

# End Review of EnPe I and Mid-Term Review of EnPe II

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# End Review of EnPe I and Mid-Term Review of EnPe II

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Final Report

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## Acronyms

DAC	Development Assistance Committee
EnPe I	Master Programme for Energy and Petroleum
EnPe II	Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum
HEIs	Higher Education Institutions
HERD	Programme in Higher Education, Research and Development in the Western Balkans
IOCs	International Oil Companies
KfW	German Development Bank
LDCs	Least Developed Countries
LMICs	Low and Middle-Income Countries
MFA	Ministry of Foreign Affairs
MICs	Middle-Income Countries
NMBU	Norwegian University of Life Sciences
NOMA	Norad's programme for Master Studies
Norad	Norwegian Agency for Development Cooperation
Norfund	Norwegian Investment Fund for Developing Countries
NORHED	The Norwegian Programme for Capacity Development in Higher Education and Research for Development
NTNU	The Norwegian University of Science and Technology
NVE	Norwegian Water Resources and Energy Directorate
OECD	Organisation for Economic Cooperation and Development
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goals
ToC	Theory of Change
ToR	Terms of Reference
UiB	University of Bergen
UiS	University of Stavanger

## Executive Summary

The Master Programme for Energy and Petroleum (EnPe I) was established in 2009 and was followed by the Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum (2013-2019) (EnPe II). The programmes build on previous Norwegian initiatives for supporting higher education and research in Low and Middle-Income Countries (LMICs), and complements Norwegian support to higher education and research through the NORHED programme (The Norwegian Programme for Capacity Development in Higher Education and Research for Development), the Research Council of Norway and other initiatives. The Norwegian University of Science and Technology (NTNU) was selected through a competitive process in 2009 to manage the EnPe programme on behalf of Norad. The EnPe programme is managed by a secretariat located at NTNU and advised by a board comprised of Norad, independent academics and business representatives from the energy sector.

The EnPe programme has been operational in 13 countries. The projects are implemented through partnerships between 16 different academic institutions from LMICs and four Norwegian institutions, namely the Norwegian University of Science and Technology (NTNU), Norwegian University of Life Sciences (NMBU), the University of Bergen (UiB), and University of Stavanger (UiS).

The Governance Group-TGG was selected by Norad to conduct an end-review of EnPe I and a mid-term review of EnPe II. The review team conducted field studies to four EnPe countries (Angola, Ethiopia, Uganda and Nepal), which represent a mix of renewable and petroleum projects as well as south-south-north collaboration.

The overall purpose and objectives of the review were:

1. To ascertain programme and project results at output and outcome level.
2. To assess the relevance, effectiveness and efficiency of the programmes, including the management structure.
3. To provide recommendations for the remaining programme period as well as for potential future programme design and implementation.

### Key Findings EnPe I:

- The EnPe I programme was operational in 12 countries with 15 projects with a total budget frame of NOK 60 million.
- HEIs in LMICs-as reviewed for this study- have benefitted and express overall strong satisfaction with the programme. On the Norwegian side, however, the benefits for HEIs are less tangible.
- 14 Master programmes were established, and 146 master students graduated as well as 7 PhDs were obtained.
- Almost 70 % of the students that graduated were, as of 2015, in a relevant sector in their country or at their home university.
- On average there were 33 % female students, however it should be noted that some EnPe I countries achieved gender parity, notably Tanzania and Ethiopia.

- The programme and project countries are for the most part highly relevant to both Norway and the southern partner. For all EnPe countries the energy sector plays an important role with regard to economic growth, job creation and sustainable development.
- EnPe I was generally well suited to the needs and priorities of higher education institutions in LMICs, however there were some challenges in understanding and adapting the programme to enabling conditions of these institutions, including in Angola.
- The EnPe I programme appears to be complimentary, not competing, with other donor programmes although it remains unknown to most government, private sector and donor stakeholders in countries.
- EnPe I was designed in a way that encourages sustainability and impact of the programme, however the HEIs in southern countries are still highly dependent on the funding.
- The EnPe I project portfolio is in line with the overall programme objectives. There is a clear indication that EnPe project results have, at least in a narrow sense, positively contributed to the intended programme objectives. When it comes to impact its more difficult to demonstrate results as impact indicators were not defined at the outset either for the individual projects or the overall programme.
- The review of EnPe I was generally constrained by incomprehensive reporting and the lack of a results framework including a theory of change for the overall programme (i.e. not just the individual country projects).
- A major weakness of EnPe I was the failure to carry out a mid-term review as set out in the programme agreement. A mid- and end-term review (conducted in 2015 rather than now) would most likely have identified and mitigated some of the challenges as experienced in EnPe II.
- The 5% expenditure cap for administration/overhead and management as set out in the EnPe agreement between NTNU and Norad is very low and may have discouraged more hands-on management.

#### **Key Findings EnPe II:**

- The EnPe II programme is operational in 10 countries with 10 projects and a budget of NOK 100 million.
- Overall, it is difficult to assess the results and impact of the EnPe II programme as it is still ongoing. However, EnPe II is on track to achieving the intended programme objectives.
- The country selection for EnPe II is more in line with Norway's priority partners (*partnerland*) and LDC prioritisation (as opposed to multiple MICs for EnPe I).
- HEI partners emphasize that the programme has contributed to institutional development, particularly related to laboratory equipment and management capacity building including administration.

- With half (5) of the EnPe II projects led by southern HEIs there is greater southern ownership and sustainability than in EnPe I. This is also in line with OECD DAC principles.
- There has been increased focus on renewable projects for EnPe II with a majority of the projects being renewable not petroleum, while the opposite was true for EnPe I.
- Notwithstanding some challenges; the results framework, reporting and management of projects have improved for EnPe II.
- The promotion and achievements of cross-cutting issues of gender, environment and anti-corruption/human rights in EnPe I-II has been uneven across country projects. The HEIs lack a shared understanding and common results framework for these issues. Gender has, however, been the strongest cross-cutting issue as an explicit objective of the programme and result area reported on for all projects.
- EnPe II has invested more in building the capacity and enhancing the capacity of recipients including a Gender Workshop hosted in Uganda November 2017 for all programme countries.
- Hindrances to the effectiveness of EnPe II that have been identified so far, include the need for more practical exposures within the country and abroad, such as student exchange, internships and traineeships especially with the private sector.
- In 2016, the ANTHEI project (Angola/Tanzania/NTNU) was suspended and subsequently reopened without Angola as a partner in 2017.

### **Key findings on Organisational Structure and Management**

- EnPe I-II programmes have been governed through two agreements between Norad and NTNU. The first EnPe agreement 2009-2013 lacks clarity with regard to the governing mechanism, roles and responsibilities. A substantive shortcoming of EnPe I was the failure to carry out mid-term and end-review term reviews of the programme in a timely fashion.
- The current agreement *EnPe 2013-2019* provides a more comprehensive and clear management set-up than its predecessor. The agreement transfers management responsibility (as delegated from the MFA) from Norad to NTNU (as delegated by the Ministry of Education and Research). Both Norad and NTNU have experience using this model of transferring management authority from other cooperation agreements including with the Norwegian Research Council (Norad) and with the MFA (NTNU administration of the HERD programme). It is beyond the remit of this review to assess these other cooperation agreements but there is no indication that the model of transferring management responsibility from Norad to NTNU for EnPe should not work per se.
- The EnPe programmes have been managed by a small secretariat at NTNU. The set-up is meant to avoid a conflict of interest between NTNU as grant manager and HEI partner. The Secretariat is comprised of 1,2 positions under the supervision of the head of the NTNU Office of International Relations. The current coordinator and head are relatively new (the former came on board in 2015 while the latter in 2017) and consequently have less knowledge and institutional memory of EnPe I.



- Norad is responsible for constituting a 5-person program board with two people from the higher education sector, two people from the energy and petroleum sector and one representative from Norad. The EnPe board has played a very important role in overseeing and selecting projects. The previous and current board (a new board was appointed in 2017) meet the criteria set out in the agreement. The board, however, would be strengthened by, and benefit from, having a board member from the South.
- Grant recipients and partners interviewed, both in LMICs and Norway, have generally expressed satisfaction with the EnPe management and support through the NTNU Secretariat. Norad has, however, consistently voiced concerns for both EnPe I and EnPe II with regard to the quality of reporting, results, competency on cross-cutting issues and overall capacity of NTNU as grant manager for EnPe. These management aspects have improved with EnPe II but are still seen as sub-optimal from Norad's perspective. Norad has on this basis started questioning whether the chosen governance model (transfer of management authority) is the right form for implementing EnPe.
- NTNU acknowledges some of Norad's concerns especially regarding results management and cross-cutting issues. They point out, however, that much has improved for EnPe II including recent efforts to strengthen project management and gender in the projects. NTNU believes that the cooperation with Norad has been challenging as they are seen more as a grant recipient rather than manager, and that their competencies are not always acknowledged. Both parties, however, point to improved communication and cooperation since 2017.
- The review team believes that EnPe would benefit from more programmatic support from Norad (e.g. on cross-cutting issues) without this triggering the question of whether the transfer model works or as an indication that Norad should take over as a grant manager for EnPe. NTNU also needs to further develop their own capacity to manage complex development programmes where demonstrating results in accordance to Norwegian and OECD development standards is paramount.
- NTNU is currently working with PwC Norway to improve and upgrade its management and corporate governance. This includes reviewing how risk, internal control and compliance is exercised for NTNU programmes. Although there have been no red flags or incidents with regard to NTNU management of EnPe funds, the current management review with PwC will likely force NTNU to be more hands-on in identifying risks and strengthening internal control on programmes such as EnPe. This is likely to also address some of the weaknesses pointed out by Norad and those identified in this mid-term review.

### **Key Recommendations**

- EnPe II has improved the quality and standardisation (common reporting template for all grantees) of reporting but there is still room for improvement. Basic information on targets and baseline indicators need to be added. Special attention should be paid to EnPe reports that do not match with figures reported to the review team in country including no. of enrolled/graduated students in Ethiopia and Uganda.

- The review team has extrapolated a ToC (see annex) based on the review but this should be further elaborated on by the EnPe secretariat and Norad now that EnPe II has reached the midterm point.
- EnPe II should invest more in documenting lessons learned, risks and recommendations on the various partnership modalities including south-south-north (capacity 5).
- Norad and NTNU should continue a close dialogue and cooperation on EnPe as they have a shared interest in demonstrating results by 2019. It is essential that communication and cooperation levels between the owner and grant implementer remain high and prioritized.
- Norad should consider inviting a board member from the South. As EnPe places increased emphasis on ownership from HEIs in LMICs this should be reflected in the composition of the board. A former senior faculty member or representative of a southern HEI from a previous EnPe project may be well placed to fill this role.
- The EnPe Secretariat needs to continue to invest in its human and technical management resources as well as cross-cutting issues.
- EnPe HEIs should be encouraged in their proposals and syllabi to include collaboration with relevant partners including industry actors and government institutions, especially at the local levels.
- A focus on public-private partnerships should be a priority to ensure sustainability and added value of EnPe in countries.
- From Norway's side several steps can also be taken to link EnPe to private sector development including ongoing energy investments through Norfund and bilateral cooperation led by NVE.
- The EnPe website should be updated with more specific project information including contact person at the host HEI, events, research and news.
- Efforts should be made at the country and Norwegian level to market the programme more.
- NTNU should continue to invest in knowledge transfer and competency enhancement on cross-cutting issues for both HEIs in Norway and in the south.
- EnPe should provide training, which demonstrates how cross-cutting issues enable or challenge the functioning of HEIs, the energy sector and the countries in which they operate.
- EnPe should consider having a gender focal point as mandatory for projects and provide tools as presented at the Uganda workshop in November 2017.
- Moving forward EnPe should consider shifting even more to renewable energy as this is more in line with international donor commitments and highly relevant as LDCs, including petroleum producers, focus more on renewables as part of their energy mix.
- A future EnPe programme would be well advised to consider fewer countries and projects. This would be in line with the OECD advice to Norway on development cooperation concerning fewer partners but larger agreements.
- When designing a future EnPe programme Norad should consider lessons learned from other relevant programmes including NORHEAD, Oil for Development and several evaluations currently taking place including on policy coherence.<sup>1</sup>

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<sup>1</sup> <https://www.norad.no/en/front/evaluation/planned-and-ongoing-evaluations/ongoing-evaluations/coherence-in-the-norwegian-involvement-in-myanmar/>

# 1. Introduction

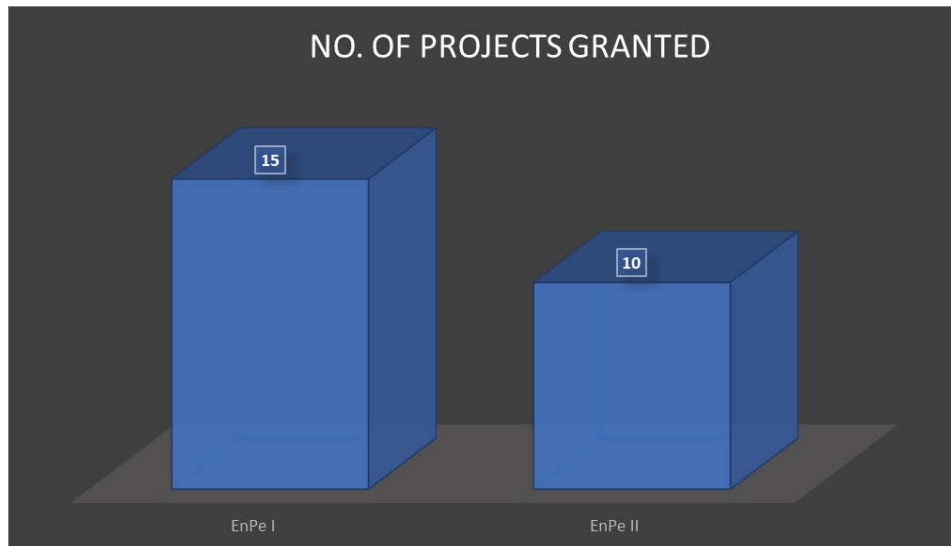
Norad's Master Programme for Energy and Petroleum (EnPe I) was established in 2009 and was followed by the Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum (2013-2019) (EnPe II). The programmes build on previous Norwegian initiatives for supporting higher education and research in Low and Middle-Income Countries (LMICs), and complements Norwegian support to higher education and research through the NORHED programme (The Norwegian Programme for Capacity Development in Higher Education and Research for Development), the Research Council of Norway and other initiatives.

The Norwegian University of Science and Technology (NTNU) was selected through a competitive process in 2009 to manage the EnPe programme on behalf of Norad. The EnPe programme is managed by a secretariat located at NTNU and advised by a board comprised of Norad, independent academics and business representatives from the energy sector.

The EnPe programme has been operational in 13 countries. The projects are implemented through partnerships between 16 different academic institutions from LMICs and four Norwegian institutions, namely the Norwegian University of Science and Technology (NTNU), Norwegian University of Life Sciences (NMBU), the University of Bergen (UiB), and University of Stavanger (UiS).

The EnPe I programme was established in 2009 with the aim of supporting the development of Master programmes at higher education institutions in the LMICs through close collaboration with higher education institutions (HEI) in Norway based on national needs in the South. The programme has supported 15 projects, including 3 seed funding projects, during the period 2009-2013 with a budget frame of NOK 60 million. Under this program, four calls for proposals were made and NOK 54,5 million was disbursed on project funding and administration. Most of the projects are thematically situated in the field of petroleum. Projects have been implemented in Africa, Asia and Latin-America.

The current programme, EnPe II, was established in 2013 and has a budget frame of NOK 100 million over the programme period 2013-2019. The programme also aims to strengthen the capacity of LMICs through partnership with Norwegian HEIs but has a more balanced approach between petroleum projects and renewable projects. EnPe II has a more holistic focus on capacity development, and supports interventions in the areas of education, research, infrastructure and system level strengthening. The LMIC institutions are also encouraged to take greater responsibility and ownership as agreement partners for the projects. Two calls for proposals have resulted in 10 projects across the following countries: Ethiopia, Tanzania, Bolivia, Mozambique, Uganda, Ghana, Angola (discontinued in 2017) and Nepal.



In addition, EnPe II has greater emphasis on south-south collaboration in the form of Capacity 5, which involves the collaboration of four universities in Africa (Ethiopian Institute of Technology-Mekelle, Mekelle University; University of Dar Es Salaam, Tanzania; Makerere University, Uganda; and Eduardo Mondlane University, Mozambique) and NTNU in Norway. The focus is on capacity building in education and research through PhD research, institutional development and the establishment of small scale research infrastructures.

The Governance Group-TGG with support from Bridge Consult was selected in September 2017 through a competitive procurement process by Norad to conduct an end-review of ENPE I and a mid-term review of ENPE II.

## 2. Methodological Approach and Limitations

### 2.1 Approach

The review was conducted using a participatory review approach addressing programme relevance, effectiveness, efficiency, impact, sustainability, and any cross-cutting issues, as well as being utilization focused. We used a “check list” throughout the review to ensure that the OECD DAC evaluation principles were observed as far as possible, and that the questions framed in the ToR were fully addressed. We recognised that as the ENPE I programme has concluded, and that the ENPE II programme is ongoing, there would therefore be slight differences in how the questions were framed and the review conducted for each programme. This was highlighted in the checklist and how we framed the methodology as well the survey questionnaire. The semi-structured survey questionnaire (see Annex 2) was used as a basis for all interviewees but with special emphasis on field surveys. As illustrated in the list of interviewees (see Annex 1) special care was taken to triangulate information both at beneficiary country level (faculty and students were interviewed separately, sector informants from business and government as well as Norwegian embassy were interviewed) and in Norway (implementing agencies, board members and independent experts). The review used a mixed-method approach involving quantitative and qualitative data.

The overall purpose and objectives of the review were:

1. To ascertain programme and project results at output and outcome level.
2. To assess the relevance, effectiveness and efficiency of the programmes, including the management structure.
3. To provide recommendations for the remaining programme period as well as for potential future programme design and implementation.

The review team also constructed a Theory of Change (ToC) based on the individual objectives of EnPe I and EnPe II programmes. The results and findings of the review were used to test the ToC and provide recommendations on how to revise it for future programming.

In order to ensure a balanced representation of programmes, geography and thematic areas, we conducted field work in four countries: Uganda, Ethiopia, Nepal, and Angola. The selection of countries was based on our original offer to Norad, the inception meeting with Norad and our conversation with the EnPe Secretariat. We followed the recommendations of the ToR of selecting 2-3 countries from both Africa and Asia, as well as countries which represent a mix of both Energy and Petroleum programmes. Furthermore, Uganda and Ethiopia were chosen specifically due to their involvement with the Capacity 5 project of EnPe II. We believed this is an important project from EnPe II as it is an example of South-South coordination between Uganda and Ethiopia and other EnPe II countries. Angola was selected as review country as we believe a “failed” or unsuccessful project can also provide valuable findings and lessons learned for future programming.

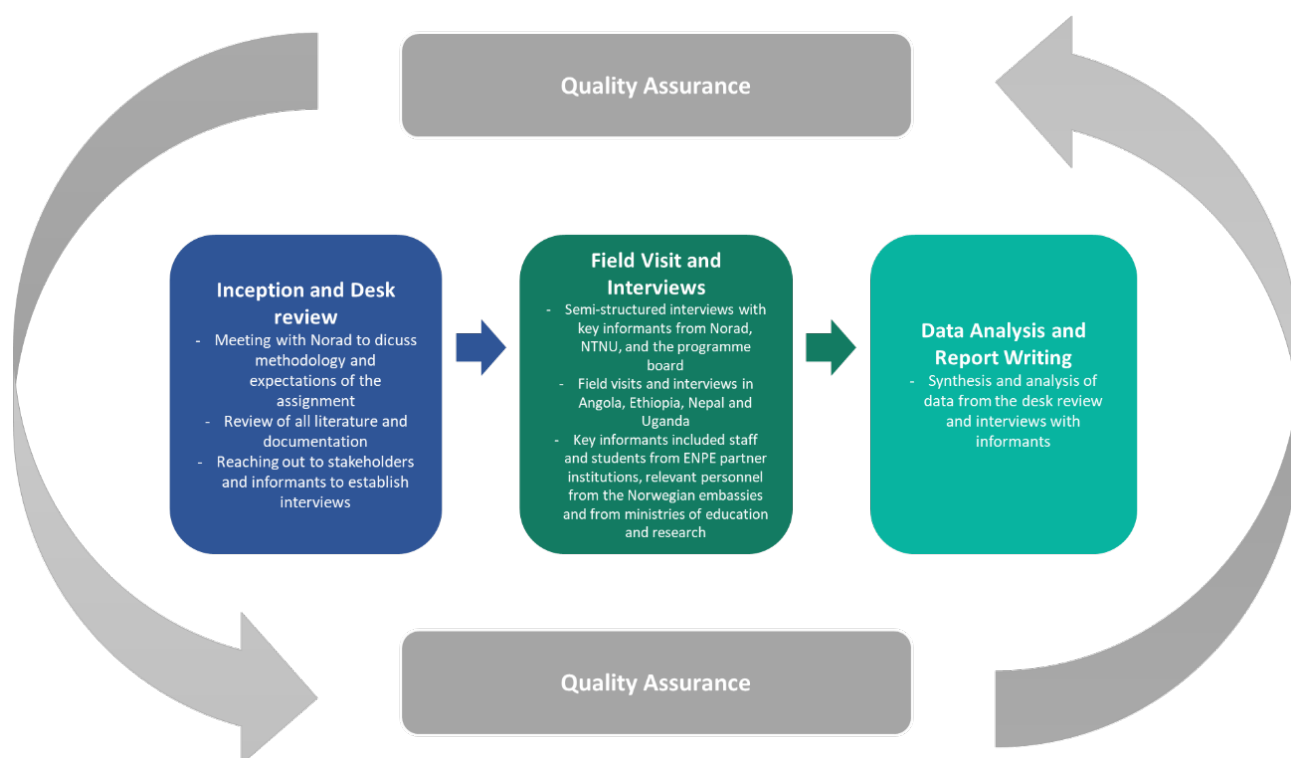
#### **a. Limitations**

Both the end review of EnPe I and the mid-term review of EnPe II faced some constraints. EnPe I was constrained by incomprehensive reporting and the lack of a results framework. The review of EnPe I was also challenging due to limited knowledge and institutional memory from NTNU and Norad’s side. Access to documents was at times cumbersome and difficult to discern. The reliability of data was also a concern, namely regarding projects in Ethiopia and Uganda, where figures that had been previously reported by EnPe differed to figures that were reported during the review. For example, there were discrepancies between the number of reported graduated students between Norad’s final report for EnPe I and what was reported to our consultant in Ethiopia.

