

Review of Technical Assistance to the Angolan Ministry of Energy and Water by NVE

Final Report

MULTICONSULT ASA

Norad Collected Reviews

3/2016

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The background of the cover is a high-speed photograph of water splashing against a bright, cloudy sky. The water droplets are frozen in time, creating a dynamic and energetic scene. A large, semi-transparent teal triangle is overlaid on the left side of the image, pointing towards the center. The text is placed within this teal area.

Final Report

DATE 29.11.2016

NORAD

REVIEW OF TECHNICAL ASSISTANCE TO THE ANGOLAN
MINISTRY OF ENERGY AND WATER BY NVE

Report

ASSIGNMENT:	Review of Technical Assistance to the Angolan Ministry of Energy and Water by NVE	DOCUMENT CODE:	128404-Ø
SUBJECT:	Final report	ACCESS:	Open
CLIENT:	Norad	ASSIGNMENT MANAGER:	Mari Sofie Furu
CLIENT CONTACT:	Inger Anette Sandvand Dahlen	RESPONSABLE UNIT:	1088 Renewable Energy Advisory Services

Version control

REV.	DATE	SUBJECT	PREPARED BY	CONTROLLED BY	APPROVED BY
1	03.11.2016	Draft Report	Mari Sofie Furu and Gregor Perzyna	Ingar Flatlandsmo	
	29.11.2016	Final Report	Mari Sofie Furu and Gregor Perzyna	Ingar Flatlandsmo	Tore Eliassen

Executive Summary

The *Technical Assistance to the Angolan Ministry of Energy and Water (MINEA) by the Norwegian Water Resources and Energy Directorate (NVE)* (hereafter called 'the Programme') was initiated in 2011 upon a request from MINEA. The three-year Programme is financed by the Royal Norwegian Embassy in Luanda, and started in 2013. It is currently in a no-cost extension phase until the end of 2017.

This report presents the findings of a review undertaken by Multiconsult ASA (the Team) in October and November 2016. The review aimed to answer three key guiding questions:

- What are the Programme's main achievements?
- How have these achievements been reached, and what are likely reasons for any lacking results?
- What actions, adjustments and prioritizations might improve the Programme achievements in the last period?

The Report culminates in a set of recommendations aimed at improving the Programme's management and implementation efficiently, while avoiding major adjustments to the Programme structure and implementation modalities due to the short time that remains.

The Programme's most positive progress and results are mainly found in two areas: Legal and regulatory framework and management of hydrological resources. In the final period of the Programme, the focus should be on leveraging the achievements and progress to date, and ensuring sustainability of the results that have been achieved in these areas. Very little progress and achievement have been identified related to the planned strategy-level work on renewable energy and rural electrification, as well as in the activities related to rehabilitation of Angola's national hydrometric network. In these, the basis for producing real, lasting results is considered weak and it appears appropriate to discontinue certain activities.

The Programme has been affected by a number of significant challenges, some of endogenous nature, but factors outside the control of any of the Programme Agreements' partners have also been significant. Overall, quite limited progress is made towards the Programme's overall goal: *Increasing the capacity and knowledge base within MINEA and its daughter institutions* in the three Activity areas.

In the remaining period, Programme management should also focus on strengthening coordination, communication flow and information sharing. It should be expected that Angolan partners demonstrate political ownership and commitment to the Programme through clear prioritization and appropriate resource allocation in the final phase.

Background and Programme presentation

Cooperation between Angola and Norway in the Energy sector has existed since 1987. NVE had also been involved previously, through a cooperation programme from 2000 to 2006.

MINEA's request for assistance from Norway focused on institutional capacity and competence within a number of priority areas. Strong emphasis was put on renewable energy, energy efficiency and hydrology. The Royal Norwegian Embassy in Luanda invited NVE to cooperate with MINEA to plan and propose a detailed programme for cooperation in line with the request. The actual cooperation started in the beginning of 2013, and is governed by a set of two Agreements, one between NVE and RNE, and another between NVE and MINEA.

A Programme Coordination Unit with two Programme Managers, from NVE and MINEA respectively, has managed the Programme. The Programme has combined technical assistance directly provided by NVE's experts with outsourcing to external consultants. Originally planned with a total duration of three years, the Programme is currently in its fourth year of implementation.

The Programme has worked within three key areas:

Activity 1: Renewable Energy & Rural Electrification

Activity 2: Energy Efficiency

Activity 3: Support to DNHR & National Water Resources Institute

Coordination by NVE, Backstopping and Training, was established as a separate, fourth Activity to ensure sufficient attention to Programme management, administration, and NVE's role in backstopping all activities.

Summary of findings from the review

The planning phase and Programme design

All stakeholders were invited to participate in the planning and establishment process, and through missions and workshops several encounters between the parties took place. NVE duly took MINEA's request into account, and established a goal hierarchy with relatively high detail.

Nevertheless, the Programme has suffered from a number of weaknesses in the planning phase.

First, the results management framework does not provide an appropriate basis to manage the processes toward well-defined and clearly perceived targets. Several indicators are poorly defined and not measurable.

Second, the Programme management structure did not include a platform to ensure that all stakeholders be formally included in information exchange and decision-making.

Third, NVE's experience from previous programmes indicates that getting access to NVE's professional resources to implement international programmes can often be a challenge. In spite of this, the possible need to use external consultants to implement parts of the programme was not explicitly discussed.

The Programme would have benefited from a stronger focus on formal coordination with other relevant programmes. The strong linkages with a World Bank funded programme, the Water Sector Institutional Development Project (PDISA) was not given sufficient attention. In retrospect, it is clear that Programme's planned activities related to hydrometric network rehabilitation have been dependent on the progress of the PDISA Programme.

Relevance

The thematic areas chosen for support are in line with the priorities of both Angola and Norway. The Programme appears relevant for all the institutions. For the most part, the Activities respond well to MINEA's request and the prevailing situation at the time of Programme planning. Within energy sector legal and regulatory matters and hydrology, in particular, accessing NVE's experience and competence has high value for the involved institutions. An exception is noted in the area of rural energy development, which was not explicitly requested. NVE also seems to have less relevant competence in this area than in the others.

Effectiveness and efficiency

Good progress and results with potential to be sustainable have been achieved mainly in two areas:

Regulatory Framework for Renewable Energy and Regulatory Capacity (Activity 1)

In the Team's opinion, the best results have been achieved in the regulatory area. The staff in IRSEA has been stable, and the support appears relevant to and appreciated by the institution. Capacity and understanding

of economic regulation of the power sector appears to have improved to a certain extent through the support by NVE. The quality of the regulations that are in progress is not yet known, but expectations are that they will address a number of regulatory gaps, including harmonizing regulations with the revised General Electricity Act. It is noted that NVE also contributed to the General Electricity Act revision process.

Hydrological resources management (Activity 3)

The HYDSTRA hydrological database establishment, data recuperation, and training, as well as the water tariff study, are valuable and appreciated by INRH. The Institute expects the water tariffs to be introduced soon, and plans to establish adhering regulations to implement the tariff regime.

The Programme has provided significantly less training than planned. This is due, partly, to lack of clear priorities and assessment of training needs, and partly to failure to recruit staff as planned for the new INRH.

The Programme has achieved little in the areas related to renewable energy policy and deployment, as well as in the energy efficiency area. Some improved awareness related to renewable energy solutions in rural areas (Directorate of Renewable Energy (DNER)/MINEA) has been created. Similarly, a number of stakeholders have gained a certain increased understanding of energy consumption patterns in urban areas. However, this progress has not translated into concrete results, and further progress in these areas is not likely in the near future, at least not as direct consequence of the Programme.

Use of funds has been lower than budgets. Less than two-thirds of the NOK 24 million three-year budget was spent after three and a half years. Low spending has mainly been related to delays as well as lower level of training than budgeted. The Programme's cost-efficiency varies between the different Activities. Most notably, in the area of Renewable and Rural Energy strategy under Activity 1, much effort has been spent with little concrete output other than one study tour to Tanzania.

Outsourcing work to external consultants, instead of using NVE's own professional staff, has represented a significant part of the work implemented. This has in particular been the case for the hydrological area (Activity 3). NVE maintained the training activities in this area and contracted a consultant for the other tasks. The outsourcing, combined with less training than planned, implied less use of NVE's highly relevant in-house competence and thus limited the transfer of NVE's knowledge in this area. It further appears that some important messages from the external consultants has not been shared with all relevant parties. The need for coordination with the PDISA programme is one example where closer follow up by the Programme Managers might have improved performance.

A number of significant exogenous factors have strongly affected the Programme and the chances of successfully achieving its targets. The challenges in getting sufficient staff to maintain operations in the INRH (Activity 3) was partly a result of a moratorium on recruitment and effectively hindered progress of training and capacity building activities. The Power Sector Reform in 2014/2015 strongly affected the activities in the Energy Efficiency area (Activity 2) since the main beneficiary, EDEL, was reformed.

The Programme has suffered from limited attention on political level. It is noted that the Agreement with MINEA clearly specifies the obligation on the Angolan side to provide the required resources, including staff, as required for the implementation. The external events such as the oil price fall and the reform agenda appears to have stolen attention from the Programme. Further, the difficulties in achieving meaningful results in the renewable energy and rural electrification area have been compounded by internal coordination challenges.

In the Team's view, the combination in the weaknesses of the management structure, difficulties in communicating and ensuring follow up by the Angolan stakeholders in between physical meetings between the partners, and the external challenges that materialized, has been the main reason for lack of progress and results in some areas, delays and underspending.

Programme management

The Programme has been actively managed, with frequent contact between the two Programme Managers of the PCU. The lack of a mechanism or platform for formal or informal information sharing among all stakeholders appears to have constrained information flow and has compounded some of the challenges that have materialized in the Programme implementation. More in-country presence might also have improved the efficiency of the Programme through better communication and quicker decision-making. This could have improved the planning processes and ensured that visits by NVE professional staff could happen with higher frequency. While permanent or long-term presence has a clear cost consequence, experience shows that it may be effective in order to manage various partners' expectations, and ensure good communication and information flow to and between all participants.

The Programme has delivered timely and consistent reports in line with the Contract requirements albeit with somewhat sparse information. Formal meetings have been held with the required regularity. The review has not revealed any indications of financial mismanagement.

