology.

Project timeline and current status

- Originally, Differ and Senegal Ecovillage Microfinance Fund (SEM) established VITALITE Senegal in 2013, originally focused on clean cookstoves and sustainable biomass, and based on its previous market scoping and SHS sales work in Kenya.
- In 2014, VITALITE expanded to Zambia with cookstoves and was first-to-market with a pay as you go (PAYGO) solar home system (SHS) offering. VITALITE expanded into Malawi in 2019.
- VITALITE has created 1,250 predominantly local jobs to date and provided environmental energy services to more than half a million people.
- Over the next 12 months, VITALITE is pursuing its Series A capital raise.

Project structuring

- During 2021, VITALITE intends to establish VITALITE Group (VG) as a holding company to consolidate all VITALITE companies.
- VITALITE uses a hub (service centres) distribution model to simplify logistics and reach rural areas. It has an extensive agent-based distribution network, covering all 10 provinces in Zambia, 15 of 28 districts in Malawi and most of in Senegal.
- VITALITE systems are backed by a 3-year warranty period, with service carried out by trained and certified local technicians. It offers a suite of products and services (e.g. solar powered water pumps, certified farming inputs, etc.) in order to capitalize on additional unmet needs of customers.
- The default rate is relatively low, at less than 10% of gross accounts payable.

Financial structuring

- Differ is the only non-founder investor in VITALITE.
- Main debt and grant providers in VITALITE are TRINE, Lendahand, Sunfunder, Segal Foundation, AECF, RVO, SIDA, USAID, EEP and NORAD. In its seed funding round, VITALITE secured equity financing from Differ.

Origination	Project Status	(Exp.) Financial Close
2013	Commercial Operations	Series A: June 2022

Assistance

Differ's main shareholders, Rufus AS, Selvikåsen Invest AS and Sauar Invest AS, contributed guarantees for the operation of the project.

Main debt and grant providers in VITALITE are TRINE, Lendahand, Sunfunder, Segal Foundation, AECF, RVO, SIDA, USAID, EEP and NORAD

Mobilisation effect

Under its Series A capital raise, VITALITE is currently discussing contributions from ElectriFi as well as several of the largest investment funds and players in the sector.

The company is seeking to raise a total of USD 4 million equity and USD 6 million debt (hard and local-currency) to be utilized for growth operations across the three countries.

Powering Africa Kickstarter Program (Malawi) and Beyond the Grid Fund Africa (BGFA) are expected continual major grant donors for VITALITE in Malawi and Zambia.

Differ's shareholding position will be about 20% in VITALITE Group (VG) pre money. Tom Erichsen from Differ is Chairman of the Board.

Norad value-addition

Grant-flexibility on the part of Norad was important.

While the original project grant to Differ given by Norad was for feasibility work for the stove project in Senegal, Differ has used the learning from that project, combined with the learning from the Norad-supported projects on market scope and sales of SHS in Kenya, to turn into a leading DESCO in the region - which currently covers three geographies and several energy services

Lessons learned

- Differ and SEM were early movers in the SHS market. Using lessons learned from its previous market scoping and SHS sales work in Kenya, and combined with partial donor cost coverage through grant based financing enabled VITALITE to expand into Zambia as the first-to-market entrant providing pay as you go (PAYGO) solar home system (SHS) offering. VITALITE then expanded into Malawi in 2019.

5.2 Empower New Energy – Renewable Energy Accelerator (Africa portfolio)

Country

Africa

Investors

Edfi
Norfund
Leviathan Holding
Malthe Winje
Other (impact investor)

Origination

2018

Financing mobilized

Equity: USD 8,200,000

Debt: 0

CAPEX

USD 1,900,000 (to date)

Project gearing

100 : 0

Norad grant

USD 546,500

(NOK 4,700,000 (in 2 applications)

NOK 3,203,500 disbursed

Findings

Project Origination

- Empower New Energy AS (EmNEW) was started in 2017 to address a gap in the energy market in Africa: to structure and finance small and medium-sized renewable energy projects (0.5-10 MW) that often stall due to lack of access to (international) equity and debt financing. The objective is to provide green, affordable and reliable electricity. EmNEW targets the commercial and industrial (C&I), household and refugee market segments.

Project structuring

- While EmNEW identifies, develop and manage projects, Empower sought support from Norad to establish a Renewable Energy Accelerator Facility, called Empower Invest AS. Empower Invest was incorporated in 2018.