Information on baselines and targets were also missing from previous reports and programme documents making it difficult to measure the progress of the two programmes.

Although special emphasis was placed on selecting representative field studies, it should be noted that the review covers four out of a total fourteen programme countries.

## b. Stages of review



## 4. EnPe I 2009-2015

### a. Background

The EnPe I programme commenced in March 2009 when The Norwegian University of Science and Technology (NTNU) and Norad entered into a contract which stated that NTNU would manage the EnPe programme on behalf of Norad. 60 million kroner was made available to the EnPe programme which ran from 2009 through to 2015. The original project period (2009-2013) was extended to the end of 2014, with two projects also granted a no-cost extension to August 2015. The last EnPe I projects ended in August 2015.

The overall goal of the EnPe programme was to contribute to the education of staff in the energy and petroleum sectors in Norway's selected partner countries through **capacity building** at the Master level in higher education institutions in the South.

The main objectives were:

- Development of Master programmes in accordance with national needs;
- To achieve sustainable capacity of institutions in the South to provide the national work force with qualified candidates;
- To stimulate South-South-North cooperation;
- To enhance gender equality;
- To strengthen the competence of Norwegian institutions to integrate global/developmental perspectives in their professional work.

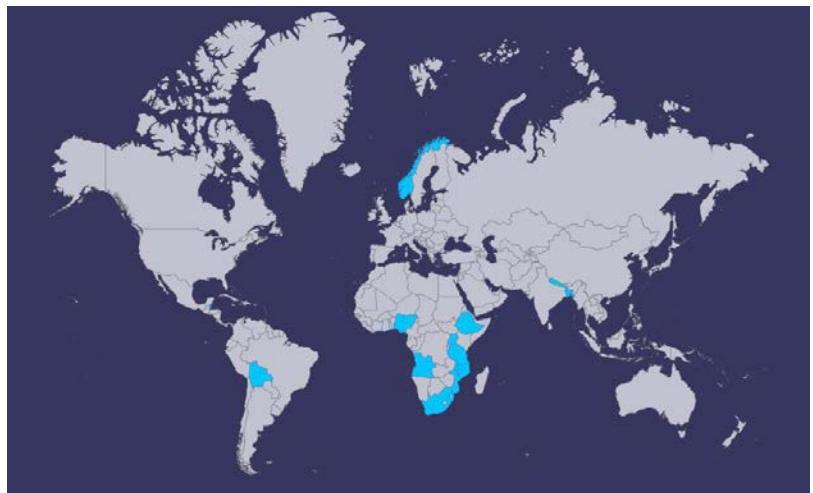
Eligible academic fields for the EnPe programme were:

- Energy supply and distribution, emphasising renewable energies;
- Petroleum engineering and geoscience, exploration and exploitation.

The different categories of programmes included:

- **Bilateral master programmes** – cooperation between two partner institutions, one in the South and one in Norway
- **Multilateral master programmes** – two main partner institutions, one outside Norway and one inside Norway, but could consist of additional partner institutions both outside and in Norway
- **Additional funds to support existing NOMA (predecessor to NORHED) projects within the fields of energy and petroleum**

Countries who received project funds from ENPE I included: Bangladesh, Nepal, Angola, Tanzania, Malawi, Mozambique, Uganda, Ethiopia, South Africa, Nigeria, Bolivia, and Norway.



## b. Key findings and results

It should be noted that the review of EnPe I has been constrained by incomprehensive reporting and the lack of a results framework. Each country report for EnPe I contained a measurement of indicators and evaluation of success plus tables with results, but no information on targets. Without targets it is difficult to say whether the projects have achieved the desired results. Although the reports include a description of the situation before the EnPe project, it is not formulated as a baseline and therefore difficult to compare. The country project documents also lacked risk factors and mitigation. The final report for EnPe I shows the overall results and country specific results (taken from country reports), however, contains no information on targets or impact. The review team also found some discrepancies between project results as reported in the field and what was reported to Norad for EnPe I.

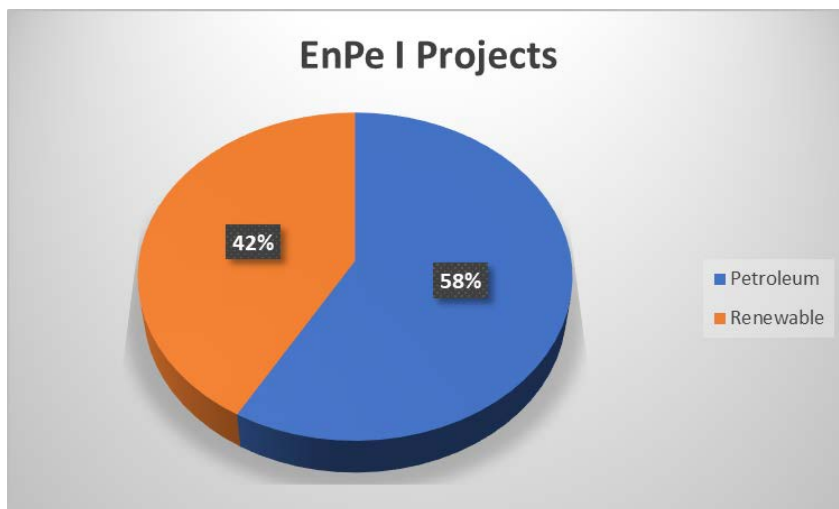
It should also be noted that the current EnPe Secretariat staff and Norad focal point were not involved in the first phase of EnPe. NTNU, Norad and embassies in the four field countries were only able to provide very limited insight and institutional knowledge of EnPe I.

## Relevance

In this section we have responded to the following questions:

- To what extent are the programmes' objectives and design suited to meeting partner country needs and the priorities of Norwegian international development assistance?
- To what extent are the EnPe programmes suited to the needs and priorities of higher education institutions in LMICs, and adapted to the enabling conditions of these institutions?
- To what extent are the EnPe programmes complementary to other donor programmes supporting higher education and research in LMICs, and to what extent are they overlapping and competing with other donor programmes?
- How do LMIC and Norwegian higher education institutions respectively experience and benefit from this model?

The programme and project countries are for the most part **highly relevant to both Norway and the southern partner**. For all EnPe countries the energy sector plays a crucial part with regard to economic growth, job creation and sustainable development, although the latter more for renewables than petroleum. The same can be said for Norwegian development priorities in the broad sense (SDGs)<sup>2</sup> and specific signature programmes including Oil for Development and the Clean Energy initiative. The programme is also highly relevant to the government's education and development goal. It should be noted, however, that the MICs in EnPe I, including Angola, Nigeria, Bolivia and South Africa, are generally less relevant to an OECD donor like Norway as LDCs should be the priority. Focusing on fewer country partners with priority given to LDCs and fragile states has been the norm for Norwegian development cooperation for the last decade.



EnPe I was generally well suited to the needs and priorities of higher education institutions in LMICs. There were some **challenges in understanding and adapting the programme to enabling conditions** of these institutions including in Angola. The Norwegian partners' understanding of how HEIs operate was mixed and seemed to be very dependent on the individual focal point. In many cases, the responsible Norwegian professor (faculty member) had extensive experience working in developing countries but there was a lack of institutional approach from the Norwegian HEI. The southern HEIs in the EnPe I programme were also highly dependent on their Norwegian partners as funding and grant agreements only went through the latter.

<sup>2</sup>[https://www.regjeringen.no/no/tema/utenrikssaker/utviklingssamarbeid/stmeld\\_utvpolitikk/id2519706/](https://www.regjeringen.no/no/tema/utenrikssaker/utviklingssamarbeid/stmeld_utvpolitikk/id2519706/)



Notwithstanding differences with regard to culture and resources, the EnPe partnership model is successful in that there is a shared identity, understanding and knowledge between northern and southern HEIs. The model is premised on a common collegial understanding of the need for curricula, faculty, laboratories, post-graduate programmes and other elements that make up an HEI in the field of petroleum and energy. Although the **EnPe I partnership model was generally successful** in reaching programme objectives and can demonstrate some impact, it was clear that well performing and capable EnPE countries like Ethiopia, Uganda and Nepal should have more flexibility and ownership to shape and manage their individual projects.

All HEIs in LMICs appear to have benefitted and expressed overall strong satisfaction with the programme. On the Norwegian side, however, it's unclear exactly how HEIs have benefitted. Tangible benefits for Norwegian HEIs usually come in the form of increased research funding, innovation and publication points. The EnPe programme has in this regard not benefitted Norwegian institutions. There are, however, non-tangible benefits that seem to play a role including shared collegial identity, personal satisfaction and dedication of Norwegian faculty members wanting to support southern institutions by sharing knowledge and transferring technology. **NTNU emphasizes that the EnPe programme is an important part of their corporate social responsibility and mandate (*samfunnsoppdrag*)** as a public Norwegian university.

Based on desk and field reviews (Angola, Nepal, Uganda and Ethiopia) the EnPe I programme seems to be **complimentary, not competing, with other donor programmes**. Several HEIs reviewed (e.g. Uganda and Ethiopia) benefit from other donor funds. Donors interviewed believe that programmes such as EnPe with its focus on research and graduates provides important and beneficial contributions to their development objectives even though they are often unaware of EnPe. International Oil Companies (IOCs) welcome highly qualified local workforce including at the engineering level as this is key to their operations and helps fulfil local content requirements. Statoil, for example, says they have benefitted from this in Angola. As noted in the recommendations, however, more should be done to identify synergies between EnPe and ongoing donor supported programmes especially from Norway's side.

## Effectiveness

In this section we have responded to the following questions:

- To what extent is the project portfolio (including geographical, thematic and institutional selection) consistent with the overall programmes objectives and the intended impact?
- To what extent are the EnPe programmes, based on progress and results from the projects, likely to contribute to the intended programmes objectives?
- What are the major factors influencing the achievement or non-achievement of the two programmes' objectives, at the programmes and project level?

The EnPe I project portfolio is in line with the overall programme objectives. There is clear indication that EnPe project results have, at least in a narrow sense, positively contributed to the intended programme objectives. When it comes to impact it is more difficult to demonstrate results as impact indicators were not defined at the outset, either for the individual projects or the overall programme.

Using the four objectives for EnPe I; the following project, and to a lesser degree impact, results (15 projects in total) can be highlighted:

1) *Development of Master programmes in accordance with national needs:*

- 14 Master programmes established, and 146 master students graduated;
- 7 PhDs obtained;

2) *To achieve sustainable capacity of institutions in the South to provide the national work force with qualified candidates; statistics of EnPe I graduates (as of 2015):*<sup>3</sup>

- Almost 70 % of the students that graduated were as of 2015 in a relevant sector in their country or at their home university;
- 37% employed in the energy/petroleum sector;
- 33% employed at a learning institution in an LMIC;
- 18% employed in other areas;
- 12% unknown.

3) *To stimulate South-South-North cooperation:*

- EnPe I successfully established and contributed to regional and south-south collaboration;
- Examples include the establishment of the East African Renewable Energy Centre of Excellence at Makerere University in close cooperation with University of Dar es Salaam and other mutual partners in the region. In South Africa, collaboration on Carbon Capture Storage was established between Witwatersrand University, Tswane University of Technology, University of the Western Cape and the research council;
- The Norwegian HEIs have also established stronger cooperation among themselves and with multiple southern partners;
- It's not clear to the review team, however, how much of these south-south-north achievements can be attributed directly to EnPe I or whether they were the result of previous project support by NOMA (NORHED predecessor) or simply south-south cooperation independent of EnPe.

4) *To enhance gender equality:*

- On average there were 33 % female students, but it should be noted that some EnPe I countries achieved gender parity, notably Tanzania and Ethiopia;
- Although the average is low, the number is higher than at many other engineering programmes in the same or equivalent HEIs in LMICs;
- There is little evidence of EnPe I focusing on gender beyond the rather narrow target of gender balance for students and faculty members. The original programme document for EnPe I noted that the programme aimed to contribute to "gender equality in education and empowerment of women" through the Master programmes pursuing the "enrolment of female candidates as well as the conditions to facilitate the participation of female students" in EnPe. This aim was expected to be realised through "active recruitment strategies and gender perspectives". While the EnPe I projects have

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<sup>3</sup> NB INFORMATION MISSING ON SURVEY OF GRADUATES IN 2015, SAMPLE AND QUESTIONNAIRE UNKNOWN.

put in place recruitment strategies for women, it is unclear how far they have incorporated gender perspectives.

5) *To strengthen the competence of Norwegian institutions to integrate global/developmental perspectives in their professional work:*

- As already mentioned, when it comes to strengthening the competence of Norwegian institutions to integrate global/developmental perspectives in their professional work it is unclear how this has been achieved. EnPe I does not report on specific training or interventions to strengthen their competencies. The approach has been more 'learning by doing' but that this is limited to the few individuals involved i.e. it is not clear how competence above the individual level is strengthened.

### Factors influencing achievement and non-achievement of EnPe I

Across the 12 project countries the review team has attempted to identify factors influencing the achievement or non-achievement of the two programmes' objectives, at the programmes and project level.

- **Flexibility:** the EnPe projects, especially in Angola, Ethiopia, Nepal and Uganda, report high satisfaction with the flexibility of EnPe I, which allowed more time for substantive exchanges and learning as opposed to time spent just on project management.
- **Empowered and confident faculty:** several EnPe countries report on increased confidence among university faculties to conduct the Master degree programme. This is key with regard to local ownership and long-term sustainability.
- **Student satisfaction:** students interviewed for the review and the (limited) information available from EnPe I reporting indicate high satisfaction among students especially with studying in Norway. Student satisfaction should be a key indicator for the project.
- Several HEIs report on **delays** as a major challenge, including in handing in of master thesis and the procurement of equipment. In some projects this resulted in procurement being conducted by the Norwegian partner in order to speed up the process.
- **Risk management:** EnPe I projects had not identified risks or mitigation for individual projects. This would presumably have helped deal with how to respond effectively to some of the aforementioned delays or specific risks such as **political unrest**. The latter was reported as a challenge and having adversely affected the projects in Bangladesh (project delayed for 6 months) and South Africa (delayed for several weeks due to university strikes). These are risks which could have been identified at the outset of the project.
- **Language challenges:** The Angola project reported that the level of English for Angolan students was a challenge. Additional language training was then given to Angolan students before leaving for Norway to help mitigate the problem. The language barrier, however, seems to have been too great and adversely affected communication between Norway and Angola including supervision of master students. Again, this should have been identified as a risk early on.

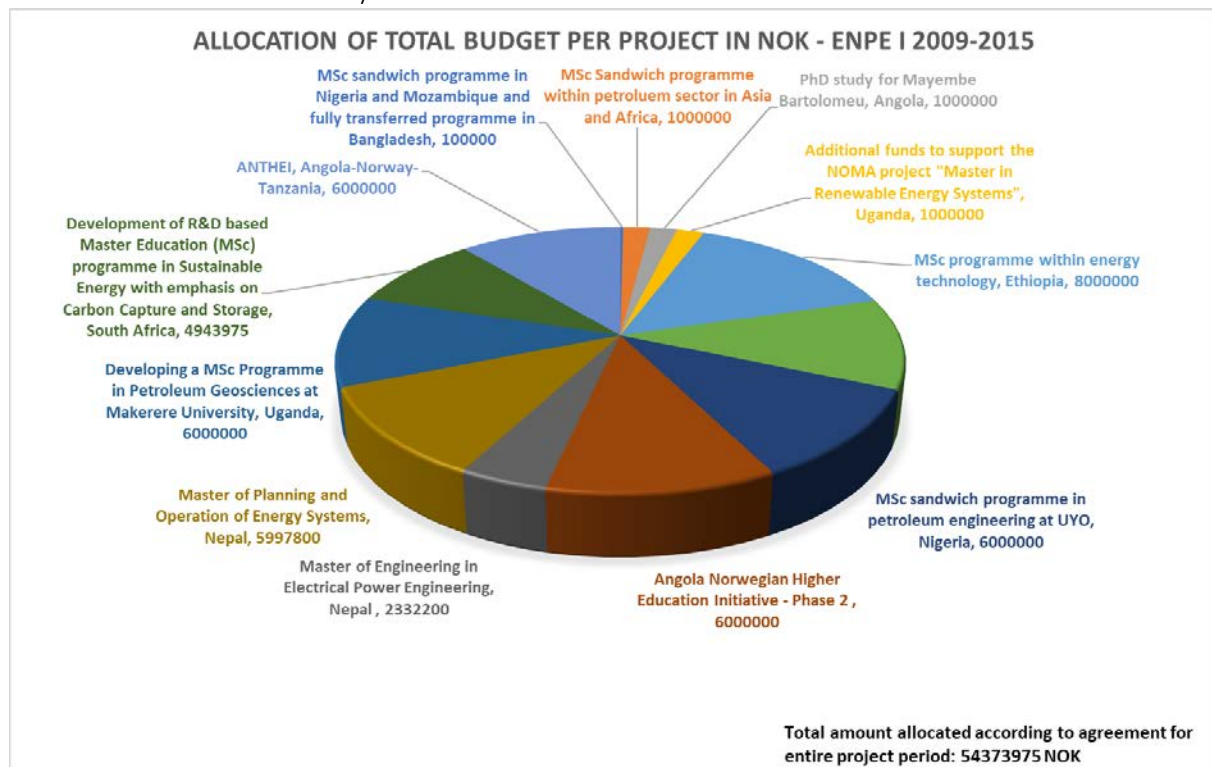
## Efficiency

In this section we have responded to the following questions:

- To what extent are the EnPe programmes cost efficient in terms of achieving the desired results?
- To what extent has the amount of budget available for individual projects had any influence on the implementation capacity and results achieved?
- To what extent are the EnPe models, including the partnership models and the way they are implemented, efficient at strengthening institutional capacity in LMICs?
- To what extent are NTNU's grant and results-based management requirements efficient and contribute to programmes goals? Do NTNU's requirements have any unintended effects on the administrative and management capacity of project partners?
- To what extent do the project partners have sufficient capacity to meet the reporting and other administrative requirements set by NTNU?
- To what extent is NTNU's use of resources to manage the programmes, including human and financial resources, efficient and in support of programmes goals?
- To what extent is the EnPe programmes management and steering structure characterised by impartiality and transparency?

EnPe I has been efficient with regard to project disbursement with NOK 54 500 000 or 90 % of programme funds disbursed. The expenditure was less efficient as several projects were delayed and in some cases demanded no-cost extensions. Some projects ended up using less funds than they were budgeted, including projects in Bolivia, Bangladesh, and Mozambique.

Overview of disbursements/allocation to countries:



As there is not an overall results framework for EnPe I it is difficult to assess **cost efficiency**. If one looks strictly at measurable results in the form of number of graduates (master and doctoral), EnPe I does not appear to be very cost efficient. If one takes into account other possible results including capacity development of HEIs, sector employment/utility and contributions to gender equality it could be argued that EnPe I, and especially successful projects, are cost efficient. The management of EnPe I (NTNU secretariat) is arguably cost

efficient with low overhead but this is most likely to the detriment of the programme (see chapter 9. Organisation and Steering Structure). Cost efficiency was presumably a criterion when the EnPe programme was put out for tender and NTNU selected in 2009.

The **budget available** for individual projects does not appear to have had any adverse effect on the implementation capacity and results achieved for EnPe countries. To the contrary, several EnPe I countries report satisfaction with budget made available. What has been a challenge, however, are procurement delays. None of the 4 EnPe countries/projects reviewed reported on insufficient funds. In Ethiopia they point out that their EnPe I proposals were funded more in line with the requested amount while for EnPe II they received overall money but less than what was requested.

The **partnership model** with Norwegian partners being the grant recipient or lead actor poses a dilemma. On the one hand, EnPe projects report that Norwegian implementation means more efficient procurement, management and, according to many EnPe students, higher quality teaching and supervision. From a capacity development perspective, however, Norwegian implementation has not been optimal as it compensates for, rather than strengthens, institutional capacity of the southern partner. To ensure more ownership and sustainability it is essential that HEIs in LMICs are able to run and implement master and other EnPe programmes.