NVE's Programme Manager has actively followed up the Programme Document's risk management framework. The risks that have materialized in the course of the Programme have been identified and responses have been discussed. However, more speedy and firm responses to the challenges that the Programme has faced could have improved planning of annual work and potentially saved time and effort.

Summary of recommendations

The recommendations from the review are described in detail in the Report's Chapter 9. They assume a Programme duration until the end of 2017, and focus on ensuring a sustainable exit. In summary, they include:

I. Set a maximum time limit for the Programme.

Duration should be limited to the current no-cost extension period until end of 2017. In the case of a renewed no-cost extension request that the Royal Norwegian Embassy will consider, an overhaul of the results framework as well as the governance structure would be recommended.

II. Establish an exit strategy

Once the final date of the Programme has been agreed, the parties should work out measures to ensure that the Programme resources can be withdrawn in a responsible manner. The exit strategy should focus on how to ensure that activities are either completed before Programme exit or can effectively be taken over by partners. It should include parameters to measure successful exit, such as indicators for activity completion and for partners' successful take-over of processes or activities.

III. Consider the impact of changes on the results management framework.

The Programme has developed over time and the Programme Document's result management framework does not fully reflect the current Programme. Making the changes explicit would be a useful exercise for stakeholders to set clear targets and fine-tune strategies for the final period.

IV. Improve information sharing with all counterparts.

Increasing the level of detail in reporting and improving communication to all stakeholders could increase ownership and active engagement by stakeholders. Explicit coordination between stakeholders with related mandates, for example those of INRH and IRSEA in the water sector, could be beneficial.

V. Adopt activities to partners' absorption capacity.

Plans for training and other activities that are dependent on staff's availability should be adjusted to a realistic ambition level considering the resource situation.

VI. Consider the value of increased engagement by RNE to ensure political level attention and support

It is important that both the Angolan counterparts and RNE make efforts to ensure that the Programme maintain support on political level. Sustainability of, for example new or updated regulations, is dependent on political awareness.

VII. Concentrate efforts on areas where achievements and progress has been achieved, and ensure sustainability of the results

In Activity 1, NVE should leverage the results that have been achieved in the regulatory area. This implies to focus efforts on continued support to harmonize regulations to the new legal framework (established by the revised General Energy Act).

Discontinuation of activities related to renewable energy and rural electrification strategy and policies should be considered.

In Activity 2, activities should be discontinued as proposed.

In Activity 3, the Programme should clarify INRH's position on further NVE support and their priorities for technical assistance. Support related to the HYDSTRA data base operation could prove valuable to INRH. All activities should consider the constrained staff situation, and be coordinated with the PDISA Technical Assistance consultant's support to INRH.

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Acronyms and abbreviations

AfDB	African Development Bank
DNER	Direcção Nacional de Energias Renováveis (National Directorate of Renewable Energy)
DNRH	Direcção Nacional de Recursos Hídricos (National Directorate of Hydrological Resources)
GABHIC	Gabinete para a Administração da Bacia Hidrográfica do rio Cunene, Cunene River Hydrological Basin Administration Office (GABHIC), AfDB
INRH	Instituto Nacional de Recursos Hídricos (National Institute of Water Resources)
IRSEA	Instituto Regulador dos Serviços de Electricidade e de Água (Regulatory Institute of Electricity and
NAWASMA	The National Water Sector Management Project
MINEA	Ministério Nacional de Energia e Águas (Ministry of Energy and Water)
NESMA	National Energy Sector Management
NOK	Norwegian Kroner
NVE	The Norwegian Water Resources and Energy Directorate
PDISA	Water Sector Institutional Development Project (World Bank)
PSRSP	Power Sector Reform Support Program (AfDB)
RNE	Royal Norwegian Embassy (in Luanda)
TA	Technical Assistance
ToR	Terms of Reference
WB	The World Bank

1 Introduction

The Technical Assistance to the Angolan Ministry of Energy and Water (MINEA) by the Norwegian Water Resources and Energy Directorate (NVE) (hereafter called 'the Programme') was initiated in 2011 upon a request from MINEA. The supporting Agreements and Contracts to enable the start of the support were signed in February 2013.

The Overall objective of the Programme is

"To develop the country's renewable energy resources for human development and to promote efficient use of electricity. It is a goal that the private sector shall be involved in the future development of renewable energy resources."

The Purpose is

"To increase the capacity and knowledge base within MINEA and its daughter institutions in the identified areas."

The Programme targets three key areas:

Activity 1: Renewable Energy & Rural Electrification

Activity 2: Energy Efficiency

Activity 3: Support to DNHR¹ & National Water Resources Institute

1.1 Report purpose and scope

This report presents the Review Team's assessment of the implementation and the results as compared to plans, from February 2013 until third quarter 2016. The review's findings and conclusions create the basis for a set of recommendations for the final period of the Programme.

At the time of the review, the Programme was in its final phase, a no-cost extension from the end of 2015 (the originally planned completion date) until the end of 2017.

1.2 Methodology

The review has been conducted according to the Terms of Reference² (ToR) for Review (Annex V) by a two-person team from Multiconsult ASA ("the Team"). The review combined desk studies and field based work, including:

- Review of primary documentation: Formal Programme documents
- Review of secondary documentation: Central documents related to the Angolan power sector (please refer to Annex I)
- Meetings and interviews in Norway
- Field mission to Luanda from 9 to 14 October 2016 including meetings and interviews with Angolan Programme partners and other key stakeholders. Please refer to Annex III for a list of persons and institutions met during the review.

The Team presented a Mission Preparation Note to Norad before the Field mission. Towards the end of the field visit, the Team shared preliminary findings and overall impressions in a debriefing meeting with the Royal Norwegian Embassy (RNE) in Luanda.

Figure 1 presents the flow of the overall analysis. Where relevant, the assessments follow the OECD Development Assistance Committee's (DAC) definitions and methodology.

¹ the National Directorate of Hydrological Resources

² ToR for Review as enclosed into Norad's Award Letter dated 16 September 2016 are annexed to this report (Annex V)

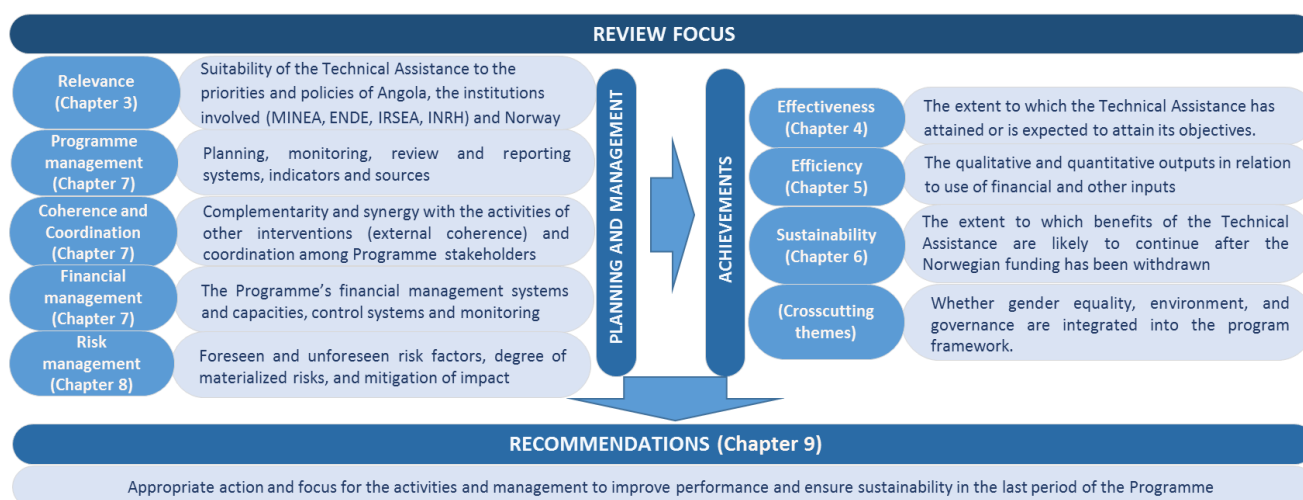


Figure 1 Approach employed in the review.

The Team has aimed to establish the achievements of the Programme in terms of produced outputs, the outcomes resulting from the outputs, and the sustainability of the benefits. (The report's sections 4 – 6.)

To measure *effectiveness*, the achievements as compared to the original plans are assessed. 'Achievements' here are Outputs that are *useful* or *valuable* to the institutions or the country as such, and their contributions towards achieving the Outcomes. The activity level and overall Programme effectiveness is rated as 'good', 'moderate' or 'poor'.

To measure *efficiency*, the ability of the Programme to employ resources (funds and other resources) and produce outputs, is assessed as 'high', 'moderate' or 'low'. For a capacity building programme, this exercise inevitably becomes subjective. Although it is possible to compare use of funds and resources across programmes, it is often difficult to compare the *value* of the results. A few references are nevertheless provided³.

As the review takes place during the Programme implementation, assessment of the likely achievement of higher-level objectives is premature. Even so, a few reflections with regard to long-term impact are included in the Effectiveness section (Section 4).

Through the sections on planning, design, and Programme management elements the report aims to explain how the achievements have been reached, and explain any lacking results. (Sections 2, 3, 7 and 8.)

In addition to the specific elements in the ToR, Section 2.3.3 provides a high-level assessment of the results management framework presented in the Programme Document. This paves the way for subsequent reviews of i) consistency between the Programme Document and progress reporting, and ii) the resulting ability to follow a logical thread from planning through implementation.

The Team has referred to Norad's *Practical Guide to Results Management in Norwegian Development Cooperation* as a guiding tool for Programme management and design related assessments.

³ Reference is made to the Norad report "The Clinton Climate Initiative, Islands Diesel Replacement Programme: Review of Phase I and Appraisal of Phase II", Multiconsult 2016. The review included a comparison of two technical assistance programmes that are considered 'successful', one in Mozambique and one in Uganda.