Project financial structuring and investors

- EmNEW is owned and run by a few experienced Norwegian renewable energy experts. Norad has supported EmNEW on a 50-50 basis to help EmNEW develop a pipeline of projects and investment and management tools to facilitate fundraising for the Accelerator/ Empower Invest.
- The investors in Empower Invest include Development Finance Institutions such as Edfi Management Company Nv (39.71%) and NORFUND (24.8%), LEVIATHAN HOLDING AS 6.2%), MALTHE WINJE AS (6,2%) and other (impact) shareholders (23%). By September 2019, USD8.2M in equity had been raised through Empower Invest.

Project timeline and current status

- 3 behind the meter C&I projects commissioned: Ghana (0.7MW), Nigeria (0.7MW) and Egypt (0.5MW).
- 2 projects in development, including a mini-grid project in West Africa.
- Currently all projects are equity investments carried on the balance sheet of Empower Invest (MNOK 15.5/ USD 1.9M).

Government agreements and PPA terms

- All current projects are behind the meter with a Power Sales Agreement (PSA) of 20-25 years with single C&I off-takers.

Technology & Capacity	Project Status	(Exp.) Financial Close
C&I Solar	Inital fund	Closed (2019)
0.7MW Ghana	3 Projects commissioned	Closed (2020)
0.7MW Nigeria	2 projects in development	2021
0.5MW Egypt	Other projects to be developed	Not confirmed

Assistance

- Norad support mainly goes to development of the pipeline (projects) and investment tools and management infrastructure.
- For the projects developed, EmNEW has taken out plant and equipment insurances and is in negotiation for equity cover by the African Guarantee Fund.
- In 2021 (not included in this review), EmNEW is also receiving subsidies from Norad for payments of equity guarantees for four projects. This opportunity comes after a concerted effort by the private sector and dialog with the development and investment promotion agencies in Norway.

Mobilization effect

- EmNEW reports that the mobilization effect of the Norad grant is certain. The Norad grant is acting as (pre-)seed funding (without the exchange for an equity interest as Norad funding is a grant) that allows EmNEW the time to build a pipeline to demonstrate the business model and raise Series A funding (equity funding raised once a business has developed a track record that has the potential to be scaled/ optimized).
- Although Norad support limits the exposure to the founders, provides creditability and allow for pipeline development, the Norfund shareholding position is reportedly key to the success and to attract other investors.

Norad value-addition

- Norad support is flexible. The funding provided acts as core funding to a small start-up company, which allows EmNEW flexibility in terms of which opportunities to pursue.
- Support from Norad (and Norfund) creates credibility in the market. Bringing DFIs onboard is also costly in terms of reporting and Norad has been able to help EmNEW shoulder some of those costs.
- The introduction of guarantee premium support from Norad is welcome as the cost of those risks premiums are reportedly high for small transactions averaging around US$0.5M thus far.

Lessons learned

- Mini-grids (and projects in refugee camps) have proven more difficult than the C&I market. The projects take more time to development and are riskier. For instance government support processes take more time. There are also inherent payment risks when dealing with households – and there might be room for agencies such as Norad to see how such risks can be better understood and mitigated in order to scale up household level access to renewable energy.

5.3 EcoPower Holdings – Luongo HPP (Zambia)

Country

Zambia

SPV

Eco Power Holdings Zambia Pvt. (100%)

Technology & Capacity

Small-scale hydro

19.5 MW

Sponsor(s)

Sponsor and Developer: Eco Power

CAPEX

USD 60 million
(~USD 3 million per MW)

Financing mobilised

Equity: none

Debt: none

Project gearing

70 : 30

Norad grant

USD 237,409

(NOK 2,041,707)

NOK 607,909 disbursed

Findings

Project Origination

- EcoPower, an experienced small hydro project developer from Sri Lanka, investigated the small hydro potential in Zambia on its own accord and applied to the relevant authority (OPPPI) for development rights in 2017.
- Permission to undertake a feasibility study on the Luongo River in the northern Luapula Province (which has inadequate power infrastructure) was granted in March 2018.
- The project was also shortlisted on the GET FiT Zambia program in 2019.

Project structuring

- The project is an IPP that intends to sell power to national utility ZESCO under a 20-year PPA on a take-or-pay basis, including 'deemed energy' clauses.
- Direct supply to mining off-takers in both Zambia and DRC is being investigated.
- The project developer is Eco Power.

Project financial structuring

- The debt-to-equity ratio is expected to be 70:30.
- Equity investment and debt financing will be sourced once the PPA and the funding plan have been finalized.
- Eco Power intends to retain at least a 'significant minority' shareholding through own equity.
- MIGA political risk insurance and/or credit enhancement guarantees will be explored.