**NTNU Secretariat grant and results-based management requirements for EnPe I** appear to have been rather flexible or in some cases lax. The lack of baseline data and targets makes it difficult to assess results. Norad has also noted a lack of reporting (both quality and frequency) for EnPe I. A majority of the HEIs in both Norway and the South, however, indicate that they find the grant and reporting requirements for EnPe (although less so for EnPe I) to be too onerous and bureaucratic. Several Norwegian and southern HEI partners express frustration with regard to spending more time on project management and reporting requirements rather than substantive work. EnPe under NTNU management is premised on trying to be more flexible than NORHED with more time spent on academic exchange and peer learning rather than management.

Several project countries report that the grant management reporting and requirements have been cumbersome and time consuming. NTNU reports that this is a requirement from Norad rather than their own system. The partners have often lacked capacity to understand and comply with the reporting requirements. It should be noted, however, that the capacity of HEIs in the South varies to a large degree. Ethiopian HEIs, for example, have demonstrated high capacity and satisfaction with reporting requirements while the Angolan partner has not. From Norad, and the review team's perspective, the overall quality of the reporting has been poor for EnPe I.

It is unclear whether the NTNU Secretariat had sufficient and efficient human and financial resources to manage and support the programme objectives for EnPe I. However, it is fair to assume that it was inadequate and more hands-on support to HEIs to comply with management and reporting requirements would have been beneficial. It should also be noted that EnPe I included more countries and projects than EnPe II.

A concern regarding EnPe has been **impartiality and transparency** especially with regard to project selection. To avoid a conflict of interest, NTNU separated its dual role as an HEI partner (e.g. the NTNU Geology and Petroleum Institute) to EnPE projects in the south and the implementing agency for EnPe. By creating an EnPe Secretariat (as part of the NTNU International Secretariat) it has a firewall from the NTNU academic/institutional partner. A further measure to ensure **impartiality** has been to create an independent EnPe advisory board to provide guidelines for EnPe calls and to evaluate grant proposals. The board members include academics but not from the grant HEI recipients. These measures and overall approach seems to have worked well with regard to ensuring impartiality and transparency.

### Impact/Sustainability

In this section we have responded to the following questions:

- The probability that the EnPe programmes have contributed/will contribute to its intended results in the long term (impact).

EnPe I was designed in a way that encourages sustainability and impact of the programme through:

- Encouragement of staff with bachelor's degrees to enrol in the master programme and encouraging staff with masters to obtain PhDs.
- Involving students at master's level in tutoring students at a lower level, which allowed for the master students' teaching competence and understanding of the subject matter to improve and increased their chances of employment after completing their degrees.
- Investment in laboratory equipment (although this was more uneven across partner countries).
- Creating a south-south-north and regional collaboration model.

Although the above elements have certainly contributed to the impact and sustainability of EnPe, the fact remains that the HEIs in southern countries are highly dependent on the funding, and to a lesser extent the technical expertise from Norwegian institutions.

## 5. EnPe II 2015-2019

### a. Background

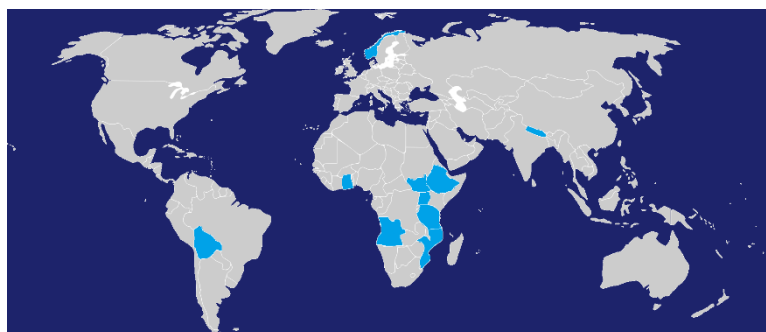
EnPe II is in most aspects a continuation of the first programme with the overall aim to contribute to the education of staff in the energy and petroleum sectors in Norway's selected partner countries through building capacity in higher education institutions (HEI) in the South. One substantial change to EnPe II is to focus more on renewable projects where as EnPe I was highly petroleum focused.

The specific objectives of the EnPe II programme are:

- To support the development of Master programmes at HEI in the South through close collaboration with HEI in Norway in accordance with national needs;
- To achieve, in a longer-term perspective, sustainable capacity of institutions in the South to provide the national work force with adequate qualifications within selected academic fields of study of relevance to the energy and petroleum sectors;

- To stimulate South-South-North cooperation through support to the development of regional Master programmes and research;
- To enhance gender equality in all programme activities.

Countries who received project funds from ENPE II included: Angola (discontinued in 2017), Bolivia, Ethiopia, Ghana, Mozambique, Nepal, South Sudan, Tanzania, Uganda and Norway.



### b. Key findings and results

As of May 11, 2015, all available funds for the EnPe programme have been awarded. A total of 10 projects are being supported by EnPe II.

#### Relevance

In this section we have responded to the following questions:

- To what extent are the programmes' objectives and design suited to meeting partner country needs and the priorities of Norwegian international development assistance?
- To what extent are the EnPe programmes suited to the needs and priorities of higher education institutions in LMICs, and adapted to the enabling conditions of these institutions?
- To what extent are the EnPe programmes complementary to other donor programmes supporting higher education and research in LMICs, and to what extent are they overlapping and competing with other donor programmes?
- How do LMIC and Norwegian higher education institutions respectively experience and benefit from this model?

Following from the EnPe I programme, EnPe II is by and large very relevant from both the LMIC and Norwegian perspective. The energy sector is important in all EnPe II countries with regards to growth, jobs and development objectives, including poverty reduction. The country selection for EnPe II is more in line with Norwegian development priorities as most countries are LDCs and priority partners for Norway. EnPe II is also relevant with regard to Agenda 2030 and multiple SDGs including 1 (poverty reduction), 4 (quality of education), 5 (gender equality), 7 (clean energy) and 17 (partnerships for the goals). NTNU and Norwegian HEIs should especially consider EnPe cooperation as part of their SDG contribution as universities are increasingly focusing on how they can contribute to Agenda 2030.<sup>4</sup>

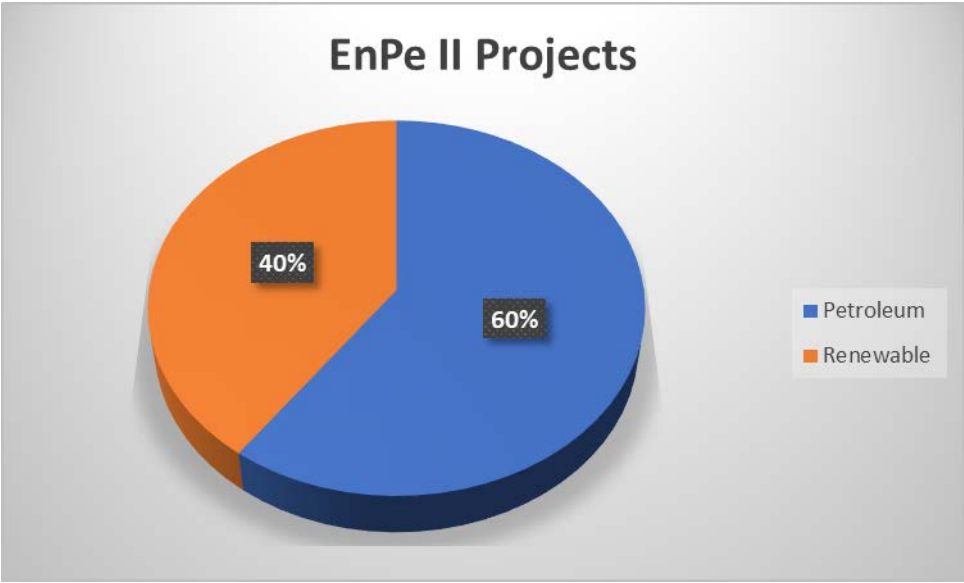
Based on experience from EnPe I, several of the EnPe II proposals/projects are based on lessons learned and cooperation experience between Southern and Norwegian HEIs. In this sense, EnPe II is better suited to the needs of HEIs, which participated in EnPe I. With regard to adapting to the enabling conditions of the HEIs the review finds that this is more ambiguous. Based on the proposals and interviews carried out for the field studies some of the enabling conditions or challenges appear to not have been sufficiently factored in. This includes

<sup>4</sup> See for example SDG Conference organised by UiB <http://www.uib.no/en/sdgconference>

procurement (Ethiopia and Tanzania) and language issues as evidenced in Angola (students/faculty not able to communicate effectively in English) and the south-south-north partnership for Capacity 5 (Tanzania and Angola communication challenges, for example). The case of Angola also demonstrates that some of the enabling conditions such as economic development and outlook as well as HEI capacity were not taken sufficiently into consideration. Although the EnPe board took decisive action in terminating the Angola project more focus on enabling conditions should have taken place at the proposal stage.

As found with EnPe I the current EnPe programme appears to be complimentary to other donor programmes. In Ethiopia, for example, the German investment fund KfW pointed out that EnPe was important with regard to their renewable investments. EnPe also feeds well into other large donor programmes including USAID Power Africa (investments and capacity development for renewables). However, as noted in the recommendations, EnPe remains largely unknown to donors including Norwegian embassies and other relevant Norwegian support such as Norfund or bilateral twinning through NVE.

With regard to how HEIs benefit from EnPe, the findings for EnPe II appear to be similar to the findings for the end-review of EnPe I where HEIs in the south clearly benefit while the Norwegian HEI benefits are not clear beyond the individual levels (see p. 15).



Several of the participating EnPe II countries have requested more exchanges and training opportunities with the private sector/industry, local communities or relevant government agencies, in order to improve the relevance of the projects and its reach. Nepal and other EnPe countries have emphasized that the industry is very disconnected from universities even when it comes to programmes such as EnPe, which should be highly relevant. Furthermore, through this review, we have revealed that Norwegian embassy staff as well as governments in all EnPe II countries which were reviewed know very little about the EnPe programme.



A question regarding relevance pertains to research. This was not addressed in the ToR but was raised by the MFA section responsible for Development and Research Funds (from which EnPe derives its funding). EnPe may be classified more as an education sector programme rather than research but there have been made considerable investments in laboratories and research especially for Geoscience and Renewables Capacity 5 projects. The MFA pointed out that EnPe needs to demonstrate research relevance.

## Effectiveness

In this section we have responded to the following questions:

- To what extent is the project portfolio (including geographical, thematic and institutional selection) consistent with the overall programmes objectives and the intended impact?
- To what extent are the EnPe programmes, based on progress and results from the projects, likely to contribute to the intended programmes objectives?
- What are the major factors influencing the achievement or non-achievement of the two programmes' objectives, at the programmes and project level?

As noted under relevance, the EnPe II project portfolio is effective in terms of reaching Norwegian development objectives (education, gender and clean energy, for example) as well as those specific to EnPe. The geographical spread and selection of HEIs is also stronger than for EnPe II.

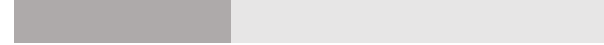
Based on the 2016 programme report to Norad and our country reviews, the EnPe II programme is on its way to achieving the intended programme objectives as set out by the EnPe board. The report also notes, however, that allocation of funds to projects approved in 2015 have been delayed. This makes the review of the projects somewhat challenging with regard to finding indicators on effectiveness e.g. the number of master students/graduates (including gender balance) as many of the projects are yet to enroll students.<sup>5</sup>

The EnPe programme has widely been seen as relatively flexible as opposed to other donor country programmes and has contributed to institutional development, particularly related to laboratory equipment and management capacity building.

## Enrolment of students

	Target for entire project period for all projects	2016	Total so far in all projects
Master	316	99	173
PhD	42	24	37

<sup>5</sup> From the 2016 NTNU report: "De foreløpige rapporteringene på oppnådde delmål viser at alle prosjekter forløper i tråd med styrets vedtak. Verdt å merke seg er at samtlige innvilgede prosjekter fikk betydelige kutt i sine omsøkte budsjetter, men det er ingen prosjekter som av den grunn ikke følger sin opprinnelige plan, foruten nedskalering på visse områder. EnPes prosjektportefølje har med andre ord ambisjoner for et høyt aktivitetsnivå med tanke på de midlene som er innvilget. Prosjektene som fikk innvilget midler i 2015 kom i gang noe senere enn EnPe-sekretariatet hadde forutsett. Dette var blant annet på grunn av at det tok lengre tid enn antatt å få gode nok reviderte planer som var i tråd med nedskalering av budsjettene."



With regards to gender, EnPe II has invested more in building the capacity and enhancing the capacity of recipients. A workshop on gender mainstreaming, for example, was hosted in Uganda 15-17 November for the EnPe countries. The workshop focused on specific aspects identified as weak in this review, namely information, communication and dissemination (although not limited to just gender). Unfortunately, the workshop is coming after projects were designed and it is unclear how the strengthened gender competence is going to be operationalised for the projects. In Nepal, a position of “Gender Convenor” has been specially created to address the promotion of gender issues. There was also an increased focus among the projects for reporting on the proportion of women among recruited students, project staff and other project stakeholders, and on gender mainstreaming in general.

**Gender distribution so far throughout the project period for all projects**

	Women	Men	Percentage women
Master	43	130	25 %
PhD	11	26	30 %

It should be noted that the majority of master students have not yet been recruited, so the average may be misleading. It will be important for EnPe II to produce higher gender averages (i.e. more than 33%) than its predecessor.

The effectiveness of improving gender equality in the programmes depends largely on the country context, however. In Uganda, despite best efforts to promote the enrollment of female students, the EnPe II programme has suffered from a lack of qualified female candidates. This is largely seen as a result of traditional family attitudes in Uganda whereby male members are more likely to be encouraged to gain a higher education. Therefore, with regards to EnPe in Uganda, the focus should be at secondary and Bachelor level in order to be effective in achieving gender equality in enrolled students at Master level.

Hindrances to the effectiveness of EnPe II, that have been identified so far, include the need for practical exposures within the country and abroad, such as student exchange, internships and traineeships etc. The use of more practical and problem-based learning would allow for increased effectiveness of the projects by allowing the students to gain exposure of the industry. In addition, proper programme dissemination and marketing has been identified as a way to ensure future job-placement of the Master and PhD students, which will in turn contribute to the intended programme effectiveness.

## Efficiency

In this section we have responded to the following questions:

- To what extent are the EnPe programmes cost efficient in terms of achieving the desired results?
- To what extent has the amount of budget available for individual projects had any influence on the implementation capacity and results achieved?
- To what extent are the EnPe models, including the partnership models and the way they are implemented, efficient at strengthening institutional capacity in LMICs?
- To what extent are NTNU's grant and results-based management requirements efficient and contribute to programmes goals? Do NTNU's requirements have any unintended effects on the administrative and management capacity of project partners?
- To what extent do the project partners have sufficient capacity to meet the reporting and other administrative requirements set by NTNU?

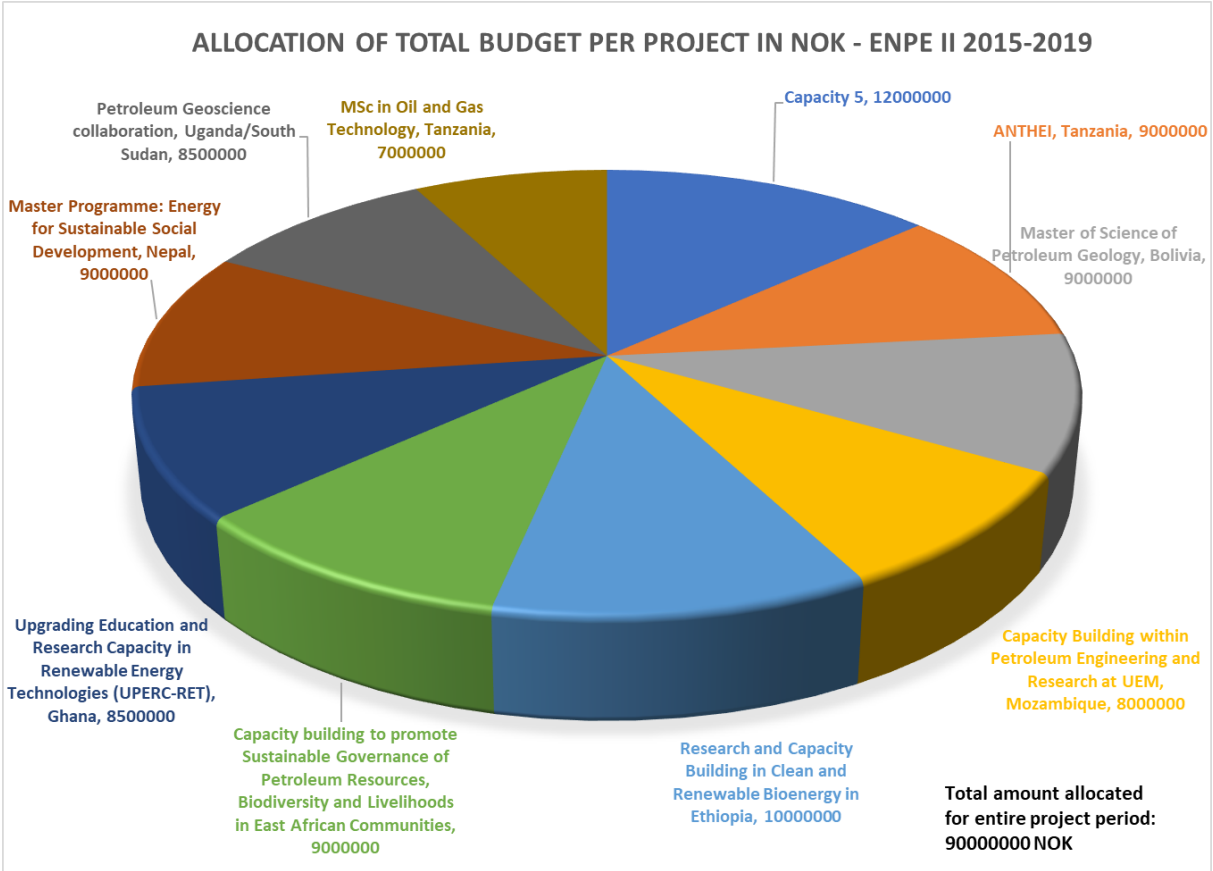
EnPe II has improved the quality and standardisation (common reporting template for all grantees) of reporting in order to maximise the efficiency of the programme. However, there is still room for improvement, with a number of countries reporting that the online reporting format is very rigid and repetitive and leaves little room for description of content and quality of the progress that has been achieved. In addition, basic information on targets and baseline indicators are missing for country projects and cannot be found in the reports. Nonetheless, the quality of reporting has been steadily improving, especially with regards to cross-cutting considerations and the understanding and implementation of the reports by Norad's framework. It should also be noted that the quality of reporting varies from project/country. Reports from Ethiopian HEIs, for example, appear to be of good quality. The reports from Angola, however, are generally weak and was a key reason for first suspending and then terminating the cooperation. The NTNU Secretariat indicates that southern HEIs that have demonstrated strong administration and reporting in EnPe I were also seen as more qualified to become programme partners/grant recipients for EnPe II. The fact that 5 HEIs from the south are now grant recipients is strong indication of progress with regard to efficiency.

Several southern HEIs, including in Uganda, however, have pointed out that the administrative responsibilities and requirements have been challenging. Uganda (Pelibigo project), for example, points out that the required audit was very challenging for them and consequently took 9 months to complete. Although the administrative burden falls mainly on the HEI project focal point, it could be argued that an unintended effect has been that the HEIs spend more time on administration than they would like or have capacity to. This in turn, may take away valuable time from other tasks including teaching.

With regards to project funds, several of the projects that received funding in 2015 started later than planned which has affected the achievement of results and resulted in the secretariat receiving several written applications for a no-cost extension to 2020. A large number of projects had unused funds in 2016 which were to be transferred to 2017. The secretariat usually pays out funds twice a year based on approved budgets, however some projects had up to 1 million or more in unused funds at year-end. The secretariat therefore decided to consider switching to a payment model based on request for payment from the projects instead of an automatic payment based budget. The change would be more time-consuming for the secretariat and the project economist, but would help to avoid a potential accumulation of unused funds in the South. The main reason for the amount of unused funds was mostly due

to delays in project start-up, and therefore there was no cause for concern regarding the implementation capacity of the projects on this basis.

Overview of disbursements/allocation to countries:



Several EnPe II countries have faced budget related challenges. In Ethiopia, EnPe II only covers tuition fees, which has resulted in students with the best performance not enrolling, but rather looking for programmes that also pay a stipend. Hence, the quality of students and the research produced has so far been lower in EnPe II. In Uganda, due to limited funds there is a general freeze on new staff being hired at Makerere and no new master programmes are being approved. At the same time, staff members are being forced into retirement when the required age has been met. This has had the unintended effect that certain academic chairs are being left empty. For example, the lecturer in the specialised field of palynology was forced to retire against his wish and none of the existing staff have the required competence to teach this subject. Furthermore, the EnPe II projects where the partnership is managed in the North, have reported less issues involved with students receiving their grants for tuition and field research on time, whereas many of the projects where the partnership is being managed in the South, have reported issues related to this.