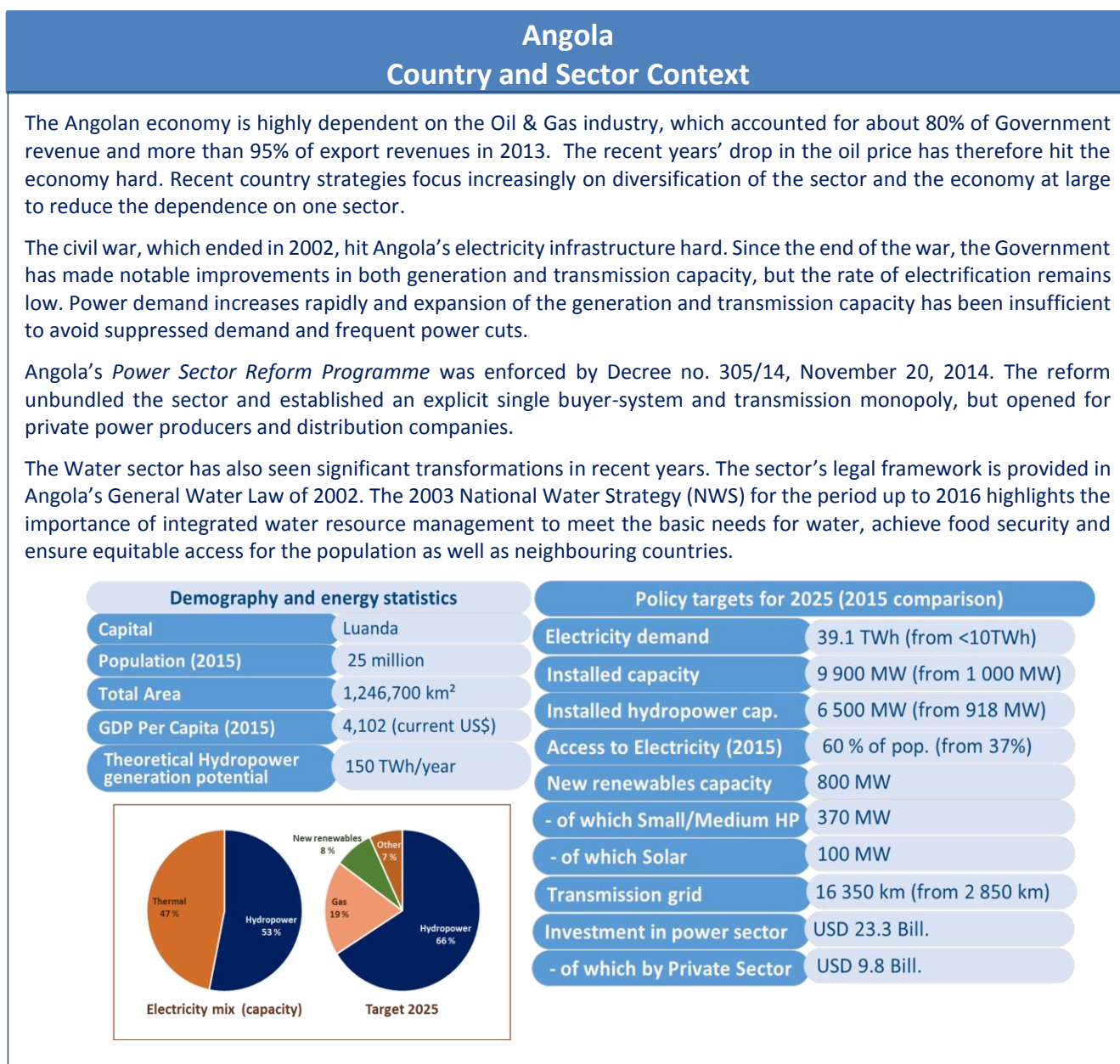
2 Programme overview

This chapter provides an overview of the Programme's context, describes the planning phase, and presents the Programme design.

2.1 Background

Cooperation between Norway and Angola in the energy sector was initiated in 1987. NVE's involvement started in 1996 through a co-operation agreement with Angola's Energy and Water Secretariat (SEEA), which was later extended into 2000-2006.

Some country and sector background is provided in Box 1.



Box 1: Country and Sector Context

2.2 Programme planning phase

The planning of the Programme started in 2011, based on a request from the Angolan Government through MINEA⁴.

The request indicated the following areas as relevant for assistance from Norway:

- Drawing up regulations regarding the utilization of renewable energy
- Assistance in preparation of projects eligible for the Clean Development Mechanism (CDM)
- Training technical personnel, preferably in Spanish or Portuguese speaking countries
- Drawing up studies of the hydrographic basins
- Cooperation between Angolan & Norwegian Universities with a view to the development of Master courses in energy
- Studies in energy efficiency and energy saving

In response to the request, RNE through Norad contracted NVE to undertake a fact-finding mission to Luanda in May 2011. The Programme was thereafter developed over a period of roughly 18 months, during which NVE undertook a mission to Angola, including a workshop with relevant stakeholders in Luanda to discuss details regarding Programme content.

While a planning period of up to two years may seem long, experience from other countries shows that establishment of programmes with large elements of capacity building is demanding. Ample time is required to gain sufficient contextual insight to identify institutional and organizational challenges, establish requirements and gaps, and reach consensus on how these should be addressed.

Most of the areas included in MINEA's request were taken into the Programme. A few notable exceptions include the exclusion of CDM related work, which is explained by uncertainties related to that mechanism at the time of planning. Inclusion of rural energy and electrification – not only on the regulatory level but also the more political and overall, strategic level – is justified by reference to Angola's "National Energy Security Strategy and Policy"⁵ and targets MINEA's capacity to implement programmes for rural electrification based on use of renewable energy.

The Programme Document specifically refers to a 2007 end-review of Norwegian Support to the Non-Petroleum Energy Sector⁶. While the Program Document takes heed of several of the review's recommendations, there are a few notable exceptions, including;

- The importance of permanent or long-term in-country presence. It is noted by NVE that the budget frame indicated by the Embassy (NOK 8 million/year) would not have allowed for permanent in-country presence. Further, according to NVE it had been discussed at the first Annual meeting, when MINEA had stated that they did not find such permanence as a requirement for successful implementation;
- Need for specific support to the sector reform process. MINEA did not specifically request this element for this Programme; and
- The risk posed by unavailability of sufficient NVE internal resources (professional staff). NVE notes that this is a well-known challenge for international development projects in NVE. In the light of this, it is surprising that the risk was not taken more into consideration during the planning.

More attention to these issues in the planning phase could have helped to avoid some of the challenges faced by this Programme.

The Programme Document shows that strong emphasis was given to training. The fact-finding mission specifically emphasized the need to establish baselines for the capacity building components, and develop thorough training needs assessments. This was not carried out before the start of Programme implementation, nor included as a specific task in the Programme Document. According to NVE it was

⁴ Request from MINEA, February 2011).

⁵ The NESSP identifies a need to rapidly increase access to a regular and reliable power supply at competitive prices in order to assure an economic growth that is a prerequisite for poverty reduction. It is further seen as important to promote a balanced development of the Angolan economy and society, reducing social and geographical differences and develop a diversified energy mix that favours endogenous sources, security of supply and environmental sustainability..

⁶ End-Review of the Norwegian Support to the Non-Petroleum Energy Sector in Angola with a focus on 2002–2006 and Identification of Opportunities for Future Cooperation, SAD-ELEC Ltd, March 2007

originally planned for the start-up phase, but at that point, MINEA had informed that their internal assessment already had been done. NVE's needs assessment and baseline was apparently meant to build on this existing information. In the end, NVE never received this information from MINEA.

The Programme Document refers to activities by the World Bank's Water Sector Institutional Development Project PDISA⁷, but coordination mechanism and specific work division was not established. According to NVE, the PDISA Programme was at very early stage, and activities were not apparent on the ground during the early stages of the Programme. Further, the counterparts did not put weight on its importance in relation to the NVE support. It is nevertheless the Team's opinion that more attention should have been given to PDISA. In retrospect it is clear that PDISA would impact NVE's planned activities related to the hydrological network rehabilitation, and that potential for synergies exists.

The Programme Document included description of Activities and tasks, followed by goal hierarchies for three Activity areas. Programme management mechanisms and a Risk assessment was included.

The Programme design contains a number of weaknesses, particularly related to the result management framework and management structure. An explicit exit strategy with measures to ensure that the results would be lasting after the exit of the support was not developed, and not included in the work programme.

The Programme Document was approved by the financier, i.e. RNE, with advice from Norad. A full appraisal was not deemed necessary, as the process of establishing the Programme had been closely followed. An appraisal process might have identified and addressed the described weaknesses in the planning phase.

Thus, the apparently thorough process with all the stakeholders invited in consultations, did not hinder these pitfalls in the Programme design. Section 2.3.3, Result management framework assessment, and Chapter 7, Programme management, provide details and assesses the impact these weaknesses have had on Programme implementation.

2.3 Programme design

2.3.1 Governance

The Programme is governed by two parallel and mutually dependent contracts ("The Contracts"):

- Contract between NVE and MINEA, regarding Technical Assistance to the Angolan Ministry of Energy and Water by the Norwegian Water Resources & Energy Institute, signed 01.02.2013
- Contract between NVE and MFA, regarding Technical Assistance to the Angolan Ministry of Energy and Water by the Norwegian Water Resources & Energy Institute, signed 01.02.2013

The Programme Document referred to in this report is:

- "Programme Document for Technical Assistance to the Angolan Ministry of Energy and Water by the Norwegian Water Resources & Energy Institute", subtitled "Institutional Strengthening of the Energy and Water Resources Sectors in Angola", dated January 2013

2.3.2 Participating institutions

The participating institutions and their respective mandates and organizational status are presented in Figure 2 below.

⁷ Please also see section 7.3 for some more detail of the PDISA.