Project timeline and current status

- The feasibility study (FS) is underway and expected to be completed by the end of 2021.
- Once the FS is completed, the developer will secure the land, negotiate the PPA tariff and obtain relevant permits/licenses.
- Financial close is expected to be reached by the end of 2023.

Government agreements and PPA terms

- The Zambian Government has granted permission for the feasibility study to be undertaken.
- The project is strongly supported by local officials in Luapula Province.
- 20-year PPA envisaged with national utility ZESCO.
- Implementation Agreement with Government envisaged.

Prospective co-investors

- No equity investors identified yet.
- Debt financing is being sounded off with AfDB, IFC, various DFIs and Sri Lankan banks.

Origination	Project Status	(Exp.) Financial Close
2017	**Feasibility stage**	**2023** (revised) **2022** (original)

Assistance

- The sponsor has only applied to Norad for assistance. The Norad grant covers 50% of the cost of the feasibility study, with the balance being paid by the project sponsor.
- The Norad grant has enabled the sponsor/ developer to undertake the feasibility study which is underway.
- No further assistance is envisaged at this stage.

Mobilisation effect

- No equity and loan funding has been raised yet.
- Project funding will be mobilized once the viability of the project has been established by the feasibility study, the PPA tariff has been agreed and the funding plan has been finalised.
- The sponsor is sounding off various debt providers which include AfDB, IFC, various DFIs and Sri Lankan Banks.

Norad value-addition

- The project sponsor has previously used Norad grants on other projects and is very happy with the support facilities offered by Norad.
- This grant has enabled the sponsor to undertake the feasibility study and provide risk relief at early-stage development of the project.

Lessons learned

- No internal barriers in terms of project attractiveness and complexity are expected.
- There are however external barriers to be overcome, in particular the poor state of the Zambian economy and ZESCO's lack of solvency which pose a significant investment risk. It is expected that the IMF will move into Zamia after the August 2021 elections, which should mitigate the present economic strife to some extent.

5.4 Flowpower Norway – Kigwabya SHPP (Uganda)

Country

Uganda

SPV

PA Technical Services Ltd (PATS)

100% owned by Flowpower Norway

Technology & Capacity

Small-scale hydro

5-6 MW

Sponsor(s)

Sponsor: Flowpower Norway AS

Developer: PATS

CAPEX

USD 8.7 million

Financing mobilised

Equity: USD 3.0 million

Debt: USD 5.7 million

Project gearing

65 : 35

Norad grant

USD 101,454

(NOK 872 500)

NOK 860,115 disbursed

Findings

Project Origination

- Flowpower Norway has developed and constructed the 9.6MW Nkusi HPP which is operational since 2018. In 2017, Flowpower applied for a NORAD grant to study the feasibility of another site (Kigwabya, 5-6MW) on the same river, with the intention that the project organization could move on to that project once the Nkusi project had been completed. A permit to develop Kigwabya was obtained in 2019.

Project structuring

- The project is to be developed as an IPP, selling power to national utility UETCL under a 20-year PPA.
- Local project company PA Technical Services (PATS) - 100% owned by Flowpower Norway - will be the EPC contractor, with some works to be sub-contracted.

Project financial structuring

- The originally envisaged debt-to-equity ratio for the project was 65 : 35, with capitalization of 3 MUSD in equity from Flowpower Norway and 5.7 MUSD debt.
- With the Nkusi plant operational, revenues from that plant could be invested in Kigwabya, which would reduce the need for debt by 20-40%, depending on timing.
- No development partners have been envisaged.

Project timeline and current status

- The feasibility study was completed in 2019.
- The project has been on hold since then because power evacuation is problematic as the network beyond the local 33kV line does not have capacity to absorb all the power from the plant.
- Expansion of Nkusi HPP by 9.9 MW is more attractive.

Government agreements and PPA terms

- The PPA has not yet been negotiated, but the tariffs that can be achieved are known from the recently completed Nkusi project downstream.
- The PPA does not include for deemed energy, which is problematic if the network cannot absorb the power.
- Flowpower has proposed a PPP to develop a new substation on the 220kV Hoima-Nkenda line, with PATS owning and operating the substation over the 20-year PPA term. Lack of a legal framework for such a PPP is a challenge.

Prospective co-investors

- Debt will likely be sourced from Africa Trade & Development Bank, as experience with Norway Eksportkreditt (Eksfin) has been challenging.