## Impact/Sustainability

In this section we have responded to the following questions:

- The probability that the EnPe programmes have contributed/will contribute to its intended results in the long term (impact).
- The possible unintended effects of the programmes (positive and negative), at the institutional, national and international level

As explained in previous sections, it is difficult to assess the impact and sustainability of the EnPe II programme as it is still ongoing. However, positive outcomes from the projects so far have included:

- Increased human and institutional capacity development;
- Mekelle University in Ethiopia has become a Centre of Excellence in solar and wind energy in the country;
- Master and PhD programmes, especially in Ethiopia, have become mainstreamed into the university system and will therefore continue beyond the project lifetime;
- The south-south-north partnership model in Capacity 5 has facilitated resources sharing with partner universities in the region, especially laboratory research, and expertise for supervision and teaching;
- Tribhuvan University has reported that the EnPe II partnership with NTNU has enhanced their image and expanded their recognition and partnership with other international universities;
- In Uganda, 3 PhD students are from University staff and will return to build capacity at their respective departments once finished, and interesting research is beginning to evolve at Makerere through the involvement of staff that have been educated at NTNU;
- EnPe II has also been successful in supporting staff exchange to increase skills and has trained people within project management

Unexpected risks:

In 2016 two projects were suspended with one being restarted later in the year. The two projects that were suspended were ANTHEI (Tanzania / Angola / NTNU) and UMSA (Bolivia) / UiS project. An extraordinary board meeting was held on March 9, 2017 to deal with the two cases. Based on new reporting from the two projects addressing the Board's concerns, it was decided that the Bolivia project should resume and ANTHEI should submit a second revised report, as well as a new budget and project plan. The ANTHEI project was reopened (without Angola as a partner) in 2017, when the project had demonstrated improvement on these points. With regards to Angola, it was reported that the oil crises in the country has resulted in far fewer jobs available for those who participated in the EnPe Master programme, and despite the faculty wanting to employ former students, it did not have the possibility due to the crises. Overall, it was reported that the programme had not fully considered the reality in Angola to be able to provide a sustainable project. This affected the overall activity and performance level of the programme. In addition, Makerere University in Uganda was closed towards the end of the year due to strikes which also had consequences for some of the projects.

Elsewhere negative trends with regards to the sustainability of the projects have been noted in Nepal, where the marketing of the subject seems to be a weak part of the programme, with

government officials stating that the courses are unknown. However, the partnership model from EnPe II has encouraged Tribhuvan University to continue the programme even after project completion. In Uganda, it is not yet possible to ascertain whether the programme can be sustainable on its own, however, experience from the EnPe I programme shows that without funding or some form of scholarship available, it is unlikely that the project could attract a high number of students.

## 6. Ethiopia EnPe I and II

### a. Background and Relevance

In EnPe I, an **MSc programme within energy technology** was funded at Mekelle University in Ethiopia. The project was based on a previous NOMA and NUFU programme which involved the same partners. In the EnPe project, Mekelle university became the main partner and the location for the Master programme. The project also included the funding of PhD candidates.

During EnPe II, two new projects were funded in Ethiopia:

#### **Capacity 5 (Capacity building in Renewable Energy Education and Research) Ethiopia, Uganda, Tanzania, Mozambique**

Capacity 5 is a collaboration between four institutions in the South, namely Mekelle University in Ethiopia, University of Dar es Salaam in Tanzania, Makerere University in Uganda, and Eduardo Mondlane University in Mozambique, as well as NTNU as the Northern partner institution. The EnPe II project is a second phase and focuses on capacity building in education and research through PhD research, institutional development and the establishment of small scale research infrastructures.

#### **Research and Capacity Building in Clean and Renewable Bioenergy in Ethiopia**

The project provides funding to study the economic, social and ecological sustainability of renewable bioenergy production to ensure sustainability of renewable bioenergy sources in Ethiopia, and develop improved systems of production and utilization. Ethiopia has a large underutilized labor force, arable land and suitable climate for biofuel crops and immense biogas feedstock, therefore the project is highly relevant.

Overall, the EnPe projects in Ethiopia providing research and education on solar and wind energy are highly relevant with renewable energy development as one of the four pillars of the government's Climate Resilient Green Economy strategy. Ethiopia is one of Norway's key development partners (*fokusland*) with green development as a key priority e.g. REDD+ support. The EnPe projects are also highly relevant with regard to research capacity, local content and job creation for the Ethiopian renewable sector, which includes several foreign private sector investors and companies including from Norway (e.g. Norfund).

### b. Key findings

- Ethiopia is an example of best practice with high ownership and capacity, and a strong relationship with NTNU.

- Students reported that support for pocket money, thesis research fund and tuition fee were critical for them to participate and benefit from the programme. Experience sharing and educational exchanges with Norway or other EnPe programmes were extremely valuable, but only possible under EnPe I as funds for EnPe II have been delayed and more restrictive with regard to activities and have therefore had less impact thus far.
- Focus on research was more relevant, applied with possibilities of application.
- EnPe I students were top students, and the quality was higher than EnPe II. EnPe II only covers tuition fees and therefore students with the highest performance are choosing not to enrol, but rather look for programmes that also pay a stipend. Hence, the quality of students and the research produced in EnPe II has been lower.
- The partnership model has benefited Mekelle University. The Masters programme was started as a result of the partnership and it has now expanded, broadening partnerships with more institutions and donors, and launching more programmes, e.g. a PhD programme in energy was launched, and an energy institute established within the university.
- EnPe I laid the foundation for attracting additional and complimentary support from the German Development Bank (KfW).
- Gender and environmental issues are factored into the projects e.g. pro-active efforts to meet gender requirements and bio-diversity/renewables as part of the government's Climate Resilient Green Economy. Human rights, however, remain sensitive for a programme as this given the regional/ethnic tension and conflict (especially Oromia), which has manifested itself in popular protest and sometimes harsh response and clamp-down from the government. Human rights remain, generally, a sensitive topic for donor-funded programmes in Ethiopia and seem not have been considered as such for EnPe.
- **Management:** The programme management administrative and reporting requirements and the systems in place very were smooth and efficient. Mekelle University has sufficient capacity and experience, and did not face any challenges. The grant and results based reporting is very efficient, and simple due to programme management trainings being provided to key actors/ beneficiaries. The project coordinator receives reports from beneficiaries, including programme chairs, school heads and finance head, and submits the compiled report to the secretariat. For high level decision making, there is a steering committee of the university, which includes- Chair/ school head, coordinator and finance head. The only challenge is delays from other partner universities like Mozambique.

### c. Recommendations

- Lengthy procurement procedures in Ethiopia are a big challenge, and possibilities for direct procurement or via partners in Norway have been recommended.
- There is a need for a special focus regarding gender, especially on recruitment and fast-track career development.
- Training and research focus areas should be diversified, including on bio-energy.
- Collaboration with industry for manufacturing and dissemination of technology for wider use should be encouraged.

- Regarding the PhD programme, there is a need to develop a multi-disciplinary type from the current thematic area – including solar, wind, hydro and bio-fuel.

## 7. Nepal EnPe I and II

### a. Background and Relevance

EnPe I funded two projects in Nepal:

#### **Master of Engineering in Electrical Power Engineering (NTNU/Kathmandu University)**

The project was a continuation of a previous collaborative project under Norad / Noma. It was emphasized that an extra cohort of the project was necessary to enable the University to take over the entire responsibility for managing the master's degree on an independent basis.

#### **Master of Planning and Operation of Energy Systems (NTNU/Kathmandu University)**

The project was based on previous relationships between NTNU and the University of Kathmandu within the energy field. The project aimed to establish a master's degree at the University of Kathmandu, which has a comprehensive approach to renewable energy and all aspects of the operation and maintenance of different types of renewable energy sources. Throughout the project both Masters and PhD students were funded.

The EnPe II programme is currently funding a **Master Programme in Energy for Sustainable Social Development** at Tribhuvan University. The project aims to provide Nepalese society with qualified professionals with the ability to increase access to affordable and reliable energy services for sustainable development in Nepal.

Nepal has a huge potential for harnessing various renewable energy sources, such as hydropower, solar power, wind energy, and bio-fuels/bio-energy, however these resources have not been sustainably captured due to a mix of geographical, technical, political and economic reasons. The EnPe funded Master programmes at Kathmandu University and Tribhuvan University have focused on the planning, operation and sustainable use of energy systems with a focus on those energy sources which are relevant to the Nepalese context. The aim of these programmes are to produce broad competence on all sides of the development of energy systems in Nepal through producing critical human resources in the field of energy and power. Nepal is also a priority country for Norway (*fokusland*) with many years of cooperation including in the renewable sector with multiple Norwegian governmental (e.g. NVE, Norfund etc.) and private (e.g. SN Power) actors involved.

### b. Key Findings

Overall, the EnPe I programme reinforced the capacity of Kathmandu University, in particular, and of Nepal general, in providing master level education in the energy/power sector by incorporating human resources and infrastructure development activities through the NTNU/Norad programme. It has also helped to achieve continued and closer North-South cooperation in engineering education. In addition, the majority of graduated students are now working in a number of institutions within the energy sector. However, as mentioned in the



relevance section, the hydro power sector has high potential for Nepal, therefore the development of the power-sector has remained as high priority. However, due to the limited resources, Kathmandu University has not been able to attract international students. The university is also lacking in expert supervisors for the dissertation work and the international publication of students' work needs to be improved. The programme has not directly contributed to policy reform to enhance gender equality in the programme. It was observed that the respective department tried their best to encourage women to apply to the programme, however, the female candidates did not meet the minimum selection criteria. The major factors of achieving objectives of the EnPe I were due to the careful design of the programme, dedicated and experienced project management and faculties, and support from the Kathmandu University's high-level management. The periodic EnPe Project Steering Committee provided proper guidance to implement the programmes.

With regards to the ongoing EnPe II project at Tribhuvan University, so far, the students have not yet graduated, however all of the professors at IoE are satisfied with the students' progress. Project management point out that the Professor from NTNU was also impressed with the progress. Due to prolonged political unrest (related to constitution reform in Nepal), there were some delays in the implementation of the programme, however, now, two cohorts of the Masters programme have been conducted. The second cohort of students have so far brought encouraging inputs from the field, with some students working on an 'eco-city', and others on street light and solar power solutions in local communities. However, it is difficult to assess the overall relevancy and outcome of the EnPe II project as it is still ongoing. Once the first cohort of students begin to go into the professional market place, there will be more space for a qualitative assessment. The partnership model has, however, encouraged Kathmandu University to continue the EnPe supported programme even after the project completion.

Human rights issues appear to have not been explicitly dealt with in the Nepal EnPe projects either in the form of risk assessment or specific activities to strengthen this as a cross-cutting outcome. Several of the large hydropower and renewable projects have or are likely to have an impact on various human rights including land rights and freedom of movement. Unlike Angola and Ethiopia, however, human rights are not a sensitive topic to work on in Nepal. Hence, the EnPe projects here should provide more explicit mention or targets on human rights. It should be noted that other NORHED funded projects with Norwegian partners have provided research on related issues such as peace and conflict in Nepal. <sup>6</sup>

### c. Recommendations

#### EnPe I:

- Provide NTNU library access to the students for the whole course period.
- Provide incentives to faculty as well as students to participate in the international seminars and conferences.
- Facilitate role for the professor from the NTNU to supervise dissertation works as "Distance Supervisor".

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<sup>6</sup> Project title: Strengthening research, education and advocacy in conflict, peace and development studies in Nepal, Sri Lanka and Pakistan  
[https://www.nmbu.no/en/faculty/landsam/department/noragric/institutional\\_coop/norhed/norhed-strengthening-research-education-and-advocacy](https://www.nmbu.no/en/faculty/landsam/department/noragric/institutional_coop/norhed/norhed-strengthening-research-education-and-advocacy)

- Flexibility for international students to do their thesis work in their home country is needed.
- Without donor support, it is not possible to run the EnPe-I model programme with the same intensity, so it needs to be contextualized.
- Facilitate to encourage international students to apply at the KU programs with nominal incentives.
- Provide resources for faculties to do the PhD courses.
- There must be 20 students to sustain the programme in each cohort.
- Universities must market their programme for gender mainstreaming and scale up south-south learning which is missing.
- Students should be mobilized to study on "Himalayan Sedimentation Load" to develop curriculum.
- Need to focus on 'gender main streaming' in staff recruitment, carrier development as well as student enrolment.
- Develop and facilitate proper 'programme dissemination and marketing' policy to retain university students in the country.
- Future programme should be "problem-based learning" focused which can tackle the real and specific problems. This kind of course could be conducted in collaboration with the Tamakoshi Hydropower, BPC or NEA etc.
- Private sectors are disconnected from the universities, there must be a collaborative approach in higher education energy sector.

## EnPe II

- Cooperation and willingness to work with different institutions is a weak part of Tribhuvan University-TU and should be encouraged. At present there are little incentives and precedence for TU to work with other educational institutions. Unlike its Norwegian HEI partner, TU and other Nepali HEIs to not have well established programmes or much experience working with the private sector.
- Address cross-cutting issues especially human rights more explicitly in the projects activities and results framework.
- NTNU should promote healthy competition between the Nepali institutions.
- NTNU should provide a scholarship for a different institution to build the capacity.
- Practical exposures within the country and abroad (i.e. student exchange, industrial and public-sector visits) are vital. Practical and problem based teaching and learning should be applied for maximum effectiveness, therefore more practical exercises should be included in the syllabus. In addition, students should be sent to the field to gain exposure of communities and the industry. In order to provide this type of exposure for the students, visits to the industry and internships must be included in the syllabus.
- IoE should market its programme at a wider level and also focus on gender mainstreaming.
- Ensure job-placement of the Master Degree and PhD students through proper programme dissemination and marketing.
- IoE could initiate a study on 'Himalayan Sedimentation' to produce the necessary technical human resources in country.

## 8. Uganda EnPe I and II

### a. Background and Relevance

The EnPe I programme funded two projects in Uganda:

#### **Additional funds to support the NOMA project ‘Master Programme in Renewable Energy Systems’**

The project was a continuation of the existing NOMA-cooperation between NTNU and Makerere University.

#### **Geoscience collaboration Makerere University – University of Bergen. Developing a MSc programme in Petroleum Geosciences at Makerere University**

The goal of the project was to establish an independent Master degree within petroleum geology at Makerere University.

The EnPe II programme is currently funding three projects in Uganda:

#### **Capacity 5 (Capacity building in Renewable Energy Education and Research) Ethiopia, Uganda, Tanzania, Mozambique**

Capacity 5 is a collaboration between four institutions in the South, namely Mekelle University in Ethiopia, University of Dar es Salaam in Tanzania, Makerere University in Uganda, and Eduardo Mondlane University in Mozambique, as well as NTNU as the Northern partner institution. The EnPe II project is a second phase and focuses on capacity building in education and research through PhD research, institutional development and the establishment of small scale research infrastructures.

#### **Capacity building to promote Sustainable Governance of Petroleum Resources, Biodiversity and Livelihoods in East African Communities (PELIBIGO), Uganda, Tanzania**

This project aims to design new education and research programmes to address the often-conflicting claims between biodiversity conservation, livelihood security and petroleum exploration and production. East Africa is currently exploring oil and gas for commercial production to fuel socio-economic growth and development. However, there are concerns and criticisms over current and future oil and gas activities from environmentalists, human rights activists and development practitioners due to numerous socio-ecological and livelihood challenges which if not addressed may lead to marginalization, environmental degradation and increasing poverty levels. The project aims to build institutional capacity and increase the number of skilled workers in this field in order to mitigate some of these challenges. Human rights and environmental as cross-cutting issues are hence dealt with in the form of sensitized students and capacity development on these issues to relevant Ugandan institutions.

#### **Petroleum Geoscience Collaboration (Commenced 01/16), Uganda, South-Sudan**

The projects main aim is to strengthen M.Sc programmes and petroleum related research at Makerere University and University of Juba in order support these young petroleum economies with a workforce in demand in addition to applied geoscience research. The project also aims to facilitate a regional network in education and research through cooperation between Makerere and Juba.

The five EnPe projects in Uganda focus on petroleum geoscience and the use of petroleum as well as renewable energy systems and education in general. Uganda is an emerging oil and gas producing nation and having these courses in place will allow Uganda to build up its own workforce in this sector. Uganda has recently established the new Petroleum Authority (PAU) and Uganda National Oil Company (UNOC) in 2017 which has started recruiting and with the oil development and renewed plans for exploration in the Albertine Graben, the outlook for jobs in the petroleum sector should be markedly improved going forward.

## **b. Key findings**

### **EnPe I:**

- The MSc candidates from EnPe I have generally been employed but none in the petroleum sector. The foreign oil companies are not hiring due to the delay in approving the development concepts for the Lake Albert oil fields combined with a dramatic drop in the price of petroleum. This has resulted in too few qualified students applying for the programme.
- In the EnPe I project both male and female students received sponsorship from EnPe which was pointed out as very positive.
- A very positive unintended effect of the Geoscience collaboration project was the involvement of students at the Bergen College taking on a project of setting up the IT lab at Makerere, benefiting all parties.
- After the Geoscience project was terminated in 2014, there was a marked reduction in enrolled students for the third cohort (2014/2015) with only one enrolled Master student in the 2015/2016 cohort. The EnPe geoscience project is in line with development research which has shown that a consistent longer-term perspective is required to achieve sustainability.
- In EnPe I the partnership was coordinated from Norway and the model worked well. Laboratory equipment was procured in or from Norway avoiding the bureaucratic procurement processes at Makerere.

### **EnPe II:**

- The south/south cooperation has been seen as positive and working well. In both Pelibigo and Capacity 5 there is a south-south cooperation, but it does need help and push from Norway. South/South cooperation has resulted in very little financial resources being allocated to follow up programs from Norwegian collaborative universities. It is based today on volunteer work in the form of Norwegian professors, often with backgrounds from previous stays in Africa, which receive little acknowledgement and no financial support. This appears not to be sustainable.
- The EnPe II Geoscience project has placed a greater emphasis on gender equality, and the programme is of a particular benefit to female students whereby they have all of their expenses covered and are therefore able to concentrate fully on their studies.
- There are currently two PhD students enrolled at Makerere University in the Geoscience project who will be travelling to Bergen for short courses and support for their research which is considered very beneficial.
- The administration department in the EnPe II Geoscience project functions quite slowly. This has led to an unnecessary and frustrating delay in most EnPe II programme activities.

- The cooperation with University of Juba in South Sudan is not working well due to the continued conflict and unrest in South Sudan. The geoscience project grant manager (Professor William Helland Hansen at UiB) has not been to Juba since the civil war restarted. UD's travel advice is still: «*Utenriksdepartementet fraråder alle reiser til eller opphold i Sør-Sudan*». The one pending project, the PC lab, finally found a location, but the cost of renovating is estimated much higher than budgeted. As recommended the funds allocated to South Sudan should be spent on financing Master and PhD students from South Sudan at Makerere, not in Juba.
- In the EnPe I project both male and female students received sponsorship from EnPe. The sponsorship both covered tuition and a small stipend plus field research. In EnPe II only female students get their tuition and fees fully covered, while the male students receive support for their research programme in the second year. This has resulted in the male students feeling excluded and staff and students at Makerere requesting that male students also receive support going forward to secure a stable and qualified enrolment of students.
- Due to limited funds there is a general freeze on new staff being hired at Makerere and no new master programmes are being approved. At the same time, staff members are being forced into retirement when the required age has been met. This has had the unintended effect that certain academic chairs are being left empty.
- A Gender mainstreaming seminar arranged by the NTNU secretariat is scheduled to take place in Kampala in mid-November 2017 after the country field visit of this review.
- In the Pelibigo project, the current organisation of the partnership model and funding is not sustainable.

#### General:

- All money in EnPe I phase was channelled through University of Bergen, which all parties, including the Makerere accountant, highly supported. It resulted in students receiving their grants for tuition and field research in time, something that has plagued the two other EnPe II projects where the partnership has been managed in the south.
- The EnPe secretariat was considered very good, with little bureaucracy and unnecessary reporting. All projects, however, noted that the online reporting format is very rigid and repetitive and leaves no room for reporting on content and quality of results.
- Both EnPe I and II have suffered from a lack of qualified female candidates in order to improve on gender equality within the programme.
- Delays in the disbursement of approved funding is a major hindrance to the programmes being completed on time. Several reasons for the serious delays have been reported. In the Capacity 5 project, money is disbursed to Ethiopia and government regulations result in serious delays before money is disbursed to Makerere. For the Geoscience project, the delay is due to the audit report from the Geoscience Department at Makerere being severely delayed and the NTNU secretariat not paying out money until the audit report is approved. Regarding the Pelibigo project, Makerere staff claimed that the delay in transmitting funds was due to a summer shutdown at NTNU.
- The EnPe programmes have been seen as very flexible as opposed to other donor country programmes.