Mandates of benefiting Angolan institutions and their roles in the Programme

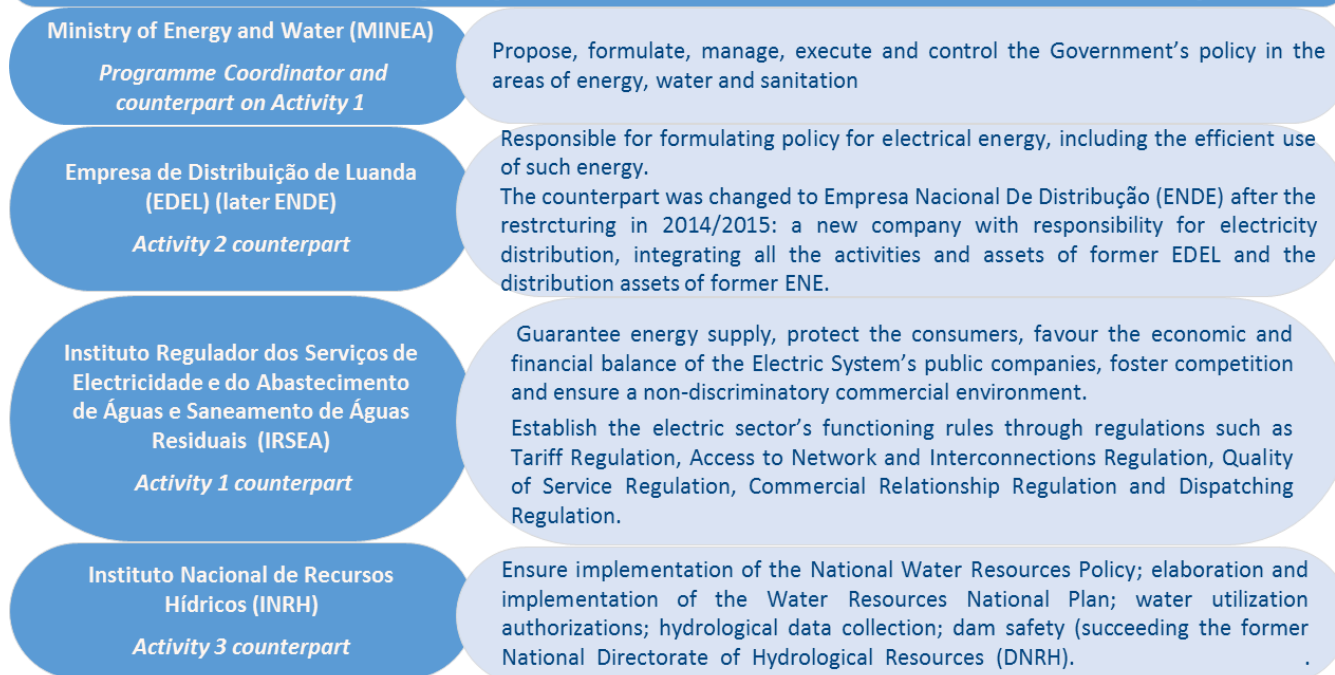


Figure 2 Benefiting Angolan institutions, mandates and roles in the Programme

2.3.3 Result management framework assessment

The quality of the Programme's Results management framework is an important basis for the evaluation of progress towards targets and assessments of effectivity and efficiency.

The Programme Document was designed with separate goal hierarchies, one for each Activity (1-3). Each activity has an "Impact" as well as a specific Objective. In addition to a separate Overall Objective and Purpose, this creates an additional layer in the combined goal hierarchy.

The structure, without Tasks, Indicators and Assumptions, is presented in Table 1.

Table 1 Presentation of the Overall objective, Purpose, and Outcomes and Outputs for each Activity

Overall Objective (Development Goal):	
To develop the country's renewable energy resources for human development and to promote efficient use of electricity. It is a goal that the private sector shall be involved in the future development of renewable energy resources.	
Purpose	
To increase the capacity and knowledge base within MINEA and its daughter institutions in the identified areas.	
Main Activities, Outcomes and Outputs	
Activity 1: Renewable Energy & Rural Electrification	
Objective	To build capacity in MINEA's Directorates of Renewable Energy and Electrification to develop, plan and implement programmes for electrification of rural areas using renewable energy sources.
Impact	Renewable Energy technologies available to the population and public services in rural areas. Reduced CO ₂ -emissions from gen-sets
Outcomes	Pilot programmes for dissemination of renewable energy solutions implemented and replicated.
	Regulatory framework adapted to needs of dissemination programmes.
Outputs	Comprehensive strategy and action plan for use of renewable energy solutions in rural areas.
	Necessary amendments to legal framework.

Activity 2: Energy Efficiency	
Objective	To reduce wasteful use of electricity in Luanda
Impact	Reduced waste of electricity in urban areas
Outcomes	Reduced power consumption in areas where meters are introduced.
	Better understanding of power consumption in the domestic and commercial sectors in MINEA and EDEL
Outputs	Investment programme for pre-payment meters presented for funding.
	Energy efficiency campaign(s) implemented.
	Energy efficiency strategy and action plan.
	Plans for replication adopted and included in budget
Activity 3: Support to DNHR & National Water Resources Institute	
Objective	To build capacity in DNHR / INARH to manage the hydrometric network and use hydrologic data for the formulation of policy
Impact	Improved access to design data for clean energy hydropower developments and other uses of water resources
Outcome	Hydrometric database available and regularly kept up to date.
Outputs	National Institute of Water Resources staff competent
	Hydrometric network effectively managed.
	National Hydrometric Database re-established
Activity 4: Coordination by NVE, Backstopping and Training	
	<i>No specific Impact, Outcomes or Outputs</i>

The goal hierarchies show that NVE and their counterparts made significant efforts in the design phase to create a good basis for programme management. They nevertheless contain a number of weaknesses that create challenges for assessments of progress and achievements as compared to targets.

The following observations are made, in descending order of importance:

- The goal hierarchy includes indicators. However, indicators defined as ‘necessary amendments made’, ‘regulatory barriers absent’ and ‘adequate and qualified staff’ are not quantifiable and are difficult to measure. In this Programme, possible measurable indicators could be specific regulatory barriers, or specific tasks undertaken independently by the institutions, number of staff trained, or similar. The Team acknowledges identifying SMART indicators is particularly challenging for intangible assets such as ‘capacity’ and ‘knowledge’.
- Indicators to assess strengthened capacity in DNHR and/or INRH are not provided.
- A number of Outputs and Tasks have been added during Programme implementation but do not have indicators associated with them.
- Baselines (status at the time of Programme start) for the indicators are not explicitly provided. The lack of baseline and needs assessment for the capacity building components has made it difficult to identify relevant training activities, as well as measure progress towards targets.
- Some Outcomes are confused with Activities or Outputs. Two of the Outputs for Activity 3, ‘*effective management of the hydrometric network*’ and ‘*INRH staff competent*’ are not under the full control of the project management, not quantifiable, and should be considered as Outcomes.
- The Activity Impact indicators are quantitative and specific, but as the Programme has evolved, several are no longer relevant⁸. Further, they are on highly aggregated or macro-economic level and depend

⁸ The Activity impact indicators are defined as:

- 5% increase in population with access to modern energy services
- 15% of off-grid public services equipped with RE solution
- Off-grid RE supply contributing to added value processes in 50 villages in rural areas
- Gen-sets not use on a daily basis in RE intervention areas

on many factors external to the Programme. Effects would take several years to materialize, and the Programme's would thus at best provide small contributions to positive development on these.

2.3.4 Budget

The total budget for three years was NOK 24 million, with equal shares for each year. Figure 4 shows how the total was divided between the different Activities.

While the budget is broken down on task level, it includes no specification of cost categories (such as NVE fees, travel costs, outsourced activities, reimbursables etc).

Some small amount of training funds were included in the budget for Activity 4. It is not clear what this training was meant to be, and it is assumed that most of the training budgets were included under each Activity.

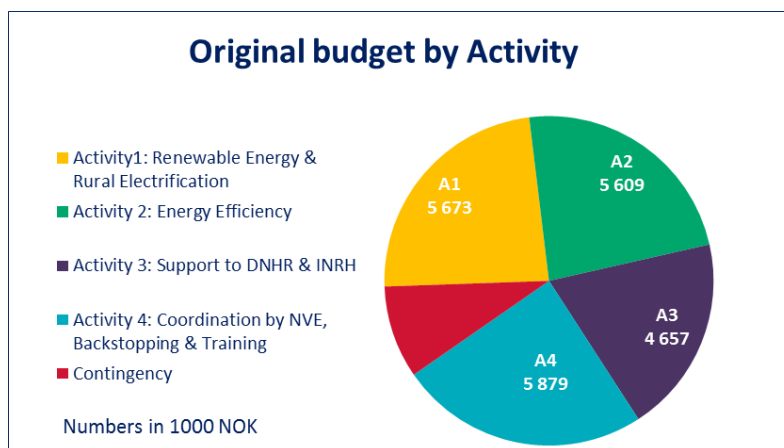


Figure 3: Programme budget

3 Relevance

“Relevance is the extent to which the intervention is suited to the priorities and policies of the target group, recipient and donor”

- DAC Criteria for Evaluating Development Assistance

3.1 Relevance for the Government of Angola

The thematic areas are consistent with the high ambitions identified in the Government of Angola’s key guiding documents *National Energy Security Strategy and Policy Paper (2011)*, and *National Water Strategy, as well as the later Angola Energy 2025*. The selected Activities target several priorities that these documents specify:

- Hydrological resources as strategically important in terms of national security of water and power supply and provision of clean energy to a power-starved region;
- Renewable energy as means to diversify the power generation portfolio and ensure electrification in areas far from current and foreseen reach of the national grid;
- Energy efficiency as a measure to improve the financial and technical sustainability of the sector.

On this basis, **the Programme is found to be highly relevant** for development of the Angolan Energy and Water sector.

3.2 Relevance for the involved institutions

MINEA: As the Ministry with oversight of the energy and water sectors, MINEA is a natural main counterpart and Programme coordinating institution on the Angolan side. In most respects, this appears to have functioned well. Awaiting overview of the various institutions’ training needs, NVE did not establish a baseline and needs assessment. This has made it difficult to tailor capacity building efforts to the most relevant areas.

National Directorates: The National Directorate of Renewable Energy (DNER) has a small staff of 9 people, and assuming the responsibility for formulating policy for and promoting the use of renewable energy is a significant challenge. The Programme’s aim to improve the awareness and knowledge of DNER related to effective and efficient methods in this area can be useful as staff is often poorly aware of developments in neighbouring countries. However, the planned work related to strategies and action plans appear to have lacked ownership on sufficiently high level.

It is noted that the original request did not specifically mention off-grid electrification. The rationale for introducing this element in the Programme design is not documented.

Other Directorates, although initially foreseen as beneficiaries, have not had active roles in the Programme.