Origination	Project Status	(Exp.) Financial Close
2017	**On hold**	**Dec 2019** (original)

Assistance

- The Uganda GetFIT program averted the need for Flowpower to negotiate directly with Ugandan institutions, which enhanced administrative efficiency.
- The NORAD grant enabled the feasibility study.
- Additional grant funding is needed to find a solution for evacuating power from the plant.

Mobilisation effect

- The NORAD-supported feasibility study has revealed the challenge of evacuating power from the plant and proposing the construction of a new substation on the 220kV line.
- The feasibility study has also enabled benchmarking of the Kigwabya project against the expansion of the Nkusi plant, which is more attractive at this stage.
- With revenue from the Nkusi plant now being available, less debt would be required for developing the Kigwabya project.
- With Nkusi project having been executed very efficiently as a result of prudent controls, Flowpower can now obtain better terms from banks and DFIs.

Norad value-addition

- Flowpower expressed very positive experience in dealing with NORAD, from constructive dialogue to quick turn-around time regarding decisions.
- NORAD should support finding a sensible solution for evacuating power from Kigwabya.
- Flowpower's own cost in the feasibility study were higher than the assumed 50%, because of exchange rate fluctuations and the low rates covered by the NORAD grant.

Lessons learned

- The project is on hold due to challenges with evacuating power in the absence of a deemed energy clause in the PPA.
- Governments needs to provide an enabling environment. A good legal framework, bankable PPA and a knowledgeable public partner are important aspects in developing power projects on IPP basis.
- Flowpower believes in having a focused approach (only Uganda, only hydropower).
- Flowpower found it challenging to work with GIEK and Norway Eksportkreditt, and tries to keep project development simple by dealing with few external parties.

5.5 Malthe Winje – Ruconzogera SHPP (Rwanda)

Country

Rwanda

SPV

Rucanzogera Hydro Power Ltd

Technology & Capacity

Small-scale hydro

1.9 MW

Sponsor(s)

Sponsor and Developer: Renewable Finance Partner, Theo Uweyo

CAPEX

USD 9.3 million

(SHPP incl. access road and TL)

Financing mobilised

Equity: USD 1.8 million

Debt: USD 4.9 million

Project gearing

70 : 30

Norad grant

USD 1,558,154

(NOK 13,458,000)

NOK 10,590,000 disbursed

USD 1 million 'Guarantee Grant'

Findings

Project Origination

- In 2017 local developer Theo Uweyo of Tiger Ltd approached Malthe Winje for financial and technical support for development of Rucanzogera small hydropower project (SHPP).
- A feasibility study had already been completed then but needed revision and optimization.

Project structuring

- The project is an IPP that intends to sell power to national utility EUCL under a 25-year PPA.
- The project is being developed by Malthe Winje through Renewable Finance Partner (RFP) and Theo Uweyo.
- The following SPV shareholding is envisaged: RFP 35%, Theo Uweyo 30%, Empower New Energy 30%, others 5%.
- Malthe Winje will be the EPC contractor.

Project financial structuring

- Total capital cost is estimated at 9.3 MUSD.
- Debt-to-equity ratio for the project is 70:30.
- Capitalization involves 2.6 MUSD in grants (from Norad and EEP), 4.9 MUSD in loans (90% from Norway Eksportkreditt and 10% from Africa Trade and Development Bank), and the balance in equity from the consortium partners.
- Financial risk products include loan guarantees from GIEK.

Project timeline and current status

- Feasibility study has been optimized and updated in 2018
- PPA signed in December 2018, conditional upon reaching financial close within 12 months. One extension already applied for and granted, second application underway.
- Project start-up delayed by COVID and lenders' due diligence
- Financial close expected in September 2021.

Government agreements and PPA terms

- A 25-year PPA with a «take-or-pay» provision was signed in 2018.
- The government is supporting the project by covering 40% of the road access costs, as the road has benefit for the wider community.

Prospective co-investors

- Advanced negotiations with Empower New Energy to take up 30% shareholding in the SPV.
- Equity contributions from other prospective co-investors are being explored. Discussions are underway with Everstrong Capital / Milele Energy who would be a long-term investor.

Origination	Project Status	(Exp.) Financial Close
2016	Lenders' due diligence	**Sep 2021** (revised) **Dec 2019** (original)

Assistance

- The biggest obstacle for infrastructure project development in Africa is lack of funding for the development phase. Norad understands this and its 'Enterprise Development for Jobs' grant addresses this issue.
- Through Empower New Energy the project has also secured grant funding of 500,000 Euro from the Energy and Environment Partnership Trust Fund (EEP Africa).
- Financial risk products considered include loan guarantees from GIEK.