### **c. Recommendations (both EnPe I and EnPe II)**

- All Master students, both male and female, should be considered for EnPe sponsorship to secure a sufficient and stable enrolment of qualified students.
- To enrol Master students in Norway is not recommended. It is expensive and a source for “brain drain”, benefiting the individual but not Uganda.
- Students and faculty in general have to become more extrovert. They should travel to conferences, institute a culture of publishing their research and seek more contact with industry.
- With regards to the Geoscience project, the intended programme at University of Juba should not be continued as long as the political and security situation in the country is unacceptable, with a civil war and ethnic killings with catastrophic consequences for the inhabitants ongoing. In November 2017 government employees had not been paid for several months. This situation unfortunately at this point in time looks more likely to continue during the remaining part of EnPe II Geoscience programme.
- The partnership model for the Pelibigo project, whereby there is little benefit for the Norwegian institutions and project coordinators involved both in terms of funding or credit, should be discussed by the Board. The current model is based on a large personal interest and work from the Norwegian coordinators, whereby the involved professor at NTNU is East African born and has a strong personal interest and commitment to the project. This is not seen as sustainable as a programme’s needed progress should not be based on this.
- Norad could in its funding going forward aim to have e.g. petroleum geoscience centre for EAC at Makerere, petroleum engineering at University of Dar and master programme in sustainability at Dodoma. These are all master and PhD programmes that are already being funded through the EnPe programme, but the Centre of Excellence foundation should be embedded in the programme going forward.
- While there is no indication of misuse of funds or nepotism in the projects, as a preventive measure, project coordinators should be rotated after some years. This will also promote the educating of other staff members in writing applications and administering projects.

## **9. Angola EnPe I and II**

### **a. Background**

During EnPe I, Angola had three different projects funded:

**Funding of PhD study for Mayembe Bartolomeu** at the University of Agostinho Neto (UAN).

The project was extension and strengthening of a former NOMA project between NTNU and UAN.

**Angola Norwegian Higher Education Initiative – Phase 2 (NTNU/UAN).**

The project was a continuation of a bilateral master program in petroleum technology between NTNU and UAN in Angola. The project had been funded through NOMA from 2007.

**ANTHEI – Angolan Norwegian Tanzania Higher Education Initiative (NTNU/UAN/University of Dar es Salaam)**

The project was an extension of an existing cooperation between NTNU and UAN on the establishment of a master's degree in petroleum science. Through this project, with the experience of Angola, it also aimed to establish a master's degree in petroleum science at the University of Dar es Salaam in Tanzania.

The EnPe II programme was funding the continuation of the ANTHEI project with both the University of Agostinho Neto in Angola and the University of Dar es Salaam in Tanzania, however Agostinho Neto was removed from the project in 2017.

EnPe support to Angola has focussed on petroleum technology and increasing capacity in this field through the establishment of Master programmes and funding PhD students. Angola has significant oil and gas production and local expertise in this area is in high demand. In addition, the development of a petroleum programme at the Agostinho Neto University was seen as key to the development of national independence of the Angolan petroleum industry. The projects have aimed to develop high level human resource capacity, upgrade technical skills, assist with curriculum development, enhancement of research and knowledge exchange, improvement of infrastructure, and strengthening of links between institutions in the South and with Norway. Statoil holds EnPe to be very relevant to the needs of IOCs, which face a limited pool of Angolan engineers as well as research and laboratory facilities. With strong local content requirements there was a strong need for the skills and knowledge to be produced by EnPe I. The dip in oil prices from late 2014, however, has had a severe effect on the Angolan economy leading to high unemployment in the sector and dim prospects for petroleum graduates.

#### **b. Key findings**

EnPe I funded three different projects in Angola whereas EnPe II funded one project, as noted above. The EnPe I funded projects were largely successful and achieved their targets. There were some issues related to the level of English knowledge of the Angolan students who were to come to Norway to study, however additional language training was given to the students before coming to Norway to mitigate the problem.

During EnPe II, the collaboration between UAN and University of Dar es Salaam in Tanzania was suspended and the project continued without Angola as a partner. The reason for this seems to be twofold; firstly, the Norwegian and Tanzania partner (NTNU) described a lack of communication and reporting from UAN. Secondly, the advisory board felt that, in addition to a lack of engagement from UAN Angola, the project was at a point where they did not really need assistance from EnPe. As an MIC, and not a priority development partner for Norway, with considerable resources it was felt that Angolan local authorities and business were better placed to support than EnPe.

The review of the Angola projects found that there was little focus on human rights (gender and environment were more visible). It should be taken into consideration, however, that human rights remain a sensitive topic in Angola.

On the Angolan side the understanding for the cancellation of the project was as follows:

- A project review was conducted by EnPe and the understanding of the activities in Angola were misunderstood.

- The Angolan partner believes their poor level of English, especially among Angolan students, was a key reason for terminating the project as it made it difficult for a successful outcome overall. The Angolan project coordinator acknowledged language difficulties but said this was known and almost impossible to recruit students for the programme due to a poor level of skills and a poor level of English.
- Despite the cooperation ending earlier than planned, the support received from the EnPe programme was perceived as far better than cooperation the University has with other universities and international companies.

With regards to project results and outcomes of EnPe II:

- 40 students participated, many of those started working in the oil industry but many are now unemployed due to the ongoing crisis in the oil industry.
- Only one student has continued to PhD level
- Despite wanting to employ former students in the faculty, the faculty does not have the possibility to employ staff at the moment due to the crisis, even though the need for them is high.
- The economic downturn in the oil industry has also led to more difficulties in finding ways of cooperating with the industry. For example, there are less opportunities for trainees in the oil industry at the moment.
- A constant challenge has been the level of students applying to the courses, which has been very poor.
- Efforts to incentivise women to choose the course have been employed and the result has been very positive. More women than men are now attending the course.

Major challenges for students from EnPe II included:

- Lack of communication and support from project management in Angola. Students' overall experience in Norway was far more positive than in Angola as they felt that difficulties they encountered in Norway were taken care of by project coordinators. In Angola, they experienced difficulties with payment of scholarships for example and lack of software.
- Due to the crises, very few students had the chance to do traineeships in companies.
- There were difficulties involved with getting the students' diplomas certified in order to be recognised by the institution in Norway. The Norwegian Embassy in Angola was not willing to certify the documents without standard payment for which the project was not able to cover. The students then took the option of buying a ticket for one of them to travel to Norway to get the diplomas certified. This was a very expensive alternative for the students, but their only option as the project administration and Embassy were not able to find a payment solution.
- The students were told they would be employed as teachers at the University (Neto) after completing the masters. The students interviewed hold that the University has made no effort to employ them since completing their master degrees.

### **c. Recommendations (as seen by the Angolan stakeholders)**

- The programme committee should have met more often to identify difficulties at an early stage.
- Tanzania wanted more Masters students and programmes, however for Angola it was preferable to stay at the Bachelors level due to issues related to poor level of skills. The



programme should have begun at the Bachelors level and then built from there, which would have led to a better result for the Angola team than beginning with a Master programme.

- The programme did not consider the Angolan reality including language.
- The Master programme for Angolans should be done in Norway for the entire 2-year period as Angola does not have the capacity to handle a Master level programme.

## 10. Cross-cutting Issues

The promotion and achievements of cross-cutting issues of human rights, corruption, environment and gender equality in EnPe I-II have been mixed and at times challenging. The strongest cross-cutting issue has been gender as this is stated as an explicit objective of the programme and included as a result area in the reporting structure. There are several reasons for why results on cross-cutting issues are difficult to achieve and demonstrate for EnPe:

- **Lack of shared understanding:** the key partners and stakeholders for EnPe are mainly energy experts and have limited knowledge or understanding of what “gender and anti-corruption/human rights” means especially from a development perspective. The understanding of environment is somewhat stronger as this a key area for renewable projects and to a certain degree petroleum where environmental impact studies are required (as are social but this seems to be less pronounced in the projects we reviewed for EnPe). As a consequence, the EnPe approach to cross-cutting issues is rather fragmented and the reporting often superficial. The responsibility for ensuring that the cross-cutting principles are implemented lies with NTNU as the implementing agency. Norad, however, has specialised expertise on this topic and can provide much needed support to the programme. The NTNU Secretariat on the other hand, has not invested or explained to grantees sufficiently what is meant by these cross-cutting topics. A gender mainstreaming workshop was hosted by EnPe II in November 2017 with all HEIs partners invited. It is exactly these kinds of workshops that are needed to create a shared understanding and know-how among EnPe projects on how to apply cross-cutting issues to their individual projects and institutions.
- **Understanding cross-cutting issues beyond project levels:** EnPe has generally treated cross-cutting issues, including gender, as something limited to the project levels and then aggregated for all projects e.g. nr. of women, nr. of corruption cases and whether environment was part of the curriculum. What is needed is a more comprehensive and holistic understanding of how these issues enable or challenge the functioning of HEIs, sectors and countries in which they operate. Corruption as a cross-cutting topic, for example, is not limited to the project but is more about natural resource management and resource curse as a prevalent phenomenon in petroleum producing LDCs. Likewise, gender is more than just disaggregation but also understanding structural challenges in society at large. Without a deeper appreciation of cross cutting issues, it is difficult to have an impact beyond the project.
- **Lack of results framework:** although there are measurable indicators on gender there are generally no baselines, indicators or targets on the cross-cutting issues for EnPe I. This has improved somewhat for EnPe II, as has the understanding, but it is difficult to

discern clear results. The gender workshop held in 2017 is unlikely to change the design or result reporting of ongoing projects.

Specific findings based on field visits and document review do, however, demonstrate some interesting innovations and potential impacts on cross cutting issues:

**Gender equality:**

- Most projects acknowledged the importance of having scholarships available for women due to school fees at universities often meaning that students must have part time jobs. Experience shows, however, that female students have less access to part time jobs and therefore the importance of available scholarships is even greater for women.
- EnPe I has generally improved awareness of gender issues at universities and ensured that more emphasis would be placed on recruiting women in EnPe II.
- The percentage of EnPe I female students was 33%, which is higher than most engineering programmes at the cooperating southern HEIs. Tanzania and Bolivia achieved 50% gender balance for their projects.
- All EnPe II projects offer scholarships for women and some projects have a gender focal point, but not all.
- Some projects have reported that women automatically gain a certain amount of extra points in the assessment, others have a maternity leave offer. For example, Makerere University offers a 3-month paid maternity leave for PhDs in the EnPe programme.

**Environmental issues:**

- Several of the projects reported that the environmental aspects of petroleum exploration and production was an integral part of the studies and that it is expected that the graduates will keep the focus on this in their jobs in their home countries.
- Many of the projects emphasised the importance of raising awareness of environmental issues and that the programmes succeeded in doing so.
- Almost all projects reviewed reported that either through the syllabus or through the design of the research assignments there is a focus on the impact their activities have on the environment, both positive and negative. Unlike previously, the petroleum projects also have a clearer awareness about climate and the environment.

**Anti-corruption:**

- There were no cases or instances of corruption reported during EnPe I or EnPe II.
- With regards to the handing of funds, the majority of projects reported good solid practices with often more than one person on different levels being involved in the handling of funds.
- Regarding procurement, regular routines were reported at the universities of the South, but a common feature involved purchases often taking place from the Norwegian partners in order to avoid delays.

**Human rights:**

- Identified as a topic that was difficult to report on.

- Some projects reported that their project does not have an effect on human rights, while others noted positive consequences their project has and will have for certain vulnerable groups.
- Capacity 5, for example, highlights that their development of technologies related to different energy sources will hopefully lead to more people in rural areas accessing affordable energy.
- The project in Nepal shows that all case studies take place in areas where the majority of the population belongs to specific marginalized groups.
- With regards to the choice/enrollment of students, the majority reported that their recruiting processes followed the same procedures as other study programmes at the universities. What stands out for the EnPe programme is that it is being advertised more extensively, and explicitly, for women and vulnerable groups to receive a scholarship.

## 11. Organisation and steering structure

NTNU was selected to administer EnPe I based on their response to an invitation sent to relevant Norwegian institutions, at the beginning of the first programme in 2009. In 2015 Norad signed a new agreement with NTNU to also administer the EnPe II programme.

EnPe II is governed through an agreement between Norad and NTNU *Avtale om overføring av forvaltningsoppgaver under tilskuddsbevilgning 165.70 fra Norad til NTNU under programmet EnPe 2013-2019*. The agreement governs the cooperation between Norad and NTNU. EnPe I was governed through a similar agreement between Norad and NTNU for the time period 2009-2013. We have below summarized the key responsibilities for the two parties (NTNU and Norad) both in the first agreement 2009-2015 and the ongoing agreement 2015-2019.

## ENPE I AGREEMENT 2009-2013

NTNU is responsible for:	Norad is responsible for:
<ul style="list-style-type: none"> <li>- Administering EnPe on behalf of Norad in line with the Programme Document.</li> <li>- Fulfilling their obligations under the Agreement and the administration and utilisation of funds.</li> <li>- Announcements for proposals.</li> <li>- Preparing and organising Board meetings, as well as minutes from meetings.</li> <li>- Designing standard project contract and entering into contracts with partner institutions.</li> <li>- Ensuring that annual progress reports from partner institutions are made publicly available.</li> <li>- Undertaking a separate mid-term review of the programme.</li> <li>- Effecting purchases for the programme in accordance with Norwegian law and regulations on public procurement.</li> <li>- Ensuring that programme funds are properly accounted for.</li> <li>- Ensuring no conflict of interest between the administration of EnPe and other interests of NTNU.</li> <li>- Ensuring that representatives of Norway are permitted to visit any part of the EnPe programme for purposes related to the Agreement.</li> </ul>	<ul style="list-style-type: none"> <li>- Appointing the programme board and deciding the mandate for the board.</li> <li>- Making funds available including 5 % of the total Project expenditures, costs related to facilitating the Programme Board and Programme mid-term review shall cover NTNU's expenses for the management, administration and reporting. The payment is based on approved reports and contractual requirements.</li> </ul>

## ENPE II AGREEMENT 2013-2019

NTNU is responsible for:	Norad is responsible for:
<ul style="list-style-type: none"> <li>- Managing the programme and grant.</li> <li>- Overseeing the programme's daily administration.</li> <li>- Secretariat of the programme board.</li> <li>- Announcing the programme, processing applications and submitting them with programme management, entering into agreements with project partners, making payments, evaluating reports and plans for submission to the programme board for approval.</li> <li>- Identifying, assessing and handling any risks associated with the implementation and impact that the programme may have for the environment, climate and gender equality.</li> <li>- Conducting yearly meetings and preparing minutes.</li> </ul>	<ul style="list-style-type: none"> <li>- Appointing a programme board and establishing the programme board's mandate and guidelines.</li> <li>- Approval of funding under the programme</li> <li>- Funding the programme. The payment is based on approved reports and contractual requirements.</li> <li>- Responsible for mid-term and end-reviews.</li> </ul> <p>*Representatives for Norad or the General Auditor's Office (<i>Riksrevisjonen</i>) can at any given time carry out reviews or controls of the grants in accordance with the grant agreements.</p>

The agreement for EnPe I is less comprehensive and lacks clarity with regard to important governing mechanisms, roles and responsibilities. It is beyond the scope and competence of the review team to provide a legal or management assessment, but we note that the agreement fails to mention that Norad and NTNU are government entities under respective ministries and how this relationship should be governed. With regard to responsibilities, the review team's assessment of EnPe I (see Chapter 3) indicates that both NTNU and Norad have, overall, fulfilled their responsibilities of the agreement. NTNU has, for example, carried out announcement of proposals, designed project contracts, avoided conflict of interest between its project administration and NTNU as an HEI, organised project board meetings, administrated funds in accordance to rules and procedures. Norad on the other hand has provided funds, including 5% of total expenditure to cover NTNU project overhead costs, and selected a project board. With regard to the clause on 5% overhead cost (section 2 of the agreement "Norad Contributions") we believe this is insufficient to run a programme as complex and multifaceted as EnPe. The 5% (approx. NOK 3 million) was meant to cover administration management, reporting and facilitation of the project board e.g. travel/visit to countries and annual meetings. Another significant weakness of EnPe I concerns the failure to conduct a mid-term review, which was tentatively scheduled for 2011 and then postponed to 2013 and then again to 2015. According to the agreement this was NTNU's responsibility. There is no mention of why this was not carried out in the final programme report but in email correspondence to Norad, NTNU explains that the mid-term review has been postponed due

to overall programme activity and uncertainty of an extended EnPe (II) phase.<sup>7</sup> More importantly, the EnPe I agreement does not stipulate for an end-review. Why Norad and NTNU did not agree on an end-review, which is standard procedure for a 4-year programme of this size, is unclear. Several of the challenges highlighted in the current mid-term review could presumably have been dealt with earlier and improved on for EnPe if mid and end-term reviews had been carried out in a timely fashion.

The EnPe II agreement 2013-2019 between NTNU and Norad provides a more comprehensive and adequate framework. Firstly, the agreement is in Norwegian and appears to have used more precise language in line with Norwegian public administrative procedures and rules (see for ex. Sections 3.10, 3.11 and 3.12). It is important to note that the agreement transfers management responsibility from the Ministry of Foreign Affairs (via its directorate Norad) to NTNU as grant manager. With the transfer of responsibility, the agreement more clearly places the responsibility on NTNU to manage and implement the programme (3. Management of the Programme). According to section 3.2 of the agreement, Norad can send written instructions to NTNU regarding the management of the programme. The agreement governs the cooperation between NTNU and Norad where the former is responsible for implementing the EnPe programme as grant manager. The agreement notes that additional governing documents include the project document (including annexes), rules and regulations (*regelverk*) for NORHEAD and general financial rules and regulations for the Norwegian public sector.

The model of transferring grant management responsibilities to another public administrative entity is not uncommon when it comes to development funds managed by the MFA. The Oil for Development-OfD and Fish for Development programmes, for example, use this model where the MFA transfers funds sideways to another ministry, which in turn transfers to its directorate (i.e. the Oil for Development programme funds go to the Ministry of Petroleum and Energy to the Norwegian Petroleum Authority). Norad has also used this model for its cooperation with the Norwegian Research Council and SIU (Norwegian Centre for International Cooperation in Education) in Bergen. According to Norad, the transfer of grant management responsibility has worked well with these other cooperation agreements. NTNU (the International Section for Cooperation) has also previously worked with this transfer and grant management model. This includes an ongoing HERD Programme (Higher Education, Research and Development in the Western Balkans)<sup>8</sup> funded by the MFA where NTNU is responsible for administering funds and providing support to multiple educational projects in the energy sector for the Western Balkans. The HERD programme is similar to EnPe but geographically restricted to the Balkans and the transfer of administration is directly from the MFA to NTNU. The 2016 report from the MFA expresses satisfaction with the HERD programme including NTNU's administration. It is beyond the remit of this review to assess these other cooperation agreements using the transfer modality but there is no indication that the model of transferring responsibility from Norad to NTNU should not work per se.

NTNU is responsible to provide programme auditing in line with relevant ISO standards. Under EnPe II, recipients are required to submit audits along with their reports. This has caused some

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<sup>7</sup> Email from NTNU Secertariat to Norad dated February 26, 2014

<sup>8</sup> <https://www.ntnu.edu/international/herd>

consternation for southern HEIs as they have little experience with this. Other HEIs including Ethiopia, however, indicate that this is a welcome addition as HEIs are expected to demonstrate financial and accounting diligence, especially if they plan to apply for additional donor funds. Whether audits are carried out by HEIs or from NTNU through a third party (international audit firm) is for the grant manager to decide as they are responsible to deliver adequate auditing as per the cooperation agreement with Norad.