IRSEA (previously IRSE): Support to the national regulator was not foreseen in the Programme Document, but was included from February 2014. At that point, the work related to legal and regulatory framework under Activity 1 turned focus towards support to IRSEA (then IRSE). IRSEA has turned into a key beneficiary. The planned support to the General Electricity Act revision was side-tracked, but the support following the revised Act, through NVE technical assistance and the later consultancy provided to develop regulations, appear high relevant and valuable to IRSEA.

ENDE (previously EDEL): The Programme was planned based on the needs of EDEL. As noted above, improved energy efficiency is important for the sustainability of the sector, and the distribution company. The situation in ENDE after the reform and the oil price fall in 2014/2015 prevented the benefits of NVE’s support from materializing. Loss control was introduced as a new focus area from 2014, in a notable effort to keep the Programme relevant. However, the initiative has lacked ownership in the restructured institution.

INRH (previously INARH): The institute was established in 2012, and became operational in 2013 when the Programme started. The Program Document pointed correctly to a need for training, and justified putting training at the core of the cooperation. There was thus at the planning stage a strong rationale for NVE to engage in the proposed activities.

Implementation of the HYDSTRA database is particularly relevant since an operational hydrological database is a pre-requisite for dissemination and sharing of data with various water resources users.

The water tariff study that was introduced later in the Programme was relevant for INRH and the country. In light of the government budget crisis, due to the sharp fall in oil prices, implementation of the proposed tariff scheme is considered fundamental to the financial and operational sustainability of the institute.

In summary, **the Programme content was, largely, well suited to the needs of the participating institutions at the outset. Over the course of the Programme, various challenges such as lack of counterpart staff availability, lack of active engagement, or reduced ownership due to changes in EDEL, reduced the relevance of some of the originally planned activities and resulted in the need to change focus and direction of the Programme.**

3.3 Relevance for Norway and NVE

At the time when the Programme was designed, the Clean Energy for Development Initiative guided the priorities for Norwegian Development Assistance in the Energy Sector. The Activities in the Programme all fall within the Initiative's priority areas, namely⁹:

- Development of national frameworks (legislation, regulation, institutions, etc.) that will encourage investment in the production of clean energy and energy efficiency.
- Electrification in rural areas and small-scale energy production from renewable sources.
- Development of knowledge, expertise and technology.

The Clean Energy Initiative highlights Norwegian experience and expertise in natural resource management, and its relevance for many developing countries, in particular those with large hydropower resources.

Based on the above, the Programme is consistent with the priorities of the Norwegian Government. The relevance of NVE's experience and expertise in the Programme areas is well described in the Programme Document for the regulatory and hydrology areas.

The relevance of NVE's competence to improve MINEA's capacity to implement rural energy programmes based on renewable energy is less clear.

A number of tasks have been outsourced, although they were planned to be implemented by NVE's own staff. This particularly concerns the support to the National Institute for Water Resources¹⁰. Less involvement of NVE's own resources has necessarily resulted in lower degree of transfer of NVE's own competence and specialized knowledge – a key aspect of institutional cooperation and knowledge sharing. NVE has, however, provided valuable support in procurement, quality assurance and follow-up of the assignments.

Norway and Angola has had a technical cooperation in the energy, fishery and petroleum sectors since the end of the 1980's. In addition Norway has supported civil society organisations and academia, and, through Norwegian Church Aid (NCA), supported mine clearing and mine survey in Angola in the period 1995-2010. However, it is noted that Angola is not a key cooperation country for Norwegian bilateral development assistance. Support in recent years has, with the exception of the Programme, been limited to Norwegian and international non-governmental organizations.

⁹ Clean Energy for Development Platform, [Norad](#), April 2007

¹⁰ Norconsult was awarded the contract "Coordination of Support to the Angolan National Water Institute".

4 Effectiveness

“Effectiveness is a measure of the extent to which an aid activity attains its objectives”

- DAC Criteria for Evaluating Development Assistance

4.1 Achievement of project outcomes and outputs

To evaluate the Programme’s Effectiveness the Team has assessed achievements under each Activity. This includes

- delivery of concrete outputs, as presented in the Programme Document or added at later points of time;
- the extent to which these have contributed to, or are likely to contribute to, the higher level Outcomes.

4.1.1 Activity 1: Renewable Energy & Rural Electrification

Outputs as listed in Program Document and Contract ¹¹	Progress and outputs to date
<p>Comprehensive strategy and action plan for use of renewable energy solutions in rural areas. <i>(not achieved)</i></p> <p>Necessary amendments to legal framework <i>(good progress).</i></p>	<p>No progress with regard to strategy and action plan.</p> <p>Study trip to Tanzania. The objective was to experience delivery mechanisms for renewable energy solutions in rural areas. Attended by 2 DNER staff. According to NVE a Study Trip Summary was written. MINEA and DNER refer to the study trip as an interesting and rewarding experience. A second study trip, focussing on policy issues, has been in the work programme, but has been put on hold. Otherwise, no further progress or follow up is reported or planned.</p> <p>Revision of “draft revised General Electricity Act”, that was enacted in 2015¹².</p> <p>Terms of Reference and contracting of consultant with the objective of development of adapted regulations. Expected deliverables by 2016:</p> <ul style="list-style-type: none"> - Regulation for pre-paid metering - Regulation for generation, transmission and distribution of electric power - Regulation for small IPPs¹³ to sell to the transmission company <p>Technical assistance and input to development of regulations for data collection and supply quality standards. Task implemented through on-the-job training.</p> <p>Work in this area is ongoing and expected to continue until the end of the Programme.</p>
Additional output defined in 2014	
<p>Increased knowledge in MINEA and IRSE about economic regulation of the power sector. <i>(some progress)</i></p>	<p>Training course in economic regulation of Energy Sector in Oslo, June 2016.</p> <p>Several workshops in Angola and 2 visits to Norway by IRSEA staff.</p>

¹¹ Listed as presented, although in our view some Outputs should have been Outcomes and vice versa.

¹² It is noted that NVE lists the GEA as an Output. NVE certainly contributed to the process, but NVE was only involved at one point of a relatively extensive process. It is thus the Team’s opinion that the GEA as such cannot be counted as an NVE contribution/Programme output.

¹³ Most of the existing auto-production is fossil-based.

Outcomes	Progress towards achievement
Pilot programmes for dissemination of renewable energy solutions (<i>no progress</i>)	No progress. In general, little concrete progress in the Renewable Energy and Rural Electrification area.
Regulatory framework adapted to needs of dissemination programmes (<i>some progress</i>)	IRSEA expect the concrete regulations developed to improve the overall regulatory framework. IRSEA staff appear to have increased knowledge related to economic regulation of the power sector. Staff value the technical assistance and formal training provided by NVE.

Table 2 Activity 1 Planned Outputs, Outcomes and progress to date

Assessment:

The lack of progress in the Renewable Energy and Rural Electrification area appears to be related to difficulties in defining useful contributions by NVE. NVE and MINEA¹⁴'s different expectations to what a 'capacity building consultant' may have caused some of the difficulty in reaching agreement about the work to be done. There also appears to exist some internal coordination challenges in MINEA. For example, development of a Renewable Energy Strategy was foreseen for the Programme, but MINEA took the initiative to develop this outside the Programme. The Programme Managers and DNER have later discussed support to development of an action plan for rural electrification, and to development of a policy on renewable energy and off-grid electrification. However, lack of ownership and driving force in the Ministry/Directorate appears to have slowed progress. To the extent of the Team's knowledge, no substantial documentation or other concrete outputs have been delivered and we have not been able to identify evidence of strengthened capacity in MINEA or DNER.

AfDB's PSRSP Programme also focusses on renewable energy and rural electrification in Angola, and the Programme management has discussed division of work with AfDB.

Good progress is achieved in the regulatory area. The lack of measurable indicators makes it difficult to assess the *degree* of progress versus targets, but the work **appears to contribute towards adapting the regulatory framework** to current needs.

The regulations that are under development are not specifically targeting Renewable Energy. The regulations nevertheless improve the regulatory environment, which is an important fundamental requirement for specific rules related to exploitation of renewable energy. They may therefore indirectly have a later effect towards the expected *Impacts* of the Activity, to make *renewable energy technologies available to the population and public services in rural areas*, and *reduced CO2 emissions*.

In conclusion, the effectiveness in the areas targeted under Activity 1 varies. **Effectiveness is quite good on the regulatory area and poor on the strategy and policy area.**

4.1.2 Activity 2: Energy Efficiency

Outputs as listed in Program Document and Contract	Progress and outputs until mid-2016
An investment programme for pre-payment meters presented for funding. <i>Not achieved</i>	Survey on Energy Use in Luanda implemented. Findings were presented in a well-attended workshop.
Energy efficiency campaign(s) implemented. <i>Not achieved</i>	Energy Efficiency Campaign Plan prepared by a local communication firm, including a report presenting the Key Message, Target Groups, Communication Strategies and channels. Campaign not implemented or planned implemented.
Energy efficiency strategy and action plan. <i>No progress</i>	Little concrete activity regarding strategy and action plan. No further activity planned.
Additional output defined in 2014	

¹⁴ Refer to section 7.1 – Point II.

Improved understanding of technical and commercial losses and how to reduce them. <i>Not apparent</i>	Loss Control Diagnostic Study with prioritized action areas outsourced and delivered, intended as input to discussions regarding further support. No follow-up or plans for follow-up by NVE is reported ¹⁵ .
Outcomes	Progress towards achievement
Reduce wasteful use of electricity in Luanda where meters are introduced <i>Not achieved</i>	The Programme has not made material contributions towards the installation of pre-paid meters in Luanda which has taken place since the Programme started ¹⁶ . Any improvements resulting from pre-paid metering therefore cannot be attributed to the Programme. Moreover, reduced power consumption in areas where meters are introduced was not measured previously, and measuring reduction of wasteful use would therefore be difficult to measure.
Better understanding of power consumption in the domestic and commercial sectors in MINEA and EDEL. <i>Some but uncertain effect</i>	The survey on energy use was intended to increase the understanding of the power consumption patterns. The presentation of the findings received high-level attention, and may have had some effect. However, since the ENDE activities are aborted, if and how this will be used is not clear.