Mobilisation effect

- The Norad 'Enterprise Development for Jobs' grant for the access road and the transmission line has unlocked government funding to cover 40% of the access road costs. This would not have materialized without the grant.
- The new Norad Guarantee Grant (covering up to 50% of lender's cost) has been catalytic in enabling the project to move forward towards financial close.
- Debt finance of 4.9 MUSD has been secured.
- No additional debt is envisaged, any balance to be made up of equity.

Norad value-addition

- Malthe Winje lauded Norad for its effective support products and efficient processing of applications for grant funding to support project development efforts, where there is the greatest need.
- This has enabled the project to move forward, by a) unlocking government funding to cover a portion of the costs of the access road, and b) reducing risk for lenders and equity investors .

Lessons learned

- The likelihood of reaching financial close is considered high, with lenders' due diligence presently underway. Expectations are that financial close is achieved in Q3 2021.
- While there were few internal barriers in terms of project attractiveness and complexity, the external enabling environment posed several challenges which mostly related to time delays with permitting approvals and negotiations about the access road.

5.6 Norsk Solar – Tay Thuan Solar PV Plant (Vietnam)

Country

Vietnam

SPV

60% Norsk Solar AS

40% VATEC

Origination

2017

Sponsor(s)

Norsk Solar AS and VATEC

CAPEX

USD 13.5 million

(120 MNOK)

Financing mobilised

Equity: USD 3.5 million

Debt: USD 10 million

Project gearing

75 : 25

Norad grant

USD 223 800

(NOK 1,925,000)

NOK 633 500 disbursed

Findings

Project Origination

- Norsk Solar undertook a fieldtrip to Vietnam in 2017, on the back of existing business leads, during which the project and a local partner were identified.
- The identified site has beneficial topography and can accommodate a solar PV plant of 50MW capacity.
- The initial phase of the project has a capacity of 15MW.

Project structuring

- The project was envisaged as an IPP selling power to national utility EVN under a feed-in tariff of 9.35 Usc/kWh.
- Norsk Solar signed an MOU with Vietnam Technology Company (VATEC) – who own the land and have a track record in solar PV – to jointly develop the project pending a positive outcome of the feasibility study.

Project financial structuring

- The debt-to-equity ratio for the project is 75 : 25.
- The capitalization involves 18 MNOK equity injection from Norsk Solar and 12 MNOK from VATEC, with 90MNOK debt to be raised from banks and Norwegian export credit.

Project timeline and current status

- The feasibility study yielded the project not to be bankable for non-recourse financing under the existing FIT structure and regulatory regime, and further development (which included trial production and training) has been abandoned.
- Norsk Solar has instead redirected their efforts towards C&I rooftop PV on shopping malls. A bankable structure and corporate PPA were developed with NORAD support, and 10 sites are presently under construction.

Government agreements and PPA terms

- The existing feed-in tariff regime has a 20-year PPA term.
- The FIT structure with national utility EVN as off-taker proved not to be bankable, primarily due to a legal framework that did not provide sufficient comfort for equity/impact investors.

Prospective co-investors

- For the Tay Thuan project Norsk Solar had explored further co-investment with NORAD, NEFCO and IFC.
- For the C&I initiative Norsk Solar has set up an investment platform with FinnFund (51% NS, 49% FinnFund).
- Norfund has expressed interest to take up to 30% shareholding in the investment platform, and local partner IEP will take up 10%, leaving NS and FinnFund with 60%.
- Debt is to be provided by responsAbility.

Technology & Capacity	Project Status	(Exp.) Financial Close
Grid-tied 15MW Solar PV	Utility project abandoned	Sep 2018 (original)
C&I Solar (11 MW)	**10 rooftop solar projects under construction**	**Dec 2020 (ID for rooftop projects)**

Assistance

- The initial NORAD grant for the feasibility study of the Tan Thuan project was important to establish non-bankability.
- Subsequent NORAD support enabled the development of a bankable legal framework and structure for a corporate PPA, which led to the deal with Central Retailer Vietnam for the installation of 12 captive rooftop solar PV plants of 1MW capacity each on shopping malls in Vietnam.