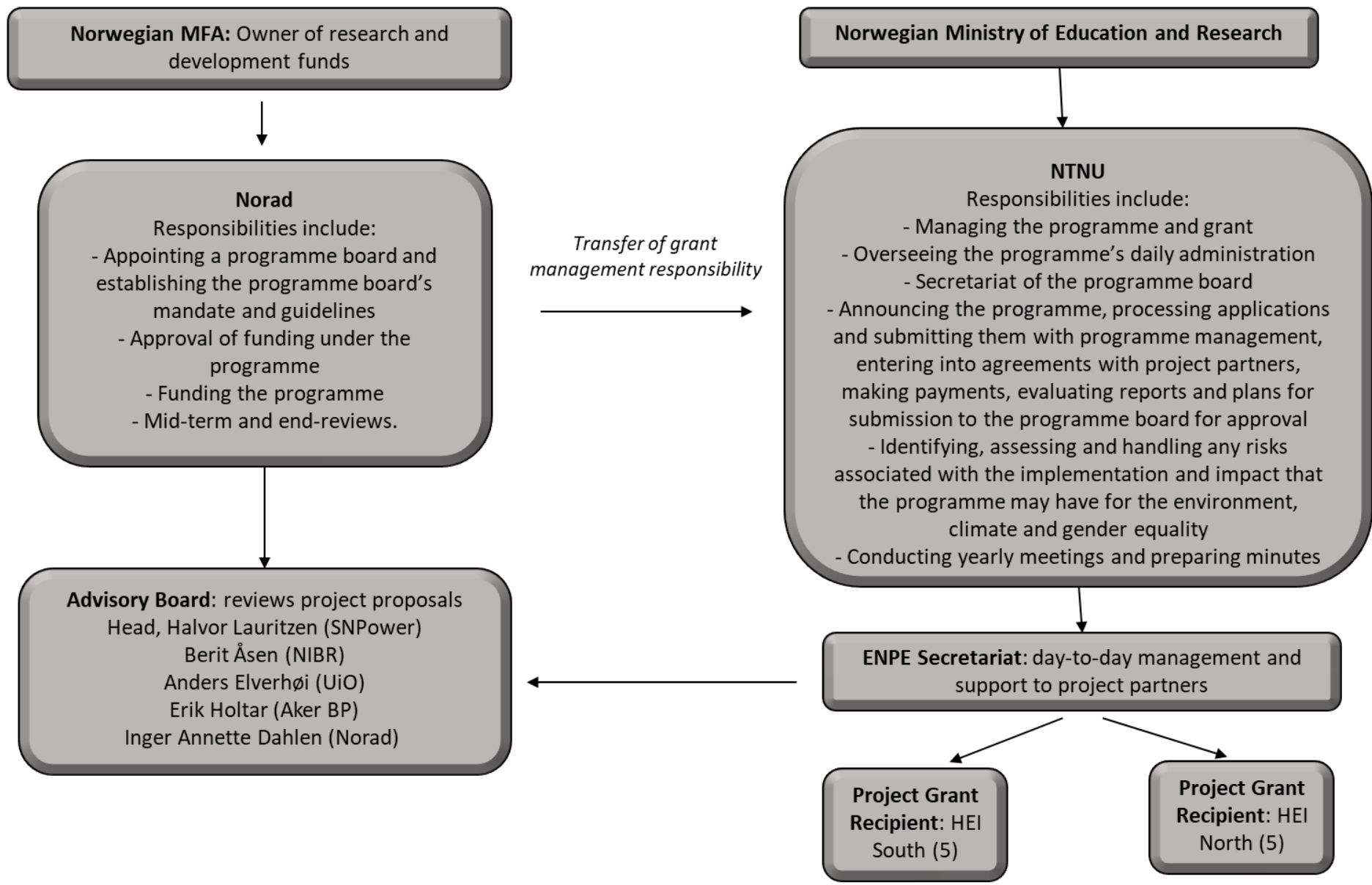
### Organisational set-up

The EnPe programmes have been managed by a small secretariat based at the Office of International Relations at NTNU. In accordance with the EnPe agreements this set-up is meant to avoid a conflict of interest between NTNU as grant manager and HEI partner. The Secretariat is comprised of 1,2 positions (shared by two people) under the supervision of the head of the NTNU Office of International Relations. The current coordinator and head of the Secretariat are relatively new (the former came on board in 2015 while the latter in 2017) and consequently have less knowledge and understanding of EnPe I. EnPe HEI stakeholders interviewed for this review have generally expressed satisfaction with support and communication received from the secretariat for both programme periods. Norwegian and southern HEIs interviewed express particular satisfaction with the necessary flexibility and facilitation provided by the Secretariat for both EnPe I-II. Several Norwegian HEI representatives who have experience with NORHEAD programmes pointed out that EnPe is more flexible and fit for purpose with NTNU as the implementing party. The chair of the board (from 2009-2017) has commended the Secretariat for its performance and support provided to the board (this is a key function of the secretariat). Norad also points to significantly improved communication with the Secretariat since 2017 and improved management and reporting tools for EnPe II, notwithstanding some of the challenges discussed further down.

In accordance with the agreement document, Norad is responsible for constituting a 5-person programme board along with a mandate and guidance for its function. The board is to consist of two people from the higher education sector, two people from the energy and petroleum sector and one representative from Norad. The term of the board is 3 years with the option of extending for an additional three years. The EnPe board has played a very important role in overseeing and selecting projects but also making important decisions such as suspending or terminating projects. The board has emphasized education and capacity development rather than research as a key criterion for selecting projects. A new board, including a chair, was constituted in the fall of 2017 (see figure below of current board members). The review team believes the previous and current board composition meets the criteria set out in the agreement and generally provides the needed competencies and balance between academia and private sector experience. The board and EnPe programme, however, would be strengthened by, and benefit from, having a board member from the South. As the programme is primarily dedicated to achieving results, in collaboration with Norwegian partners, in developing countries it is crucial to have a southern representative with regard to legitimacy and sustainability. Norad is aware of this and has informed the review team that they are looking into a practical arrangement for bringing such representation to the board. The board appears to have been hands-on and made good calls in temporarily suspending certain projects in 2016 and permanently discontinuing the partnership with Agostinho Neto University. The review team believes, however, that the board should pay more attention to how the

programme can demonstrate results in accordance with the NTNU-Norad agreement section 3 i.e. short, medium and long-term results.





Grant recipients- 5 North 5 South HEIs

## NTNU-Norad cooperation challenges

The current agreement for EnPe 2013-2019 clearly lays out roles and responsibilities for the cooperating parties. It has also been established that the model of transferring grant management from Norad to an entity like NTNU has been successful for other cooperation agreements (e.g. Norad transfer to Research Council and MFA to NTNU for HERD programme). The cooperation between Norad and NTNU, however, has been sub-optimal and, in the review team's opinion, negatively affected the running of EnPe.

Norad has consistently voiced concerns for both EnPe I and EnPe II regarding the quality of the reporting, results documentation and management capacity of NTNU as grant manager for EnPe projects. Norad has, in particular, pointed to what they see as inadequate and poor project reports and failure to carry out adequate auditing as per the agreement. These aspects have improved with EnPe II but are still seen as sub-optimal from Norad's perspective. Another key concern relates to NTNU's ability to implement cross-cutting principles of gender, environment and corruption. Norad points out that as grant manager NTNU is also responsible for fulfilling the development objectives of the programme i.e. not just the technical and educational competence outcomes. As highlighted by this review the efforts and ability to implement cross-cutting principles across EnPe projects have recently improved but are still weak. As a consequence, and with an eye to a future EnPe programme, Norad has started questioning whether the chosen governance model (transfer of management authority) is the right form for implementing EnPe.

NTNU acknowledges some of Norad's concerns especially regarding results management and cross-cutting issues. They point out, however, that much has improved for EnPe II and that this has not always been acknowledged by Norad. NTNU believes that the cooperation with Norad has been challenging because they are treated as though they were an NGO-grant recipient rather than a government partner responsible for grant management. NTNU also holds that Norad has attempted to micromanage and disproportionately pointed out weaknesses rather than strengths with NTNU administration of the programme. Norad on the other hand, says its more hands-on because they believe it is needed and the reporting has been poor. Norad also holds that they have a control function as the responsible party on behalf of the MFA. NTNU strongly believes that Norad fails to acknowledge their comparative advantage of administrating EnPe, which is that NTNU as a university better understands the needs of HEIs and is better positioned to cooperate and communicate with HEIs, both in Norway and the south. They also point out that they have considerable experience managing and implementing large funds on behalf of Norwegian government institutions including development aid (e.g. HERD program for MFA). NTNU acknowledges, however, that there is a need to review and further professionalise management including for international cooperation. NTNU is currently working with the accounting firm PwC to improve and upgrade its management and corporate governance including how risk, internal control, and compliance is exercised. Although there have been no red flags or incidents with regard to NTNU management of EnPe funds, the current management enhancement will likely force NTNU to be more hands-on in identifying risks and strengthening internal control on programmes such as EnPe. This is likely to also address some of the weaknesses pointed out by Norad and those identified in this mid-term review. NTNU also acknowledges that Norad has specialised knowledge and competence,

including on cross-cutting issues, which is needed for EnPe. However, NTNU believe they have not found a good modality for cooperating or drawing on this knowledge from Norad without being criticised for not having the necessary expertise to be a grant manager for EnPe. In essence there is a vicious cycle. It should be pointed out, however, that communication and the ability of resolving some of these shortcomings has improved significantly since 2017 with new focal points both at Norad and EnPe-Secretariat/NTNU. The recent gender workshop hosted in Uganda for all EnPe programmes is a good example as NTNU was able to draw on Norad's gender expertise for the workshop programme. The review team has also been informed that the NTNU secretariat has recruited more permanent human resources with relevant knowledge on development and cross-cutting principles.

The review team believes that EnPe would benefit if NTNU could draw on Norad expertise and knowledge without that raising the question on whether this means the transfer model works or as an indication that Norad should take over as a grant manager for EnPe. It is also important that NTNU acknowledges that development funds carry a specific responsibility in terms of demonstrating results. This includes required knowledge and understanding of development cooperation principles (there among cross-cutting issues) and technical tools including a results framework in line with OECD DAC requirements. What NTNU perceives as an unnecessary bureaucratic and heavy-handed approach from Norad (including rejection of NTNU reports) is arguably an enforcement of quality control, which NTNU should be placing on its grant recipients. Norad on the other hand, should acknowledge that NTNU's strength lies in being a facilitator between northern and southern universities including faculty and staff. Multiple EnPe HEI partners in both Norway and the south, that were interviewed as part of this review, have clearly expressed a preference for being under NTNU management as opposed to directly under Norad or NORHED as they believe the former better understands their added value and capacity needs.

## 12. Key Recommendations (see also individual country recommendations)

### Reporting, results and learning

EnPe II has improved the quality and standardisation (common reporting template for all grantees) of reporting but there is still room for improvement. Basic information on targets and baseline indicators need to be added. Special attention should be paid to EnPe reports that do not match with figures reported to the review team in country including no. of enrolled/graduated students in Ethiopia and Uganda.

- Using the standard, EnPe should review the country report template to see if adjustments need to be made. At a minimum there should be information along the lines presented for the 4 countries reviewed here within (Ethiopia, Angola, Nepal and Uganda).
- The review team has extrapolated a ToC based on the review but this should be further elaborated on by the EnPe secretariat and Norad now that EnPe II has reached the midterm point.
- EnPe should consider doing more specific trainings or workshops with grant recipients to identify lessons learned and results achieved/not-achieved for their individual projects. The recent gender workshop in Uganda is a good example of how to do this.

- A key success or failure factor for EnPe projects concerns the competence of Norwegian institutions to integrate global/developmental perspectives in their professional work. There should be an “onboarding” process for both Norwegian and southern partners on how to manage and mitigate common challenges associated with north-south cooperation at HEI levels. EnPe II should invest more in documenting lessons learned, risks and recommendations on the various partnership modalities including south-south. With regards to the latter it's clear that some of the regional partnerships (Capacity 5) have been less successful due to rather obvious challenges including language barriers (lusophone countries such as Angola and Mozambique are not likely to work with Anglophone African countries).

## Organisation and Management

- Notwithstanding individual responsibilities and division of labour as outlined in the agreement; Norad and NTNU should continue a close dialogue and cooperation on EnPe as they have a shared interest in demonstrating results by 2019. It is essential that communication and cooperation levels between the owner and grant implementer remain high and prioritized.
- Norad should consider inviting a board member from the South; as EnPe places increased emphasis on ownership from HEIs in LMICs this should be reflected in the board advisory composition. A former senior faculty member or representative of a southern HEI from a previous EnPe project may be well placed to fill this role.
- The EnPe Secretariat needs to continue to invest in its human and technical management resources as well as cross-cutting issues. Two full time positions on EnPe seems like a minimum to ensure hands-on support and addressing some of the shortcomings identified in this review. This investment is crucial to ensure smooth management, communication and coordination with recipients, Norad and the advisory board. The 5% overhead cost stipulated in EnPe I should not apply to EnPe II.

## Making EnPe relevant to the sector and industry

A key objective of EnPe is to contribute graduates with adequate qualifications to the national work force. Although the emphasis is on academic qualifications it is evident that EnPe graduates should be prepared and trained for more professional experiences outside the HEIs. Several participating EnPe countries requested more exchanges and training opportunities with the private sector/industry, local communities or relevant government agencies. Nepal and other EnPe countries emphasized that the industry is very disconnected from universities even when it comes to programmes such as EnPe, which should be highly relevant. Several EnPe countries including Ethiopia expressed the desire to collaborate more with industry for manufacturing and dissemination of technology for wider use.

- EnPe HEIs should be encouraged in their proposals and syllabi to include collaboration with relevant partners including industry actors (national and international companies) and government institutions, especially at the local levels. A key aspect in this regard is for the HEIs to use “problem based-learning” to find solutions to challenges faced by local communities e.g. access to the electrical grid and possible renewable energy solutions.

- A focus on public-private partnerships should be a priority to ensure sustainability and added value of EnPe in countries.
- From Norway's side several steps can also be taken to link EnPe to private sector development including ongoing energy investments through Norfund and bilateral cooperation led by NVE. More specifically, EnPe should consider applying for Innovation Norway funds to develop products or technological innovation through incubator programmes or similar.

### **Disseminating knowledge and Marketing EnPe**

The marketing and visibility of EnPe is weak as government officials and industry actors in most of the countries seem unaware of the university programmes.

- The EnPe website should be updated with more specific project information including contact person at the host HEI, events, research and news. With almost 10 years of running, EnPe has generated relevant knowledge, experience and information, which should be shared and made more readily available to stakeholders. The purpose of this is twofold: firstly, it will provide crucial information for EnPe stakeholders and potentially new HEIs. In the same vein it will help transmit knowledge and tools relevant across EnPe countries. Secondly, it will make the programme more transparent; what results have been achieved, who is responsible for the country projects and how can new HEIs partake in the programme.
- Another untapped EnPe asset appears to be its alumni i.e. graduates and faculty from HEIs in Norway and LMICs. It should be relatively easy to connect past, present and future EnPe beneficiaries in a Facebook or LinkedIn group or even at annual alumni events in country or possibly at a regional level. The alumni will be able to help each other beyond the programme period for both academic and professional purposes. This will also allow Norwegian partners to remain in touch at individual and institutional levels.
- Efforts should be made at the country and Norwegian level to market the programme more. An example of this has been Statoil's complimentary support through NTNU in Angola.

### **Cross-cutting issues**

- NTNU should continue to invest in knowledge transfer and competency enhancement on cross-cutting issues for both HEIs in Norway and in the south. Although NTNU is responsible for ensuring cross-cutting principles are implemented it is important to make use of Norad's specialised expertise. The gender mainstreaming workshop hosted by EnPe II in November 2017 in Uganda for all HEIs partners is a good example of this.
- EnPe should provide training, which demonstrates how cross-cutting issues enable or challenge the functioning of HEIs, the energy sector and the countries in which they operate. Corruption as a cross-cutting topic, for example, is not limited to the project but is more about natural resource management and the resource curse as a prevalent phenomenon in petroleum producing LDCs. Resource governance (or "resource curse") should therefore be part of the curriculum for EnPe master programmes.

- EnPe should consider having a gender focal point as mandatory for projects and provide tools as presented at the Uganda workshop in November 2017. Innovation and learning on gender from other projects needs to be facilitated by the Secretariat. For example, Makerere University offers a 3 month paid maternity leave for PhDs in the EnPe programme.
- Gender parity should also be applied to internships or other opportunities extracurricular opportunities as suggested in the review.
- EnPe country programmes should consider providing further incentives or scholarships for enrolling minority groups to their master programmes.

### Future EnPe Programmes

- Moving forward EnPe should consider shifting even more to renewable energy as this is more in line with international donor commitments and highly relevant as LDCs, including petroleum producers, focus more on renewables as part of their energy mix. However, given Norwegian expertise and large gas reserves in key partner countries (e.g. Mozambique and Tanzania) petroleum should remain part of the programme.
- A future EnPe programme would be well advised to consider fewer countries and projects. This would be in line with the OECD advice to Norway on development cooperation concerning fewer partners but larger agreements. From a management perspective this is also preferable as it will be easier to supervise and support fewer projects.
- The funding for EnPe derives from the Norwegian development assistance budget post on research. A future EnPe programme will need to consider how its relevant with regard to the new Norwegian policy paper on development and research<sup>9</sup>. Future EnPe programmes should consider more research not just education. Overall, EnPe needs to demonstrate relevance across the research, innovation and education spectrum.
- The transfer of management responsibility from MFA/Norad to a public Norwegian HEI has proven to be a viable organisational set-up notwithstanding other management modalities. Independent of management set-up there is a need for clear and precise governance mechanisms including responsibilities of the various parties.
- When designing a future EnPe programme Norad should consider lessons learned from other relevant programmes including NORHEAD, Oil for Development and several evaluations taking place including on policy coherence.<sup>10</sup>

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<sup>9</sup> [https://www.regjeringen.no/no/dokumenter/forskning\\_2017/id2571111/](https://www.regjeringen.no/no/dokumenter/forskning_2017/id2571111/)

<sup>10</sup> <https://www.norad.no/en/front/evaluation/planned-and-ongoing-evaluations/ongoing-evaluations/coherence-in-the-norwegian-involvement-in-myanmar/>

## 13. Annexes

List of interviewees

Questionnaire

Programme Results

ToC

ToR

## List of Interviewees

ETHIOPIA			
University/Organisation	Beneficiaries Interviewed		
	Project Coordination	Faculty members and management	Students
Mekele University	Dr. Asfaw Haileselassie Tesfay Delegated coordinator	Mr. Solomon T/Michael Energy Chair Mr. Alem Baraki Head of School of Mechanical and Industrial Engineering Mr. Dawit Abay Faculty Member and former EnPe I student	Ms. Fana Fili Mr. Abenezer Bekele Phase 2, 2nd batch Ms. Mebrahiti Teklay Staff member and phase 2, 2nd batch student Ms. Tesfu Hailu
Hawassa University		Dr. Meseret Tesema Coordinator, EnPe bio-fuel sub project Dr. Gashaw Mitikie Former Head, School of Plants and Horticultural Sciences Dr. Hussein Mohammed Head, School of Plants and Horticultural Sciences	Mr. Biruk Tesfaye MSc Student Mr. Shimelis Mengistu PhD Student Mr. Yadessa Gonfa PhD Student Ms. Shitaye Desta PhD Student
RNE Addis Ababa	Tsehay Hailemichael		

UGANDA (Makerere University)				
Project	Beneficiaries Interviewed			
	Project Coordination	Faculty members and management	Students	Others
EnPe I Geoscience project	Professor Dr. Tor Arne Johansen, Project Coordinator University of Bergen Professor Dr. Erasmus Barifaijo, Project Coordinator Makerere University	Dr. John Mary Kiberu, Deputy Coordinator Dr. John Vianney Tiberindwa, Former Head of Department. Signatory to the MoU	Ms. Joan Nakajigo, 2012 MSc cohort, currently PhD candidate under EnPe II Ms. Jacqueline Nangendo, 2012 MSc cohort, currently lecturer in geology Mr. Ivan Mukiibi Ssewanyaga, 2013 MSc cohort, currently lecturer in geology	Mr. William Kasule, Geological laboratory technician Mr. Tony Mugabi, IT lab technician Mr. Mark Katusime, Project accountant Mr. Dozith Abeinomugisha, Deputy Director Petroleum Authority of Uganda (PAU) Mr. Zack Kimumwe, Geoscience team lead sub-Saharan, Schlumberger Mr. Ronald Kaggwa, Production geologist CNOOC



EnPe II Geoscience project	<p>Professor Dr. <b>William Helland-Hansen</b>, Project coordinator University of Bergen</p> <p>Professor Dr. <b>Michael Owor</b>, Department Head and initial Project Coordinator Makerere Universtiy</p> <p>Dr. <b>Betty Nagudi</b>, current Project Coordinator Makerere University</p>	<p>Professor Dr. <b>John Mary Kiberu</b></p> <p>Professor Dr. <b>John Vianney Tiberindwa</b>, Former Head of Department.</p>	<p>Ms. <b>Justine Kiiza</b>, 2016/2017 cohort</p> <p>Mr. <b>PatricOpi</b>, 2016/2017 cohort</p> <p>Mr. <b>Henry Tumusiime</b>, 2016/2017 cohort</p> <p>Mr. <b>Charles Dekori</b>, 2016/2017 cohort and Software Team Lead Schlumberger, South Sudan</p>	<p>Mr. <b>William Kasule</b>, geological laboratory technician</p> <p>Mr. <b>Tony Mugabi</b>, IT lab technician</p> <p>Mr. <b>Mark Katusime</b>, project accountant by e-mail</p> <p>Mr. <b>DozithAbeinomugisha</b>, Deputy Director Petroleum Authority of Uganda (PAU)</p> <p>Mr. <b>Zack Kimumwe</b>, MSc student 2017 cohort geoscience and Geoscience Team Lead Sub Sahara, Schlumberger.</p> <p>Mr. <b>Ronald Kaggwa</b>, production geologist CNOOC</p>
EnPe II Pelibigo project	<p>Professor <b>Dr.HaakonLein</b>, Project coordinator NTNU</p> <p>Senior Lecturer <b>Dr. Frank Mugagga</b>, Project coordinator Makerere University</p> <p>Dr. <b>Charlotte NakakaawaJunju</b>, Adminstrative assistance NTNU</p> <p>Dr.<b>PatricByakagawa</b>, lecturer and postdoc researcher Makerere University</p>		<p>Ms. <b>AzizaAthumani</b>, Dodoma studentenrolled at NMBU fall 2017</p> <p>Mr. <b>GarendeWema</b>, Dodoma student enrolled at NMBU fall 2017</p> <p>Mr. <b>Isaac Ssewanga</b>, just returned from NTNU fall 2017</p> <p>Ms. <b>Leonida Tisakunirwa</b></p> <p>Ms <b>DianahNnakayima</b></p>	
EnPe I Renewable Energy project	<p>Professor <b>Dr. T. Nielsen</b>, Project coordinator EnPe I at NTNU</p>		<p>Dean <b>Dr. Wilson Musingiuzi</b>, Senior Lecturer at Faculty of Engineering Busitema University, PhD student</p>	
EnPe II Capacity 5 project	<p>Professor <b>Dr. Ole JørgenNydal</b>, Project coordinator NTNU</p> <p>Senior Lecturer <b>Dr. KaridewaNyeinga</b>, Project Coordinator Makerere University</p> <p>Professor <b>Dr. MuluBaray</b>, Capacity 5 Project coordinator Mekelle University, Ethiopia</p>		<p>Ms. <b>TusiimeSwaleh</b>, PhD Student</p> <p>Ms. <b>Patricia Nakanwagi</b>, Master student</p> <p>Mr. <b>Edmund Tumusiime</b>, Master student</p>	<p>Mr. <b>Michael Musoke</b>, Solar laboratorytechnician</p>