Table 3 Activity 2 Planned Outputs, Outcomes and progress to date

Assessment

Notable efforts and progress was made in the first two years of the Programme, specifically related to the Energy Use Survey and the planning of the Energy Efficiency Campaign. The reform process that merged EDEL and parts of ENE to form ENDE, had a significant, negative impact on progress under Activity 2. This, and a constrained financial situation in ENDE, are key causes for the planned Outputs not being achieved nor be expected to.

The refocussing of the Activity as a response to the changed situation also seemed appropriate¹⁷. However, the loss control related work appears to have lacked ownership at the organization's operational level. As a result, lasting results have not been created. Loss control related work will be continued by the African Development Programme.

While the lack of baseline is noted, there is no evidence of any capacity improvements.

Therefore, overall **the effectiveness of Activity 2 is considered poor.**

4.1.3 Activity 3: Support to DNRH and INRH

Because the hydrology department of NVE could not set aside the necessary resources at Programme start, the coordination of assistance to the INRH has been outsourced to the consultant Norconsult. The Inception Phase was started in December 2013, six months delay as compared to the Programme Document. NVE's contributions in this Activity has primarily been related to hydrology training as well as managing the contract.

Outputs as listed in Program Document and Contract	Progress and outputs until mid-2016
National Institute of Water Resources staff competent. <i>Partly Achieved</i>	5-day hydrology training carried out. 11 persons completed a course on hydrometrics delivered in Luanda in November 2014. The review of the ToR for the basin studies was conducted in March 2014 and assembled in a memo sent to NVE in the beginning of April 2014.

¹⁵ According to NVE, the Study was forwarded to AFDB for their possible use. ENDE, however, did not mention this.

¹⁶ According to ENDE, approximately 20% of connections have been introduced to the prepaid meter system, and the strategy is to use this approach for all new connections (except large users).

¹⁷ According to NVE, this activity was requested by ENDE's Director General.

National Hydrometric Database re-established <i>Achieved</i>	<p>2 training sessions carried out: Data migration and establishment of the system (December 2015) and HYDSTRA-platform operation (May 2016).</p> <p>Historical data recovered from old system and stored on external device. Data migrated to the HYDSTRA database. Task was delayed due to problems with funding the HYDSTRA license.</p> <p>Database is operational and two INRH staff is able to operate it.</p>
Hydrometric network effectively managed <i>Not achieved</i>	<p>In April 2015 agreement was reached with INRH and its World Bank funded TA-Team on contribution to develop plan for rehabilitation of the remaining 150 gauging stations.</p> <p>The Progress Report of October 2015 subsequently suggested that the provision of preparing a holistic plan for rehabilitation of the remaining stations be pursued after the envisaged completion of the Tariff Study in end of April 2016.</p> <p>A plan for resuming the planned contribution including further work in the Hydrology component was submitted to NVE on 5 July 2016. Decision is pending.</p>
Additional output defined in 2015:	
Study on water use tariffs for Angola INahr requested the Programme in Q1 2015 to prepare a study on water tariffs. The Request was accepted and added as an output in the Work Plan for Q2 2016. <i>Achieved</i>	Report ' Implementation of the Economic and Financial Regime for the General Utilization of Water Resources -Unit Cost of Water ' finalized and presented for several groups in Luanda, including the Secretaries of State for energy and water.

Table 4 Activity 3 Planned Outputs/Outcomes and progress to date

Assessment

The Objective for Activity 3 was to build capacity in INRH to manage the hydrometric network and use hydrologic data for the formulation of policy. Particular emphasis was put on training.

Activity 3 depended on a number of factors under the control of the Government of Angola, including:

- Timely INRH staff recruitment procedure
- INRH staff available for training
- Establishment of INRH regional offices as planned
- Rehabilitation/construction of hydrometric stations according to schedule

When these were delayed or failed, the implementation of the Programme faced serious problems and need to adjust activities to the new realities.

In particular, the lack of progress must be understood in light of **the lack of human resources in INRH, which effectively hindered progress of training activities**. The issue was repeatedly discussed, and the institute's optimistic prospects of early resolution were reiterated. This is the likely explanation for why the training plans continued to be ambitious even after the challenges had become clear.

"Hands- on", transactional tasks have been more effective. Constructive and valued contributions to the hydrometric database and water regulation has been carried out.

The additional task, 'Study for Implementation of the Economic and Financial Regime for the General Utilization of Water Resources -Unit Cost of Water', is expected to provide good effect. It is a mandatory exercise under the framework of the Angolan Water Law, and INRH highly appreciated its relevance, results and quality¹⁸. The Institute expects the new tariffs to be introduced soon, and will target preparation of adhering regulations for the implementation of the tariff regime.

¹⁸ Interview with INRH during field visit

Taking into consideration the critical human resources shortages of the INRH, we consider the effectiveness of the TA in Activity 3 as moderate.

4.1.4 Activity 4: Coordination of activities by NVE, Backstopping and Training

Outputs as listed in Program Document and Contract	Progress and outputs until mid-2016
No concrete outputs or indicators listed	<p>NVE has</p> <ul style="list-style-type: none"> - Kept the oversight of the Programme - Ensured reporting and communication in accordance with the Contracts. - Organized coordination, planning meetings and workshops in Angola and Oslo - Organized high-level visit by Angolan politician to Norway - Acted as secretary in Annual meetings <p>Funding for training has been made available</p> <ul style="list-style-type: none"> - MSc student, Energy Economy and Management Master course¹⁹ - Two IRSEA participants in training course on economic regulation of the power sector in Cape Town

Table 5 Activity 4 Outputs and progress to date

Assessment

Activity 4 has not been assigned any separate outputs or outcomes and can thus not be assessed relative to targets.

The regulatory training is funded under Activity 1, but can be said to contribute to the achievements under Activity 4.

The Master student sponsorship is ongoing, and has not been assessed. More extensive university cooperation was not considered possible within the Programme time-frame. Contact has been established between *Universidade Eduardo Mondlane* and Norwegian universities. The University of Agder has been on a fact-finding mission to Luanda with a view to consider establishing a renewable energy master at UEM with funding from NORPART.

Programme management is assessed in Section 7.1.

4.2 Achievement of Program purpose

The overall development objective is to *develop the country's renewable energy resources for human development and to promote efficient use of electricity*, including involving the private sector. Achievements on this level can only be expected after a longer period of time.

The Purpose of the Program is to *increase the capacity and knowledge base within MINEA and its daughter institutions in the identified areas*. The Programme Document does not specify indicators to assess the degree of progress towards the Purpose, and the critical baseline study was never undertaken.

As shown in the subsections above, **the Programme's most meaningful contributions with regard to capacity improvements are achieved in IRSEA and, to a somewhat lesser extent, in INRH.**

As noted under the assessment of the Result Management Framework (Section 2.2.3), the indicators for the Activity *Impacts* are on a very high level and the Programme could, at best, expect only to make small contributions to such achievements within its timeframe. At this point the Team can only state that no evidence of significant progress on these 'Impact' indicators that can be attributed to the Programme has been identified.

¹⁹ Mr. Janotha Nzogi is sponsored by the programme to a MSc. on energy economy and management given by the Universidade Católica de Angola in cooperation with the Norwegian School of Economics.

5 Efficiency

“Efficiency measures the outputs -- qualitative and quantitative -- in relation to the inputs”

- DAC Criteria for Evaluating Development Assistance

5.1 Use of inputs

The total initial Programme budget was NOK 24 million, divided equally over three years. This budget does not include the cost of planning and preparations, which were covered by the Norad-NVE framework agreement. Separate allocations provided up to NOK 500,000 for the fact-finding mission²⁰, and up to NOK 400,000 to allow for a smooth and timely transition from the conclusion of the Programme Document to implementation²¹.

The Contract between NVE and MINEA obliges counterparts to provide staff and office space as required, and cover costs for workshops and meetings. The value of such contributions was not estimated. The MINEA, IRSEA, EDEL and INRH in-kind contributions have included workshop and meeting facilities, travel costs, and salary for staff in training (INRH) in addition to staff time. These inputs are not quantified, and therefore not taken into account in the following.

After three and a half years of implementation, 64% of the original three-year budget had been spent. Levels of activity have been lower than planned all three years. As Figure 4 illustrates, spending has been particularly low compared to original budget for Activity 3 and 4.

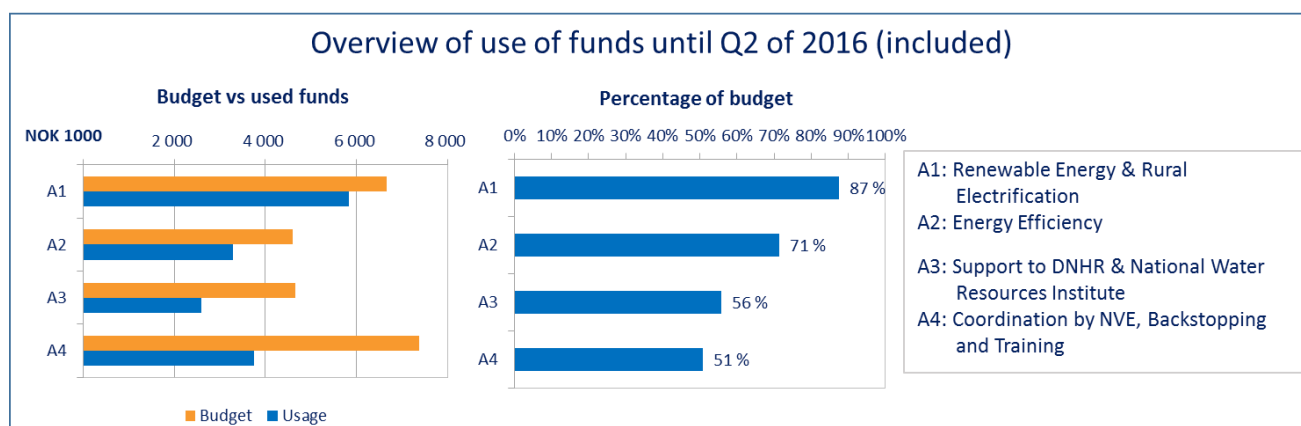


Figure 4: Overview of use of funds compared to budget, and percentage of usage of budget for each Activity

The main reasons for the low level of spending appear to be related to:

- Delayed start of Activity 3
- Stop of support from 2016 for Activity 2
- Low activity of training activities compared to plan
- Delays in confirming dates for in-country work

While the above are understandable reasons, it is notable that the Programme consistently has failed to increase the budgeting realism in spite of the experiences made.