Mobilisation effect

- The bankable legal framework and corporate PPA structure developed with NORAD support has enabled the establishment of an 'investment platform' between Norsk Solar (51%) and FinnFund (49%).
- Norfund has expressed interest to take up to 30% shareholding in the investment platform.
- Local partner IEP intends to take up 10% shareholding in the investment platform.
- Debt will be provided by European DFI responsibility, pending successful development of the portfolio.

Norad value-addition

- NORAD has shown understanding of the situation of Norsk Solar in Vietnam and flexibility in supporting the development of a bankable solution, despite different off-taker and a new focus.
- Without NORAD support Norsk Solar would have abandoned its ambitions in Vietnam after completion of the first feasibility study which yielded non-bankability for non-recourse financing.
- NORAD has limited resources to follow up on individual project developments and impact. There should be more stringent focus on, and clearer criteria for, selecting the right projects for grant support, especially for IPP projects.

Lessons learned

- The legal framework of the FIT structure, with national utility EVN as off-taker, proved not bankable for non-recourse financing.
- More emphasis needs to be placed on the legal and regulatory aspects of project development, than on technical aspects.
- NORAD support is for a number of years, but legal and regulatory frameworks in developing markets may change rapidly. This needs to be accommodated in the grant agreements (e.g. through a frame agreement).
- Expect a high degree of uncertainty in budget and timeline when developing the first project in a new market.
- Quality of the local partner is very important. It takes time to identify the right partner.

5.7 Scatec – Benban Solar PV Plant (Egypt)

Country

Egypt

SPV(s)

Six SPVs

(see adjacent)

Technology & Capacity

390 MW Solar PV;

930 GWh per annum

Sponsor(s)

Sponsor: Scatec, Norfund, and Africa 50

Developer: Scatec

CAPEX

USD 430,924,296

Financing mobilised

Equity: 103,347,188

Debt: 334,499,992

Grants:

Project gearing

75 : 25

Norad grant

USD 675,826

(NOK 5,812,050)

NOK 5,812,050 disbursed

Findings

Project Origination

- Scatec's Benban project is comprised of six projects. All six are part of the 2 GW solar Feed-in-Tariff programme launched by the Egyptian Government in 2015, with a goal of generating 20% of energy from renewable sources by 2022. With 1.8 GW in operation, the Benban site near Aswan is one of the largest one-site solar projects in the world, in which Scatec is the largest solar developer.

Project timeline and current status

- Scatec first entered the Egyptian market in 2015. In 2017, Scatec, Norfund and Africa50 signed an agreement to begin project development.
- The project reached financial close in 17-Oct-2017, 2 years after the original grant from Norad. Construction work began in 2018 and all six plants were connection to the grid by 2019.
- The project is expected to contribute to replacing about 423,000 tonnes of CO2 emissions per year and provide clean energy to some 420,000 households

Project structuring

- Under a build, own and operate model, Scatec's six projects were the company's first solar plants to utilise bi-facial solar modules to increase the clean energy generation.
- Six SPVs were established: Aswan PV Power S.A.E; Kom Ombo Renewal Energy S.A.E; Red Sea Solar Power S.A.E; Upper Egypt Solar Power S.A.E; Zafarana Solar Power S.A.E and Daraw Solar Power S.A.E
- Equity partners in the project(s) are Scatec (51%), Norfund (24%), and Africa 50 (25%).

Project financial structuring

- The project's capitalization involves USD 112 million "8M$ Capital, & 103 SHL" in equity from Scatec, Norfund and Africa 50.
- Lenders to the project were the European Bank for Reconstruction and Development (EBRD), the Islamic Corporation for the Development (ICD) - the private sector arm of the Islamic Development Bank (IDB), the Dutch development bank (FMO) and Green Climate Funds.
- Collective debt mobilized for all six SPVs totaled USD 438 million, in which USD 335 million was mobilized from commercial sources.

Government agreements and PPA terms

- In 2017, Scatec signed a 25-year PPA with the Egyptian Electricity Transmission Company (EETC) for the delivery of electricity from six plants totaling 400 MW.
- The plants are expected to generate annual revenues of roughly USD 60 million over the 25-year contract period

Origination	Project Status	(Exp.) Financial Close
2015	Commercial Operation	2017

Assistance

Scatec did not access any other energy-related development assistance.

Mobilisation effect

Scatec was able to mobilise commercial investment from the Islamic Corporation for the Development (ICD) - the private sector arm of the Islamic Development Bank (IDB). In addition, collective debt mobilized for all six SPVs totaled USD 438 million, in which USD 335 million was mobilized from commercial sources.