NEPAL				
University/ Organisation	Beneficiaries Interviewed			
	Project Coordination	Faculty members and management	Students	Others
<b>Kathmandu University</b>	<p><b>Prof. Hari P. Neupane</b>, Master in Planning &amp; Operation of Energy System Program</p> <p><b>Dr Brijesh Adhikary</b>, Master of Engineering in Electric Power Engineering</p>	<p><b>Dr Rabin Shrestha</b>, (now in World Bank, Kathmandu)</p>	<p><b>Ms Namrata Tusuju Shrestha</b>, (now KU faculty)</p>	<p><b>Er Gyanendra Lal Pradhan</b>, Chairperson, Hydro Solution Pvt.Ltd., (Private sector representative)</p> <p><b>Mr Nawaraj Dhakal</b>, Spokesperson, Alternative Energy Promotion Centre (AEPC), Government of Nepal, (government representative)</p> <p><b>Ms Solveig Andersen</b>, Counsellor, Environment, Energy &amp; Economic Development, Norwegian Embassy, Kathmandu, Donor Representative</p> <p><b>Mr Bibek Chapagain</b>, Energy Adviser, Norwegian Embassy, Nepal (Donor representative)</p>
<b>Tribhuvan University</b>	<p><b>Prof Sailendra Mishra</b>, Coordinator, Master of Sustainable Energy Education Program (MSEESD) –</p> <p><b>Dr Arun Timalisina</b>, Deputy Coordinator, Master of Sustainable Energy Education Program (MSEESD)</p>	<p><b>Dr Sushil Bajracharya</b>, Master Degree Program Coordinator, IoE</p>	<p><b>Ms Pratiksha Shrestha</b>, Master student</p> <p><b>Mr Rukesh Suwal</b> Master student</p> <p><b>Mr Surya Gyawali</b> PhD student</p>	

ANGOLA			
University/Organisation	Beneficiaries Interviewed		
	Project Coordination	Students	Others
<b>Agostinho Neto University</b>	<p><b>Emidio Silva</b>, Coordinator EnPe Angola/Director of the Department of Petroleum</p>	<p><b>Four students</b> who attended the Masters course in Norway</p>	<p><b>Juelma Giovetty</b>, Statoil</p>

**NORWAY**

**BeneficiariesInterviewed**

**Professor Torbjørn Nielsen**, project coordinator NTNU, EnPe I Renewable Energy, 12/10-2017

**Professor Tor Arne Johansen**, project coordinator UIB, EnPe I geoscience

**Professor William Helland-Hansen**, project coordinator UIB; EnPe II geoscience, 5/10-2017.

**Professor Ole JørgenNydal**, local project coordinator NTNU, EnPe II Capacity 5, 13/10-2017

**Professor HaakonLein**, project coordinator NTNU, EnPe II Pelibigo, 9/10-2017

**Dr. Charlotte NakakawaJunju**, administrative assistance NTNU, EnPe II Pelibigo, 9/10-2017

**Professor MuluBaray**, project coordinator Mekelle, EnPe II Capacity 5, 10/10-2017

**Frank Eklo**, Norwegian Environmental Directorate, regarding EnPe II, Pelibigo

**Sigrid De Barbentane Nagoda**, Norad

**Jeanette Brynhild Johansen Da Silva**, Norad

**Inge Harald Vognild**, Norad

**Svein Bæra**, Norwegian MFA

**Elisabeth Vigtel**, EnPe Secretariat

**Trond Singsaas**, NTNU/EnPe Secretariat

## Semi-structured questionnaire and guidance for ENPE field visits

### Background

The objectives of “EnPe I” are:

- To support the development of Master programmes at Higher Education Institutions (HEI) in the Low and Middle Income Countries (LMICs) through close collaboration with HEI in Norway in accordance with national needs;
- To achieve, in a longer term perspective, sustainable capacity of institutions in the LMICs to provide the national work force with adequate qualifications within selected academic fields of study of relevance to the energy and petroleum sectors;
- To stimulate South-South-North cooperation through support to the development of regional Master programmes;
- To enhance gender equality in all programmes activities;
- To strengthen and further develop the competence of Norwegian HEI to integrate global as well as developmental perspectives in their professional work.

The objectives of “EnPe II” are to contribute to:

- a) a larger and better qualified workforce
- b) increased knowledge
- c) evidence-based policy and decision-making
- d) enhancing gender equality

The expected outcomes of the programme are to:

- 1) Produce more and better research relevant to the fields of Energy and Petroleum
- 2) Produce more and better qualified graduates, men and women, relevant to the fields of Energy and Petroleum

### Meta questions for field evaluators:

- To what extent are the ENPE programmes’ objectives and design suited to meeting partner country needs?
- To what extent are the EnPe programmes complementary to other donor programmes supporting higher education and research in your country, and to what extent are they overlapping and competing with other donor programmes?
- To what extent is the partnership model consistent with the overall programme goal and the intended impact? How does your country’s higher education institutions respectively experience and benefit from this model?
- What are the major factors influencing the achievement or non-achievement of the two programmes’ objectives, at the programmes and project level?
- What specific recommendations can be made for overcoming risks and weaknesses, and for capitalizing on opportunities to meet the overall objectives, at the programmes and project level?

### Who to interview:

- Programme coordinators at respective institutions;

- Faculty members who are participating (ENPE II) or have participated (ENPE I);
- Students who are/have participated or graduated from the programme;
- Experts (government, donors, NGOs etc.) who have relevant knowledge of the education sector;
- Norwegian embassy focal point.

## Questionnaire

- What has been the role of your institution in the ENPE programme?
  - How has your institution, including students and faculty, benefitted from the programme?
  - Do you have or are you aware of any statistics/data on the above?
- How is or has EnPe contributed to the programme objectives? E.g. better research and more qualified graduates?
- What have been the results and key achievements of the ENPE cooperation?
  - How can these results or achievements be measured? E.g. number of students who participated/graduated and part of the workforce? Competencies or specialisation added to the institution?
- What has been your experience with regard to the programmes administrative set-up and reporting requirements?
  - Does your institution have sufficient capacity to meet the reporting and other administrative requirements set by NTNU?
  - Are NTNU's grant and results-based management requirements efficient and do they contribute to the goals of your programme?
  - Has NTNU's requirements had any unintended effects on the administrative and management capacity of your institution?
  - Do you have any recommendations on how management, administration and reporting could be improved?
- What has been the impact of EnPe (especially for ENPE I projects)? Has the programme been able to contribute to objectives as outlined above?
- To what extent is gender mainstreaming reflected in the implementation of the projects, including equal participation in project management structures and decision-making bodies? What measures could more effectively integrate gender perspectives and participation in the projects?

## Annex: Programme Results

### Ethiopia

#### EnPe I

Project	Description/Key information	Targets	Outputs <sup>1</sup>	Outcomes	Impact
<b>MSc programme within energy technology, Mekelle University</b>	<ul style="list-style-type: none"> <li>- A continuation of the previous NOMA and NUFU programmes</li> <li>- Mekelle University became the main partner and where the MSc programme in energy technology was to be developed</li> <li>- Financed 3 PhD candidates as well as laboratory upgrades</li> </ul>	<ul style="list-style-type: none"> <li>- 30 graduate MSc students</li> <li>- 3 graduate PhD students</li> <li>- 9 female MSc students</li> </ul>	<ul style="list-style-type: none"> <li>- New MSc programme in Energy Technology was established</li> <li>- 28 MSc students graduated</li> <li>- 2 PhD students graduated</li> <li>- 5 female MSc students enrolled</li> <li>- Two cohorts completed their studies</li> </ul>	<ul style="list-style-type: none"> <li>- Improved network between partner universities</li> <li>- Staff and student exchange between universities</li> <li>- All graduates have been employed in higher education institutions or energy-related governmental or private organisations.</li> <li>- Research group in Renewable Energy thematic area created in Ethiopia</li> <li>- Created a network of Universities in Africa</li> <li>- Capacity and image of Mekelle University was built as a result of the project financial and technical support</li> <li>- Mekelle University is now considered as a centre of</li> </ul>	<ul style="list-style-type: none"> <li>- Capacity development- both human and institutional</li> <li>- Creation of well-established renewable energy programme at MU, which has recently advanced to launching of a PhD level</li> <li>- MU has become the Centre of Excellence in solar and wind energy in the country.</li> <li>- MU has developed capacity to provide consultancy services on large national energy programs- wild farms, solar PV systems.</li> <li>- Both Master and PhD training programs are mainstreamed into the university system and will continue beyond the project lifetime as</li> </ul>

<sup>1</sup> There were some discrepancies between the number of reported graduated students between Norad's final report for EnPe I and what was reported to our consultant in Ethiopia. Norad is to confirm the actual numbers.

				excellence for wind and solar energy in Ethiopia	university's academic units. - Different prototypes were developed. Pilot implementation/ dissemination would have been good, but limited fund for production and dissemination of the developed technologies.
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## EnPe II

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>Capacity 5 (Capacity building in Renewable Energy Education and Research) Ethiopia, Uganda, Tanzania, Mozambique Mekelle University</b>	<ul style="list-style-type: none"> <li>- Collaboration on renewable energy research and education</li> <li>- EnPe II project is focused on capacity building in education and research through PhD research, institutional development and establishment of small scale research infrastructures</li> </ul>	<ul style="list-style-type: none"> <li>- 30 Master students</li> <li>- 8 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- 60 Master students</li> <li>- 2 PhD students</li> <li>- 4 papers published on solar energy in 2015, and 3 papers planned to be presented at an international conference in 2017</li> <li>- Support provided to female students</li> </ul>	<ul style="list-style-type: none"> <li>- Institutional development, particularly related to laboratory equipment and management capacity building</li> <li>- Solar and wind prototype development</li> <li>- Extending areas of application of solar energy</li> <li>- Gender mainstreaming achieved</li> <li>- Local community and national level community outreach and services</li> </ul>	<ul style="list-style-type: none"> <li>- Capacity development- both human and institutional</li> <li>- Creation of well-established renewable energy programme at MU, which has recently advanced to launching of a PhD level</li> <li>- MU has become the Centre of Excellence in solar and wind energy in the country.</li> <li>- MU has developed capacity to provide consultancy services on large national energy programs- wild farms, solar PV systems.</li> <li>- Both Master and PhD training programs are mainstreamed into the university system and will continue beyond the</li> </ul>

					<p>project lifetime as university's academic units.</p> <ul style="list-style-type: none"> <li>- Different prototypes were developed. Pilot implementation/ dissemination would have been good, but limited fund for production and dissemination of the developed technologies.</li> </ul>
<p><b>Research and Capacity Building in Clean and Renewable Bioenergy in Ethiopia, Mekelle and Hawassa University</b></p>	<p>The economic, social and ecological sustainability of renewable bioenergy production and utilization systems are not clearly evaluated in Ethiopia. The project studies these factors to ensure sustainability of renewable bioenergy sources in Ethiopia, and develop improved systems of production and utilization.</p>	<ul style="list-style-type: none"> <li>- 20 Master students</li> <li>- 4 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- Development of a new MSC programme on Energy, titled Master of Sciences in Bio Energy Science and Technology - currently under review by the university's Academic Standards and Quality Assurance Committee, expected to begin accepting students in early 2018</li> <li>- Training on project management (30 participants) given to key personals and beneficiaries of the project, including students</li> <li>- Two academic staff visit Norway for lab work and experience sharing every year</li> <li>- Financing 11 MSc students and 4 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- Project in line with the country's green economy strategy and the growth and transformation plan (GTP II) and meets country needs</li> <li>- Project supports research and training</li> <li>- The south-south-north partnership model facilitated resources sharing with partner universities in the region, especially laboratory research, and expertise for supervision and teaching</li> <li>- EnPe has also supported staff exchange</li> </ul>	<p>HU University has joined EnPe in phase to and it is difficult to make assessment of impacts.</p>



			<ul style="list-style-type: none"> <li>- 3 female Master students and 2 female PhD students enrolled</li> <li>- Project plans to enrol additional 20 students after launch of the MSc programme in bio-energy, within the remaining period of the project</li> </ul>		
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## Nepal

### EnPe I

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>Master of Engineering Electric Power Engineering, Kathmandu University</b>	Continuation of a previous NOMA-project.		<ul style="list-style-type: none"> <li>- 10 Master students enrolled (8 male, 2 female)</li> <li>- 9 Master students graduated</li> <li>- 2 PhD students enrolled, 1 graduated</li> </ul>	<ul style="list-style-type: none"> <li>- Increased confidence among university faculties to conduct the Master degree programme</li> <li>- Contributed to reducing the shortage of higher degree technical human resources in electric energy/power sectors and educational institutions in Nepal.</li> <li>- Achieved continued and closer North-South cooperation in engineering education.</li> <li>- Majority of graduated students now working in different energy sector institutions</li> </ul>	

<b>Master in Planning and operations of Energy Systems, Kathmandu University</b>	The project was based on already existing cooperation between NTNU and Kathmandu University (KU) within the energy area. The project's goal was to establish a master's degree within renewable energy and all aspects of utilizing renewable energy sources.		<ul style="list-style-type: none"> <li>- 20 Master students enrolled (10 for the first cohort and 10 for the second cohort)</li> <li>- 13 male students and 7 female students total</li> <li>- 18 Master students graduated (9 first cohort, 9 second cohort)</li> <li>- 2 PhD students enrolled, 1 graduated</li> </ul>	<ul style="list-style-type: none"> <li>- Increased competence with regards to development of an energy system in Nepal</li> <li>- Increased confidence among university faculties to conduct the Master degree programme</li> <li>- Majority of graduated students now working in different energy sector institutions</li> </ul>	
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## EnPe II

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>Master Programme: Energy for Sustainable Social Development, Tribhuvan University</b>	Master programme aimed at providing Nepalese society with qualified professionals with the ability to increase access to affordable and reliable energy services for sustainable development in Nepal.	<ul style="list-style-type: none"> <li>- 48 Master students</li> <li>- 10 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- 23/32 Master students enrolled so far</li> <li>- 12/10 PhD students enrolled so far</li> <li>- 7 female Master students (30%)</li> <li>- 2 female PhD students (17%)</li> <li>- 4 Postdoctoral students to be enrolled in July 2018</li> <li>- Position of "Gender Convener" specially created to address the promotion of gender issues</li> </ul>		

## Uganda

### EnPe I

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>Additional funds to support the NOMA project 'Master Programme in Renewable Energy Systems'</b>	The project was a continuation of the existing NOMA-cooperation between NTNU and Makerere University.	- Financing and graduation of one PhD student in Renewable Energy	- 1 student (male) graduated with a PhD in Renewable Energy - Laboratory facilities upgraded.	- PhD candidate authored and co-authored highly regarded scientific journals with NTNU researchers. - Project brought on board additional staff in the Renewable Energy programme at Makerere. - Strengthened collaboration between NTNU and Makerere University through staff and student exchange - Additional equipment has improved the capacity of experimental research at Makerere University.	The project achieved its limited objectives and with the continued funding through EnPe II is sustainable.
<b>Geoscience collaboration Makerere University – University of Bergen. Developing a MSc programme in Petroleum Geosciences at Makerere University</b>	The goal of the project was to establish an independent Master degree within petroleum geology at Makerere University.		- In cohort 1, there were three females and two male Master students who received EnPe sponsorships. In second cohort all those receiving sponsorship were male. - 19 Master students graduated - IT lab equipped with 10 work stations	- 19 graduated Master students employed in relevant jobs. - IT lab equipped with 12 work stations which are up to international standards in terms of hardware and software	

## EnPe II

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>Capacity 5 (Capacity building in Renewable Energy Education and Research) Ethiopia, Uganda, Tanzania, Mozambique</b>	Collaboration on renewable energy research and education. This second phase is focused on capacity building in education and research through Ph.D. research, institutional development and establishment of small scale research infrastructures.	<ul style="list-style-type: none"> <li>- 30 Master students</li> <li>- 8 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- 5 Master students funded (2 have completed but waiting for graduation in January 2018)</li> <li>- 3 Master students enrolled but self-financed. Will receive sponsorship for their master research project.</li> <li>- 3 PhD students funded</li> <li>- 2 female Master students and 1 self-financed female Master student</li> </ul>	<ul style="list-style-type: none"> <li>- 3 PhD students are from University staff and will return to build capacity at their respective departments once finished</li> <li>- Interesting research is beginning to evolve at Makerere through the involvement of staff that have been educated at NTNU</li> </ul>	
<b>Capacity Building to promote Sustainable Governance of Petroleum Resources, Biodiversity and Livelihoods in East African Communities, Makerere University</b>	Through this project, new education and research programmes will be designed to address the often conflicting claims between biodiversity conservation, livelihood security and petroleum exploration and production.	<ul style="list-style-type: none"> <li>- 6 Master students</li> <li>- 3 PhD students</li> </ul>	<ul style="list-style-type: none"> <li>- 8 Master students (5 female) funded by EnPe enrolled in Norway, 2 at NMBU, 6 at NTNU (6 in their second year and 2 in their first year)</li> <li>- 4 students at Makerere having their research funded (2 female)</li> <li>- 3 female PhD candidates granted funding (2 currently on maternity leave)</li> <li>- The geography department has dedicated a separate room at the university reserved for females.</li> <li>- Maternity leave funding for three months each has</li> </ul>		At this point in time it is not possible to ascertain whether the programme can be sustainable on its own when the current EnPe funding ends in 2019, but experience from other programs is that without funding or some form of scholarship there will be a very limited number of students.

			also been enabled for the two PhD students.		
<b>Petroleum Geoscience Collaboration, Makerere University</b>	The projects main aim is to strengthen M.SC programmes and petroleum related research at Makerere University and University of Juba in order support these young petroleum economies with a workforce in demand in addition to applied geoscience research.	- 30 Master students - 3 PhD students	- 2 PhD students currently enrolled at Makerere and will be going to Bergen for short courses (1 female) - 5 South Sudanese students enrolled - 10 Master students supported so far (4 are female) - Gender mainstreaming seminar arranged for mid November 2017		

## Angola

### EnPe I

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<b>PhD Study for Mayembe Bartolomeu, Agostinho Neto University (UAN)</b>	Support for Mayembe Bartolomeu to obtain a PhD in the petroleum field and to become a permanent faculty member at UAN which lacked academic personnel in the petroleum area.	Completion of PhD	- Graduation of one PhD candidate - Research results published	- Mayembe became a permanent faculty member at UAN - Development of closer contact between NTNU and UAN	
<b>Angola Norwegian Higher Education Initiative – Phase 2</b>	Project was a continuation of a bilateral master's programme in petroleum technology between NTNU and Agostinho Neto University, which had been financed through Noma from 2007	N/A	- Bachelors programme in the petroleum field - 10 Masters students graduated (4 men and 6 women) - Some of the graduates were recruited as assistants in the programmes and others	- Programme contributed to the country becoming less dependent on foreign expertise	