²⁰ Award letter dated 25.04.2011.

²¹ Award letter dated 10.12.2012.

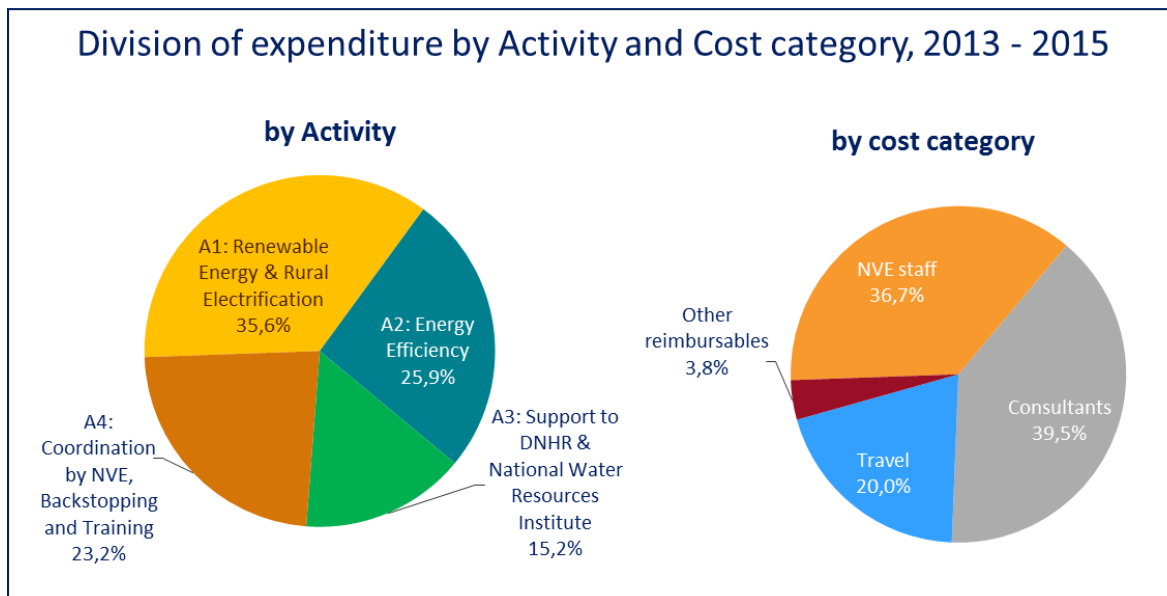


Figure 5 Division of funds by Activity and Cost category

The analysis of expenditure by cost-category (Figure 5, right) shows that **a relatively large share of the budget is spent on outsourced consultants**. The Programme Document does not show the planned breakdown on these categories, but it appears that the extensive use of professional services outside NVE was not foreseen, particularly under Activity 3. As noted in the discussion related to the Programme’s relevance for NVE (Section 3.3), this mode of work reduced knowledge transfer from NVE to Angolan counterparts.

On the other hand, outsourcing can improve efficiency if opted for as the best and most efficient way to provide services. The outsourcing of communication related work under Activity 2 to a local communication firm provides a good example. Similarly, while NVE likely hold the technical competence to develop regulations that were outsourced to a Portuguese firm under Activity 1, the contracted firm had a high level of contextual experience and knowledge, and was able to develop regulations directly in Portuguese.

Figure 7 shows that **close to 60% of NVE’s hours have been spent in Norway**. This, however, does not reflect time spent in Norway during visits by Angolan counterparts. The amount of time for this is not specified and thus not known.

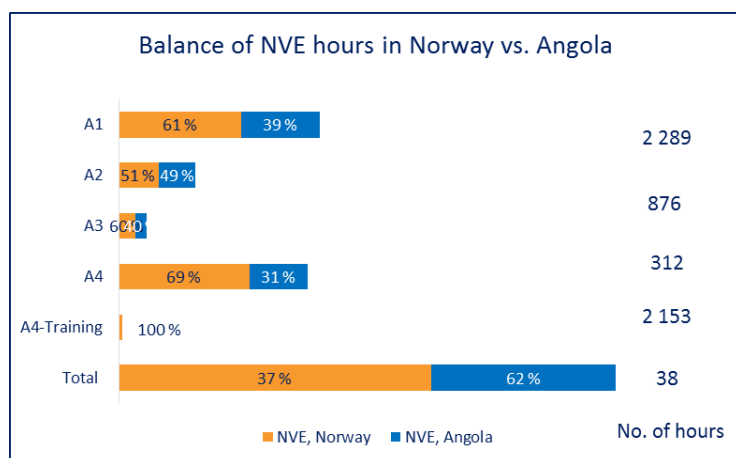


Figure 6 NVE staff home-base vs in-country (hours)

The division of time spent in Norway reflects that structured, formal training and on-the-job training has not been implemented as planned.

In this regard it is worth highlighting that one of the review interviewees called for a higher frequency and longer duration of NVE visits.

5.2 From Inputs to Outputs

The efficiency in producing outputs with the funding and other inputs provided is assessed Activity by Activity.

Activity 1 Renewable Energy & Rural Electrification

NOK 5.8 million had been used on this Activity by the end of Q2 2016. Until the contracting of GESTO Energy in 2015, NVE staff input represented all work.

Much time and effort was initially spent planning and discussing the renewable energy strategy without tangible outcomes, and to get the right focus on the legal and regulatory work. As shown above, no concrete results have or are expected to come out of the efforts in the strategic and overall planning area.

Progress improved after turning the focus to IRSEA to work with improvements of the legal and regulatory framework. New regulations are in progress and NVE has made contributions to increased knowledge in IRSEA about economic regulation and regulation of quality of supply in the power sector.

The lack of results in the policy and strategy area is only partly off-set by the value of this more recent progress. **The achievements thus appear to have come at a relatively high cost.**

Activity 2 Energy Efficiency

NOK 3.3 Million has been used for the tasks under this Activity, including outsourced work for Survey and Campaign development. NVE does not plan to follow up or initiate new activities related to energy efficiency.

Without visible capacity building effects, and with the survey, the loss-control study and the campaign plan as the only tangible outputs delivered, **the cost-efficiency is considered moderate.**

Activity 3 Support to NDHR & INRH

Expenditure in this area until Q2 2016 was NOK 2.6 million. The low level of training is reflected in the low spending versus plans.

Most of the funds has covered outsourced services provided by Norconsult. This work has relatively efficiently produced tangible outputs such as the study on water tariffs and the implementation of hydrological database and training. The Team thus considers **Activity 3 cost-efficiency as moderate.**

Activity 4: Coordination, Backstopping and Training.

Although coordination and management of a complex capacity building and institutional cooperation programme is inherently challenging, budgeting close to 1/3 of a programme's total budget for such activities seems very high.²² It is noted, however, that Angola is considered a high-cost country, with accommodation costs hovering significantly above those of other African countries. This justifies a higher travel budget than in comparable programmes.

NOK 3.75 mill has been spent. This is only 40% of the planned budget for Activity 4 but still represents close to a quarter of total spending, and 38% of NVE's own staff hours used in the Programme. The Team considers these shares as high, but also notes that the Programme undoubtedly has faced numerous challenges posed by exogenous factors. This has increased the burden of coordination relative to time spent on task related work.

²² The appraisal of Phase II of the Clinton Climate Initiative found 11% administration cost for phase 2 to be unacceptably high. The same programme had used 7% on communication and overhead in Phase 1. Travel costs was a separate budget of 13%. The division of cost across categories in different programmes make comparisons difficult and possibly irrelevant or unfair.

5.3 Overall Program efficiency

A total of about NOK 15.5 million has been spent. In the assessment of efficiency, coordination and programme management costs must be carried by the other Activities, where the Programme's real achievements are found.

The nature of capacity building programmes make it difficult to make comparisons between different programmes, and cost-efficiency statements will therefore be subjective and based on qualitative assessment. In particular, the cost level in Angola is noted.

Our overall impression of this Programme is that **progress, deliverables and outputs are lower than what could be expected considering to the total cost of the Programme to date.**²³

²³ Again, the Mozambique TA programme (Multiconsult, 2016) is referred. The Programme lasted for 8 years at a total cost of NOK 46 million. The Programme was considered to have achieved important, tangible results in terms of progress on development of generation projects. of high value to the beneficiary. Also on the capacity building side, the beneficiary's ability to lead energy project development and transactions was measured to the extent possible and found to be significantly improved. The results were valued very highly by the beneficiary institution as well as the authorities. However, the nature of tasks was so different that a straight comparison is not fair.

6 Sustainability

“Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn”

- DAC Criteria for Evaluating Development Assistance

6.1 Sustainable results

As described in the Effectiveness assessments (Chapter 4), tangible results have been achieved in *some* of the targeted areas. The four results below appear to be scalable, appreciated by the institutions, and well integrated into their work. The Team believes that they have a potential to continue to deliver value even after the Programme ends.

With regard to the assessments of results on institutions’ and staff’s capacity and competence enhancement, the lack of specific indicators and baselines, as noted in the assessment of the result framework, create a need to give much weight to explicit and implicit expression given by the interviewees.

I. Improvements on legal and regulatory framework are in good progress in 2016

The development of concrete new regulations have been outsourced to a firm with relevant experience and technical expertise. Given that they hold the expected quality and become approved, the regulations will become part of Angola’s regulatory framework. Support to IRSEA to implement the new regulations may nevertheless be required to ensure this.

II. Regulatory capacity and knowledge seems to have been strengthened

In terms of sustainable increased local capacity after the Programme’s exit, the best results have been identified in IRSEA. While longer and more frequent visits by NVE professional staff could have improved the on-the-job training effect, it appears to have had a positive impact on regulatory knowledge in IRSEA. This may prove good value for the institution’s future efforts.

The outsourcing of specific new regulations has had limited on-the-job training effects on IRSEA’s own capacity to develop regulations.

III. The hydrometric database HYDSTRA is operational, and a small number of staff has been trained and is able to operate it.