Norad value-addition

The support from Norad helped mitigate development risk arising from the long development timeline and changes in the regulatory framework and PPA during the development phase. The Norad support reduced the development cost exposure Scatec faced when assessing continued development in these circumstances.

Lessons learned

Reportedly, many other developers opted to cease development under the Egyptian Governments Feed-In-Tariff program after changes to the PPA and regulatory framework. However, Scatec's decision to remain committed to developing the project throughout reportedly led to the successful realization of large-scale solar PV projects in the Egyptian Governments Feed-In-Tariff program.

5.8 Scatec – Mocuba Solar PV Plant (Mozambique)

Country

Mozambique

SPV

Central Solar de Mocuba (CESOM)

Technology & Capacity

40 MW Solar PV

79 GWh per annum

Sponsor(s)

Sponsor: Scatec, Norfund, EDM

Developer: Scatec

CAPEX

USD 76 million

Financing mobilised

Equity: USD 14 million

Debt: USD 55 million

Grants: USD 7 million

Project gearing

75 : 25

Norad grant

USD 360,468

(NOK 3,100,000)

NOK 1,983,425 disbursed

Findings

Project Origination

- The Mocuba Project was part of the Government of Mozambique's Economic and Social Development Plan for 2015/16. The Mocuba area was identified as part of a least-cost supply plan that will support the diversification of Mozambique's energy mix, dominated by the 2,075 MW Cahora Bassa dam on the Zambezi River

Project timeline and current status

- Scatec Solar, Norfund and EDM signed an agreement in 2014 to undertake a pre-feasibility investigation. The project reached financial close in 2017, 2 years after the original grant from Norad. Construction work began in 2018 and was completed in July 2019. The project was connected to the grid and began commercial operations in 2019.
- The Mocuba plant will contribute to avoid about 5,000 tonnes of carbon emissions per year and provide clean energy to around 175,000 households

Project structuring

- The Mocuba solar PV plant, a greenfield project,was the first large scale, IPP solar plant to begin commercial operations in Mozambique. The installation covers an area of 200 hectares, 170 hectares of which are occupied by the solar panels of the plant.
- In 2015 the project sponsors established an SPV, Central Solar de Mocuba (CESOM). Equity holders in the project are Scatec (52.5%), Norfund (22.5%), and EDM (25%).

Financial structuring

- The project's capitalization involves USD 14 million in equity from Scatec, Norfund and EDM. The Norwegian Embassy funded the largest portion of EDM's equity share for grid connection infrastructure.
- Lenders to the project were the IFC, the Climate Investment Funds through the Clean Technology Fund (CTF) and the Pilot Program for Climate Resilience (PPCR), and the Emerging Africa Infrastructure Fund (EAIF).
- The Norwegian Embassy financed the development of a transmission line connecting the new plant to the grid, and the upgrading of the transformer substation, while Norad contributed financial support for Scatec Solar's feasibility study.

Government agreements and PPA terms

- Scatec Solar and Norfund signed a 25-year PPA with EDM – Electricidade de Mozambique – the state-owned utility. The PPA includes a «take-or-pay» provision.

Origination	Project Status	(Exp.) Financial Close
2015	Commercial Operation	2017

Assistance

In addition to a project development facility loan that converted into equity if the project developed**, Norfund** issued three guarantees to support bankability and to reduce the project's PPA tariff:

- **contingent equity guarantee**: to cover potential cost overruns during the project's construction phase
- **DSRA guarantee**: lenders insisted that the financial reserves should be doubled because of the high credit risks associated with the project and weak macro-economic conditions (incl. shortage of USD currency). Norfund ensured these reserves were available via a parent company guarantee.
- **performance guarantee**: guarantee on behalf of the project company should the project not perform as required under the concession agreement.

Mobilisation effect

As early-phase support, the Norad grant helped building the feasibility of the project, which enabled the project to access financing at a later stage.

Following on from support, the **IFC** provided a USD 55 million financing package, consisting of USD 19 million from IFC's balance sheet, USD 19 million through a concessional loan from Climate Investment Funds, and a syndicated loan of up to USD 17 million from EAIF, managed by Investec Asset Management, which is part of the Private Infrastructure Development Group (PIDG)). In addition, EAIF is directly providing a US$7 million Viability Gap Funding grant for the project raised from the Technical Assistance Fund of the PIDG. Kommunal Landspensjonskasse (KLP) also entered in as an investor into the project.

Norad value-addition

The Norad grant provided support to early phase development, which was instrumental for the initial development phase for the project in financing feasibility studies including identification of land, interconnection solutions, topographic studies, grid studies and environmental and social assessment (ESIA). The ESIA also covered public consultations with the local community.