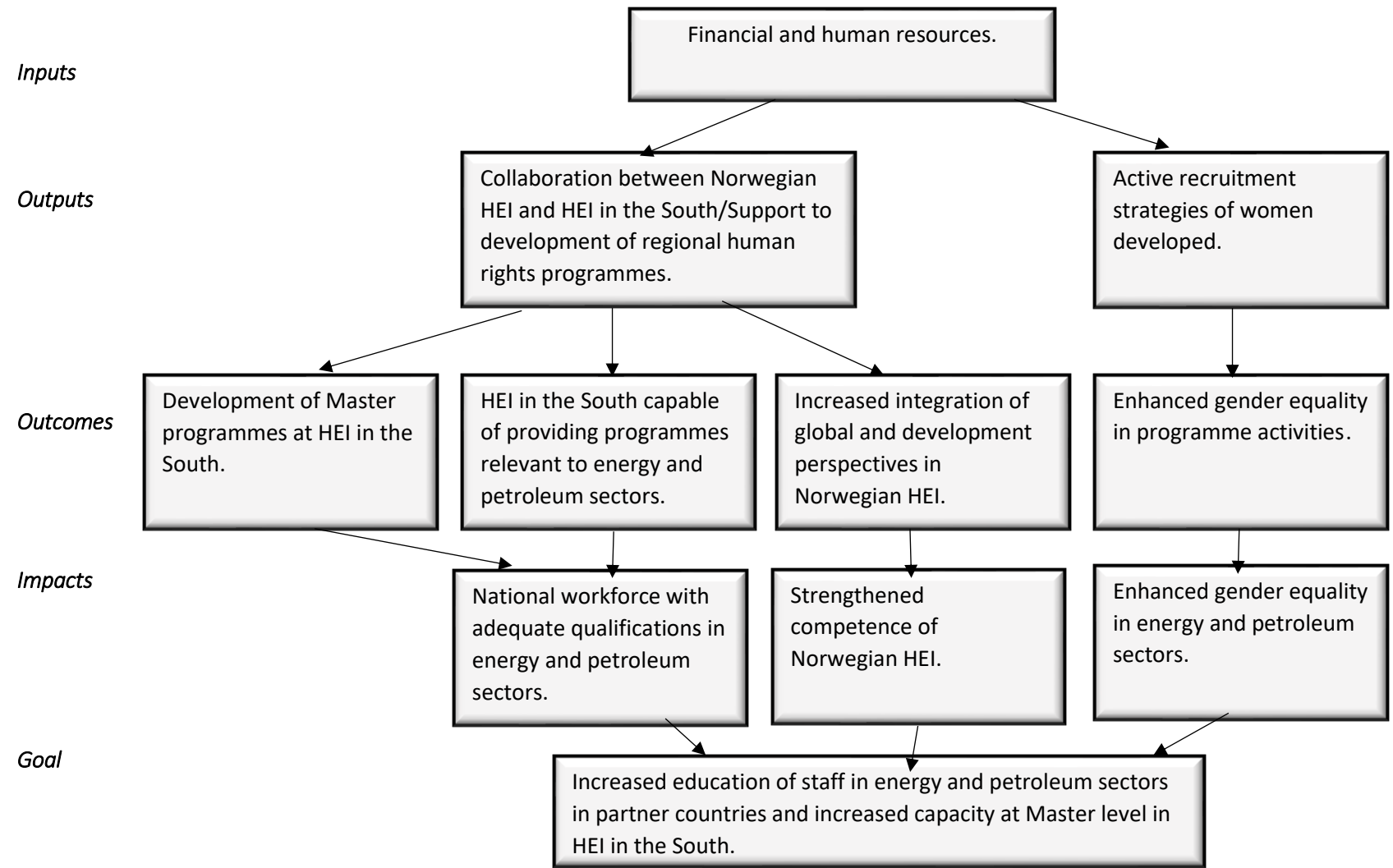
			<p>have jobs in the oil industry</p> <ul style="list-style-type: none"> <li>- University established laboratories and facilities to support the new programme</li> </ul>		
<p><b>ANTHEI – Angolan Norwegian Tanzanian Higher Education Initiative, Agostinho Neto University</b></p>	<p>Project was a continuation and expansion of the existing cooperation between NTNU and UAN. Aim was to use the experiences from Angola to establish a Master programme within petroleum at the University of Dar es Salaam, Tanzania</p>	<ul style="list-style-type: none"> <li>- Establish Master programme within petroleum at the University of Dar es Salaam</li> <li>- Establish a regional network within petroleum related education</li> </ul>	<ul style="list-style-type: none"> <li>- Both universities established Bachelor programmes</li> <li>- 27 Master students graduated (19 men, 8 women)</li> <li>- 1 PhD student graduated</li> <li>- Both universities established laboratories and facilities to support the new programmes</li> </ul>		

#### EnPe II

Project	Description/Key information	Targets	Outputs	Outcomes	Impact
<p><b>ANTHEI (Capacity Building to Enhance Teaching/Learning Research and Expert Services in Petroleum Sciences and Engineering in Angola and Tanzania)</b></p>	<p>Project aims to develop high level human resource capacity and also upgrade technical skills. It also addresses curriculum development, enhancement of research and knowledge exchange, improvement of infrastructure (equipment and facilities) and strengthening of links.</p>	<ul style="list-style-type: none"> <li>- 2 graduate Phd students</li> <li>- 11 graduate Master students</li> </ul>	<p><i>The project was suspended and then reopened without Angola as a partner</i></p>		

Theory of Change  
ENPE I

**Theory of Change:** Investment in the development of energy and petroleum education sectors and increased collaboration between Norwegian HEI and HEI in the South will improve intellectual resources, increase workforce skills, strengthen the competence of HEI, enhance gender equality, respect for human rights, conflict sensitivity, knowledge on environmental and climate issues, and strengthen anti-corruption.



ENPE II

**Theory of Change:** Investment in the development of energy and petroleum education sectors and increased collaboration between Norwegian HEI and HEI in the South will strengthen capacity in HEI in LMICs within the fields of energy and petroleum and contribute to a more and better qualified workforce, increased knowledge, evidence-based policy and decision making, enhanced gender equality, respect for human rights, conflict sensitivity, knowledge on environmental and climate issues, and strengthen anti-corruption.

*Inputs*

Financial and human resources

*Outputs*

Increased and strengthened education and research programmes.

Strengthened education and research systems.

Increased capacity and competence of staff and students.

Improved institutional infrastructure for education and research.

Improved gender balance and gender focus in all education and research programmes.

Enhanced methods for effective and high-quality teaching and research.

*Outcomes*

Strengthened higher education institutions in partner countries in LMICs with strengthened educational systems and strengthened research capabilities, within the fields relevant to the energy and petroleum sector.

*Impacts*

Short term: Expanded and better qualified workforce.

Short term: Increased knowledge.

Short term: Evidence-based policy and decision-making.

Short term: Enhanced gender equality

Long term: Sustainable economic, social and environmental development in LMICs.

*Goal*

Strengthen capacity in HEI in LMICs within the fields of energy and petroleum and contribute to a) a more and better qualified workforce, b) increased knowledge, c) evidence-based policy and decision making and d) enhanced gender equality.



## Terms of Reference

### End review of the Norad's support to the Master Programme for Energy and Petroleum (2009-2013) (EnPe I)

and

### Mid-term review of the Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum (2013-2019) (EnPe II)

related to the following Agreements between Norad and the Norwegian University of Science and Technology (NTNU):

- GLO-08/507 Norad's Master Programme for Energy and Petroleum (2009-2013), including Addendum no. 1 (2014 - 2015);
- QZA-13/0181 The Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum (2013-2019)

## 1 Rational and purpose of the review

Norad's Master Programme for Energy and Petroleum (from here onward referred to as "EnPe I") was established in 2009 and was followed by the Norwegian Programme for Capacity Development in Higher Education and Research for Development within the fields of Energy and Petroleum (2013-2019) (EnPe II). The programmes build on previous Norwegian initiatives for supporting higher education and research in Low and Middle Income Countries (LMICs), and complement Norwegian support to higher education and research through the NORHED programme (The Norwegian Programme for Capacity Development in Higher Education and Research for Development), the Research Council of Norway and other initiatives.

As stipulated in the Agreements (dated 26 March 2009 (EnPe I) and 12 December 2013 (EnPe II)) between Norad and NTNU, the programmes are to be subject to midterm and end reviews. The purpose of this review is twofold: 1) to conduct an end review of the EnPe I in order to assess the extent to which the programme portfolio contributed to the intended programme objectives, and 2) to conduct a mid-term review of the EnPe II in order to assess the progress and preliminary outcome and possibly impacts both at the programme level and at the level of individual projects. This review will also assess needs for adjustments both at the programme and project level. However, the main emphasis will be on the programme level, with individual projects to be assessed as part of an overall portfolio. For the midterm review of the EnPe II, the focus will be on progress to date and any adjustments needed, to ensure that the programme and project objectives are met. The end review of EnPe I and the midterm review of EnPe II are from here onward referred to as the review of the EnPe programmes.

## 2 Objectives of the review

The objectives of this review are:

1. To ascertain programme and project results at output and outcome level.

2. To assess the relevance, effectiveness and efficiency of the programmes, including the management structure. Possible impact and programme sustainability should also be assessed.
3. To provide recommendations for the remaining programme period as well as for potential future programme design and implementation.

### 3 The EnPe programmes description

The EnPe programmes have been operational in 13 countries. The projects are implemented through partnerships between 16 different academic institutions from LMICs and four Norwegian institutions.

All projects normally have elements of teaching, curriculum development, research and institutional development. Scholarships are primarily restricted to academic staff for institutional capacity development purposes, but can also support marginalized students when relevant and as specified by each project. Gender mainstreaming is an important component of the programmes. The following section describes briefly the two programmes.

#### 3.1 EnPe I programme

The EnPe I was established in 2009 with the aim of supporting the development of Master programmes at higher education institutions in the LMICs through close collaboration with higher education institutions (HEI) in Norway based on national needs in the South. The programme has supported 15 projects, including 3 seed funding projects, during the period 2009-2013 with a budget frame of NOK 60 million. Under this program, four calls for proposals were made and NOK 54,5 million was spent on project funding and administration. Most of the projects are thematically situated in the field of petroleum. Projects have been implemented in Africa, Asia and Latin-America. A no-cost extension was granted to the end of December 2014 and subsequently until June 2015 when all project activities ended. The final report was submitted to Norad in December 2015.

The objectives of “EnPe I” are:

- To support the development of Master programmes at HEI in the LMICs through close collaboration with HEI in Norway in accordance with national needs;
- To achieve, in a longer term perspective, sustainable capacity of institutions in the LMICs to provide the national work force with adequate qualifications within selected academic fields of study of relevance to the energy and petroleum sectors;
- To stimulate South-South-North cooperation through support to the development of regional Master programmes;
- To enhance gender equality in all programmes activities;
- To strengthen and further develop the competence of Norwegian HEI to integrate global as well as developmental perspectives in their professional work.

#### 3.2 The EnPe II programme

The existing programme, EnPe II, was established in 2013 and has a budget frame of NOK 100 million over the programme period 2013-2019. The programme aims to strengthen the capacity of higher education institutions in Low and Middle Income Countries (LMIC) within the fields of energy and

petroleum in Norway's selected partner countries in the Oil for Development Programme and the Clean Energy Initiative.

EnPe II has a holistic focus on capacity development, and supports interventions in the areas of education, research, infrastructure and system level strengthening. While EnPe I had a similar programme design as the NOMA programme, a previous capacity development programme supported by Norad and managed by SIU, the programme design of EnPe II is similar to the current NORHED programme<sup>1</sup>, which is managed by Norad. **EnPe II has a broader scope with a wider range of interventions as compared to EnPe I and the budget frame has increased from about NOK 7 million to NOK 18 million per individual project. Furthermore, the projects in EnPe II have developed results and risks frameworks based on a theory of change, while projects in EnPe I were not required to do so.**

The EnPe II projects are based on academic partnerships between Norwegian and LMIC higher education institutions. The LMIC institutions shall be encouraged to take the responsibility as lead and be the agreement partner in the projects. Two calls for proposals have resulted in 10 projects. These are in Ethiopia, Tanzania, Bolivia, Mozambique, Uganda, Ghana, Angola and Nepal. **Three projects are building upon their experiences from EnPe I.** In EnPe II, there is an equal share of projects focusing on renewable energy and petroleum. The final report for this Agreement is due on 30 June, 2020.

The objectives of "EnPe II" are to contribute to:

- a) a larger and better qualified workforce
- b) increased knowledge
- c) evidence-based policy and decision-making
- d) enhancing gender equality

In a longer term perspective, the goal of the programme is sustainable, environmental, social and economic development in low- and middle-income countries.

The expected outcomes of the programme are to:

- 1) Produce more and better research relevant to the fields of Energy and Petroleum
- 2) Produce more and better qualified graduates, men and women, relevant to the fields of Energy and Petroleum

#### Organisation and steering structure:

The Norwegian University of Science and Technology (NTNU) has been selected to administer the EnPe I based on their response to an invitation sent to relevant Norwegian institutions, at the beginning of the first programme in 2009. In 2015 Norad signed a new agreement with NTNU to administer also the EnPe II programme. The EnPe programmes have been managed by a small secretariat based at the Office of International Relations at NTNU. An external programme board with representatives from Norwegian higher education institutions and the industry has made decisions regarding funding allocations. Norad has one representative on the board.

The review is the first review of the EnPe programmes.

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<sup>1</sup> The NORHED programme: The Norwegian Programme for Capacity Development in Higher Education and Research for Development.

## 4 Review questions

Based on the objectives of the review stated under Section 2, the below questions are to be addressed. **All the questions apply to EnPe I and EnPe II, but more emphasis should be given on results achieved for EnPe I and on expected results for EnPe II. Importantly, the consultant team should assess how the experience from EnPe I has informed the programme design of EnPe II and how changes in program design and results framework from EnPe I to EnPe II have influenced programme relevance, effectiveness, efficiency and impact.** These questions should also inform the development of the review methodology. The consultant(s) may add other aspects if found useful or necessary.

### 4.1 Relevance

- 4.1.1 To what extent are the programmes' objectives and design suited to meeting partner country needs and the priorities of Norwegian international development assistance?
- 4.1.2 To what extent are the EnPe programmes suited to the needs and priorities of higher education institutions in LMICs, and adapted to the enabling conditions of these institutions?
- 4.1.3 To what extent are the EnPe programmes complementary to other donor programmes supporting higher education and research in LMICs, and to what extent are they overlapping and competing with other donor programmes?
- 4.1.4 To what extent is the partnership model consistent with the overall programme goal and the intended impact? How do LMIC and Norwegian higher education institutions respectively experience and benefit from this model?

### 4.2 Effectiveness

- 4.2.1 To what extent is the project portfolio (including geographical, thematic and institutional selection) consistent with the overall programmes objectives and the intended impact?
- 4.2.2 To what extent are the EnPe programmes, based on progress and results from the projects, likely to contribute to the intended programmes objectives?
- 4.2.3 What are the major factors influencing the achievement or non-achievement of the two programmes' objectives, at the programmes and project level?
- 4.2.4 What specific recommendations can be made for overcoming risks and weaknesses, and for capitalizing on opportunities to meet the overall objectives, at the programmes and project level?

### 4.3 Efficiency

- 4.3.1 To what extent are the EnPe programmes cost efficient in terms of achieving the desired results?

- 4.3.2 To what extent has the amount of budget available for individual projects had any influence on the implementation capacity and results achieved?
- 4.3.3 To what extent are the EnPe models, including the partnership models and the way they are implemented, efficient at strengthening institutional capacity in LMICs?
- 4.3.4 To what extent are NTNU's grant and results-based management requirements efficient and contribute to programmes goals? Do NTNU's requirements have any unintended effects on the administrative and management capacity of project partners?
- 4.3.5 To what extent do the project partners have sufficient capacity to meet the reporting and other administrative requirements set by NTNU?
- 4.3.6 To what extent is NTNU's use of resources to manage the programmes, including human and financial resources, efficient and in support of programmes goals?
- 4.3.7 To what extent is the EnPe programmes management and steering structure characterised by impartiality and transparency?

#### 4.4 Possible impact (including unintended effects)

- 4.4.1 The probability that the EnPe programmes have contributed/will contribute to its intended results in the long term (impact).
- 4.4.2 The possible unintended effects of the programmes (positive and negative), at the institutional, national and international level

#### 4.5 Sustainability

- 4.5.1 To what extent are the benefits of the programmes likely to continue after the end of the programmes?
- 4.5.2 What are the major factors influencing the achievement or non-achievement of programmes sustainability? In particular, societal and institutional enabling conditions of higher education institutions in LMICs should be considered.

#### 4.6 Cross-cutting issues

- 4.6.1 To what extent have the cross-cutting themes for Norwegian development assistance - anti-corruption, gender equality, human rights, conflict, and environmental issues - been addressed, and are there any negative impacts of the projects on these issues?
- 4.6.2 To what extent is gender mainstreaming reflected in the implementation of the projects, including equal participation in project management structures and decision making bodies? What measures could more effectively integrate gender perspectives and participation in the projects?

## 5 Implementation of the review

## 5.1 Methodology

The review team will develop a proposed review design and methodology, based on the purpose, scope and review questions set out in this document. An inception report including an outline of the report, approach and methodology shall be submitted to Norad to develop the most appropriate and feasible approach.

**The methodology, including the techniques for data collection and analysis, shall be specified and justified. The selected methodology should aim to answer the review questions using credible evidence and including all relevant stakeholders as far as possible, including the main partner institutions in LMICs.**

The review shall include field visits to partner countries. An in-depth review of all 15 EnPe I and 10 EnPe II projects may not be realistic. It is therefore recommended that the consultants undertake **field visits of about 10 days to a representative selection of 2-3 partner countries in Asia/Africa, ensuring balanced representation from both programmes and thematic area (renewable energy / petroleum)**. Which countries that will be visited will be decided in discussion with Norad after the signing of the Agreement.

As this review covers ongoing projects, **a participatory review approach** is expected in order to improve usage of the recommendations and also to improve the evaluative thinking of stakeholders.

Disaggregated data on gender and categories of potentially marginalized groups should be presented where relevant.

## 5.2 Ethics

The review must follow relevant professional and ethical guidelines and codes of conduct, including for individual reviewers. The review must be undertaken with integrity and honesty. Commissioners, managers and reviewers must respect human rights and differences in culture, customs, religious beliefs and practices of all stakeholders. The team of consultants must be mindful of gender roles, ethnicity, ability, age, sexual orientation, language and other differences when designing and carrying out the review.

## 5.3 List of relevant documents (not exclusive):

1. Programme and project- related documents which will be made available by Norad and NTNU
  - EnPe I:
    - EnPe I project Document (2009-2013): Norad's Master Programme for Energy and Petroleum
    - Agreement between Norwegian Agency for Development Cooperation (Norad) and Norwegian University of Science and Technology regarding the administration of "Norad's Programme for Master Studies in Energy and Petroleum".
    - Agreements between NTNU and the Projects
    - Reglement for EnPe' programme board 2009-2015 (in Norwegian only)
    - Annual plans and budget on programme level 2009-2015
    - Annual plans and budget on project level 2009-2015
    - Annual Narrative and Financial Reports on programme level 2009-2015

- Annual Narrative and Financial Reports on project level 2009-2015
  - Final programme period report EnPe 2009-2015
  - Any available project reviews conducted by individual EnPe projects
- EnPe II:
    - EnPe 2013-2019 Programme Document. A presentation of EnPe: The Norwegian Programme for Capacity Development in Higher Education and research for Development within the fields of energy and Petroleum (EnPe 2013-2019)
    - Agreement of transferring management to NTNU regarding the EnPe II (2013-2019) (in Norwegian only).
    - Agreements between NTNU and the Projects
    - Reglement for EnPe's Program board 2013-2019 (in Norwegian only)
    - Annual plans and budget on programme level 2013-2019 to date
    - Annual plans and budget on project level 2013-2019 to date
    - Annual Narrative and Financial Reports on programme level 2013-2019 to date
    - Annual Narrative and Financial Reports on project level 2013-2019 to date
    - Any available project reviews conducted by individual EnPe projects
2. Existing academic sources and research reports related to needs, enabling conditions and capacity building of higher education institutions in LMICs.
  3. Other relevant documents
    - Result reports NORHED 2014 and 2015
    - The Norwegian Government's White paper on Education for Development, Meld. St. 25 (2013-2014)
    - The Norwegian Government's White paper on Norwegian Development Policy and the Sustainable Development goals, Meld. St. 24 (2016-2017)
    - Any other relevant documents which may be use to the review
    - NOMA/NUFU- evaluation by DamWad of 2010

## 5.4 Target groups, dissemination and follow up

Target groups for the review:

1. Primary stakeholders
  - Norad
  - NTNU and the programme board.
  - The Norwegian Ministry of Foreign Affairs
  - EnPe partner institutions in LMICs, including staff and students
  - EnPe partner institutions in Norway
  - Norwegian embassies in relevant countries
2. Other target groups
  - The Norwegian Centre for International Cooperation in Education (SIU)
  - The Norwegian Ministry of Education and Research
  - The Norwegian research community
  - The higher education and research sector in LMICs
  - Ministries of education and research and other relevant ministries in LMICs
  - Other donors supporting higher education and research for development

## 6 Outputs, timeline and dissemination

The consultant(s) will report to Norad's Section for Research, Innovation and Higher Education and produce the following outputs as of the following timeline:

- An **inception report** of no more than 10 pages for initial feedback on the methodology and planning of the review.
- A **draft report** for comments by Norad, NTNU and other stakeholders, to inform the final steps of the review process and correct any factual mistakes.
- A **final report** of 30- 50 pages excluding annexes, with an executive summary of no more than 2 pages shall be submitted by e-mail to Norad. The report shall include distinct parts: covering the end term review of EnPe I and the mid-term review of the EnPe II respectively. The report should also include a common analysis/synthesis of the two programmes, lessons learned and include a set of recommendations for future programme priorities and programme implementation. The recommendations should not exceed 4 pages.
- Presentation of the final report to Norad and other relevant stakeholders, tentatively in January-February 2017.

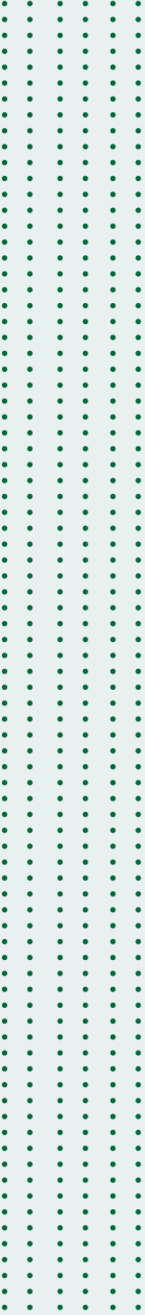
The final report must be written in English and may be used in publications by Norad.

Relevant stakeholders will be given the opportunity to comment on the draft report. The final review report will reflect these comments and will acknowledge any substantive disagreements.

### **Dissemination and follow up**

The findings from the review will be presented in an accessible format. They will be made public and distributed both internally in Norad and externally for learning and follow-up actions and to ensure transparency. In light of lessons emerging from the review, additional interested parties in the wider development community will be identified and targeted, in order to maximize the use of relevant findings.





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