Lessons learned

Main success factors to commissioning were:

- Very effective "in the field" support from the Norwegian embassy. Not only in providing the grant, but they were reportedly also instrumental in chasing some of the key authorizations from central government and ministries
- Sponsors' complementary skills and commitment to the partnership. Scatec was able to cover a lot of ground between sponsors internally (technical, financial, ESG, etc..) which de-risked the development phase significantly.
- Competent and willing buyer. Extremely helpful was also the support from EDM advisors in the negotiations of the project and financing documents

5.9 SN Power (Norfund) – Muchinga Power Plant (MPC) (Zambia)

Country

Zambia

SPV

Muchinga Power Company

Technology & Capacity

Medium-scale hydro

180-300 MW

Sponsor(s)

Wanda Gorge Investemts & Agua Imara AS

Developer: SN Power

CAPEX

USD 500-800M

Financing mobilised

None

Project gearing

N/a

Norad grant

USD 1,337,221

(NOK 11,500,000 across 3 applications)

NOK 10,718,855 disbursed

Findings

Project Origination

- SN Power (formerly called Agua Imara) acquired a 51% shareholding in Lunsemfwa Hydro Power Company Ltd (LHPC) in May 2011.
- At the time, LHPC owned two hydropower pants in Zambia: Mulungushi Power Station and Lusenemfwa Power Station with a combined capacity of 52.5MW. Both plants were in operations but in need of upgrade.
- Prior to the SN Power acquisition, LHPC had incorporated a special purpose vehicle called Muchinga Power Company (MPC) owned on a 50/50 basis with InfraCo (a donor-funded vehicle for infrastructure project development in Africa and Asia). As part of the SN Power acquisition, SN Power also acquired through LHPC the shareholding of MPC from InfraCo.

Project structuring

- The MPC was designed to replace the existing Lunsemfwa Power Station and catch water from both Lunsemfwa and Mkushi rivers through tunnels, not just one.
- MPC would be a completely new hydropower plant with a capacity pf approx. 180MW.

Project financial structuring

- The final investment cost was estimated to USD500-800M at the time.
- The financing would typically take place with 40% equity and 60% loan financing.

Project timeline and current status

- The project Feasibility Study started in December 2012, and was completed in May 2013. Further studies were scheduled in order to solve potential risks ahead of the Investment Decision that was planned for late 2014 and commissioning in 2018.
- The project is today terminated.

Government agreements and PPA terms

- SN Power and LHPC looked into several potential buyers, both domestically in Zambia and cross border to neighboring Sub Saharan African countries (SADC region through the Power Pool).

Prospective co-investors

- The SN Power equity investment share was expected to be at least 20% of the investment, assuming the 51% share ownership of the project at the time.
- SN Power has been in dialogue with international commercial banks as well as Development Finance Institutions
- (DFIs) on how the loan financing best could be structured.

Origination	Project Status	(Exp.) Financial Close
2010	Terminated	Terminated (revised) 2014 (original)

Assistance

- SN Power received assistance for updating feasibility study and complement it with studies for transmission line, geological and hydrological investigations, road and infrastructure, project financing and structuring and Power Purchase Agreement.
- Prior to this study support, SN Power had received two grants in 2010 and 2011 to determine whether and how to enter into the Zambian power market/ buy LPHC and pre-feasibility studies.

Mobilization effect

- SN Power repots that has spent significant amounts of its own resources on the project but that it had to terminate the project mainly due to Falling electricity prices and agricultural extraction of water up-stream from potential hydropower plant.

Norad value-addition

- Although these investments are costly, large and investment drivers are complex, SN Power reports that the support from Norad is important for companies such as themselves to enter into new markets and assess more difficult and high risk/ reward investment opportunities.
- Articulate the extent to which Norad is able to appropriately support your project in terms of risk relief measures at different stages of the project development cycle.

Lessons learned

- Macroeconomic and external risks beyond the control of the project are often deal-breakers. For instance, during the study period, the debt profile of Zambia changed and this has made international investors more risk adverse. The falling electivity prices and solar investments have also made the bankability of the project difficult.
- Regulatory regimes related to water rights and water abstraction needs to be thoroughly assessed where there is competing use for the water.
- Local partners need to have access to sufficient funding or willingness to be diluted.
- Entry of non-traditional developers with a different approach to financing and development have made the market for traditional multilateral/ DFI financed hydro power development more difficulty.

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