On-the-job training has made two INRH staff able to handle historical data and operate the database. They should also be able to train any new staff INRH may be able to recruit. The long-term sustainability of the data collection platform will nevertheless depend on the establishment of an operational hydrometric network and ability to regularly populate the database with recent hydrological data. This is an uncertain element, which depends on both successful PDISA support and improved resource situation.

IV. Basis for regulation of the water sector has been established.

The study on water taxation is important for the development of appropriate regulation related to water abstraction and to improve the financial sustainability of INRH²⁴. This way, the study is likely to have a positive impact on the sector’s and improve INRH’s financial sustainability. This will depend on further development of the water taxation regulation and enforcement of the tariff collection.

6.2 Sustainability challenges

In other areas evidence of lasting results is limited. The strategic and policy related tasks under Activity 1, as well as Activity 2 with EDEL and later ENDE as counterpart, **have not produced tangible results and long-term impact cannot be expected.**

²⁴ Part of the fees will be revenue to INRH.

The Team would like to highlight three particular challenges that the Programme has faced.

First, the Programme's stakeholders on the Angolan side have had expectations to the nature of the technical assistance that are somewhat different from the approach described in the Programme Document and employed by NVE. This issue is described in some more detail in Section 7 below. As noted, NVE's approach is process-oriented. This implies a role as advisor, offering on-the-job training to enable activities to continue after the Programme's exit. However, the beneficiaries have also expected a product-oriented approach, with tangible services or products delivered.

The outsourcing approach has to some extent responded to the Angolan stakeholders' expectations in this regard, with a larger weight on product-oriented activities. The difference between NVE's approach to supporting IRSEA in developing regulations versus the regulations delivered by contracted consultant illustrates this. However, at the same time, the recipients have been less involved in these processes. This implies that the capacity building effect, i.e. the improvement of the institution's internal ability to continue similar activities, is also lower. A notable exception appears to be the database work implemented by Norconsult, which appears to have been process-oriented and targeted the sustainable transition of knowledge of database management, while at the same time producing a very tangible asset for INRH.

The sustainability of hydrology training implemented in INRH is limited, mainly because INRH could not employ the trained staff. As far as INRH are informed, none of trainees use the knowledge in their current work²⁵.

6.3 Cross-cutting issues

Cross-cutting issues are given limited attention but Gender is considered. The most relevant cross-cutting element in this Programme is related to gender issues. The Programme Document takes the role of women as managers and users of natural resources into consideration and targets a reasonable share of participation by women in the Programme's activities. The Survey on Energy Use provided gender disaggregated information about energy uses. Progress reports provide information about women's participation in activities to some extent²⁶.

A clear gender focus beyond this, for example integrated in the training or capacity building, was not foreseen in the Programme Document. It is noted that the Embassy has not taken up gender issues in the Annual meetings.

6.4 Overall sustainability

Most of the achieved results have a potential to be sustainable, but depend on a range of external factors. Sustainability will presume that new regulations are approved and implemented, that institutions are adequately staffed, and that the macro-economic situation allows the energy sector institutions sufficient resources and revenues to operate according to their mandates. The last section of this report includes some recommendations for what the Programme can do in the last period to make the results robust.

²⁵ Interview with INRH during field visit

²⁶ NVE notes that Gender issues are not very relevant, with the possible exception of the Energy Efficiency issue.

7 Programme management and Coordination

7.1 Programme management and implementation

The Programme design implies an organizational structure with Programme Managers both on the NVE and Angolan (MINEA) sides in a 'Programme Coordination Unit' (PCU).

In addition to the Programme Managers, each Activity has a Focal Point, with responsibility for the technical content and implementation of the activity. The Programme formally reports to the donor through Progress reports and Annual meetings.

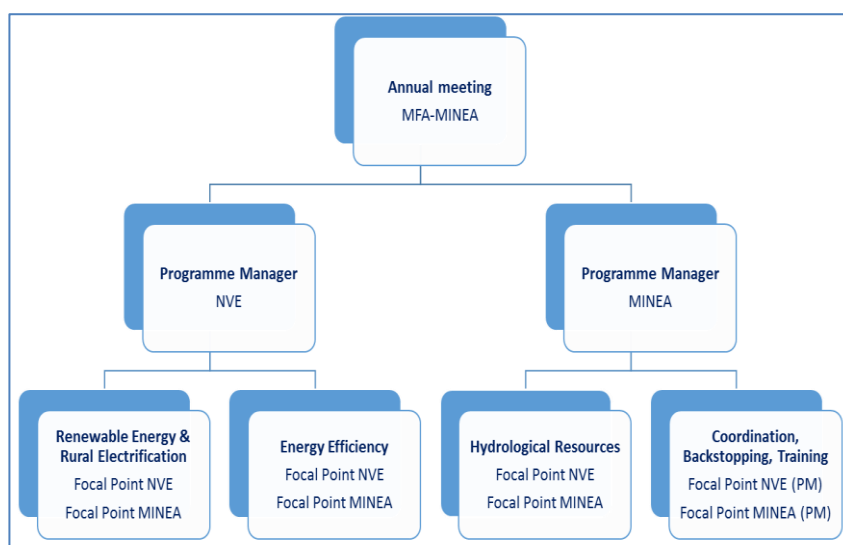


Figure 7 Programme Management structure. Note that the Hydrology area has in practice had two focal points, where Norconsult as sub-contracted consultant represented one

The Team has three key observations with regard to the management structure and implementation.

I. There is no information exchange platform that includes all stakeholders

The Team considers the Programme management structure as rational. However, no “steering committee” or other formal or informal mechanism was established. This would have allowed cross-programme communication and information sharing among focal points and all stakeholders. The stakeholders have been involved in the annual planning processes. However, only one Annual meeting has been attended by other stakeholders on the Angolan side than MINEA²⁷. The Team has not been able to confirm the extent of dissemination of progress reports or meeting minutes. Comments by several institutions gave reason to believe that they have not been shared with all stakeholders.

The lack of a mechanism for communication and information sharing appears to have left some of the involved institutions with a feeling that they did not get all relevant information or lacked direct influence on the content of the Programme. This may have been a contributing factor to lack of ownership and declining interest. It is surprising that NVE did not propose a more wide-reaching information flow, and that RNE and Norad did not comment on this in the appraisal process.

One institution specifically mentioned that the planned activities had never been presented in any plans with longer perspective than one year. While this was only mentioned once, it suggests that better oversight and predictability of the support could have contributed to maintaining interest and active engagement by the participants.

II. Expectations management has been necessary

The Programme has encountered some challenges with regard to establishing a common understanding of the nature of NVE’s support. Several institutions on the Angolan side, including the Programme manager, emphasize the need for delivery of tangible results and support to staff in managing their daily responsibilities. Several institutions, but particularly INRH, struggle with limited staff to handle broad and demanding mandates. This inevitably leads to much focus on keeping basic functions operational. Focusing on long-term capacity building becomes a second priority. NVE

²⁷ According to NVE, this was explicitly requested at this occasion.

highlights the aspects of *institutional cooperation* and the importance of taking a clear *advisory profile* rather than filling a capacity gap.

Such conflicting views may have contributed to feeling of limited influence, or the weakened ownership and declined interest, by some of the Angolan stakeholders.

Evidence from other technical assistance programmes shows that such conflict of interest is common. Expectations management is therefore of high importance. In this Programme, the Programme managers have made commendable efforts to improve the common understanding and communication, at one point using the Embassy as a neutral meeting space.

III. In-country presence has been limited

The Programme was not set up with permanent or long-term presence by NVE. Evidence from other countries emphasizes that good working relationships, trust and continuity are important factors to ensure capacity building effects of technical assistance programmes. Continuity by in-country presence are seen to provide good results in several capacity building programmes²⁸.

It is noted that the possibility of long-term presence was discussed at the first Annual meeting. At that point, MINEA stated that they did not find such permanence as a requirement for successful implementation. Further, according to NVE, Angola represents challenges for long-term presence, for example are working visas difficult to obtain.

Programme management and coordination meetings have been relatively frequent and appear to have worked well. However, IRSEA particularly mentioned the space between specific work sessions with professional staff as an obstacle to keeping high focus over time. Permanent or long-term presence in-country might also have improved the common understanding of the nature of NVE's support²⁹.

The Team acknowledges that lack of feedback from the Angolan side to proposed dates for visits, work sessions, meetings and workshops, as well as difficulties getting visas for certain experts, has contributed to the infrequency of professional staff visits.

In summary, the Programme Managers have actively engaged in coordination and planning, but the weaknesses mentioned above have contributed to the Programme's challenges.

7.2 Roles and coordination between Programme management and the donor

According to the Programme managers and RNE the communication between the Programme and the donor has been good. NVE and RNE consider each party's role as clear and do not report any concerns in this regard. It is noted that the governance structure only establishes NVE's obligations towards RNE (with the exception of MINEA's obligation to review and approve invoices). This implies that MINEA only has indirect obligations towards RNE.

RNE and MINEA have attended all Annual Meetings, supported by NVE as secretary for the meetings. Again, the lack of involvement of other Programme participating institutions in annual meetings or other coordination meetings is surprising.

It is notable that RNE also has been allowed to play a meaningful role. An example is the broker role in managing conflicting expectation mentioned in Section 7.1 above. The Programme could nevertheless have capitalized better on the possible role the Embassy could play. For example, if political level ownership and clear policy vision materialized as a challenge, RNE's could get access to the political, decision-making level in the Energy sector. Seizing this opportunity could potentially have helped NVE to define meaningful contributions in the strategy and policy area of Activity 1.

²⁸ Technical Assistance Programmes in the Mozambique and Uganda provide but two good examples. A comparative description of these programmes was provided in the report "The Clinton Climate Initiative, Islands Diesel Replacement Programme: Review of Phase I and Appraisal of Phase II", Multiconsult, 2016.

²⁹ Again, the Mozambique and Uganda programmes are used as illustration. Both Programmes have had permanent in-country staff present and working for the Beneficiary's localities. The permanent presence and frequent communication in these programmes are highlighted as important factors to manage expectations successfully.

RNE particularly emphasized Norad's role. In cases when RNE staff have lacked sufficient technical expertise and specialized insight, Norad's support and technical advisory has been valuable to the Embassy. Norad's knowledge of the Programme has also alleviated challenges related to change of Embassy staff.

7.3 Coordination with related Programmes and initiatives

There are two important initiatives by other international partners in Angola that target the same institutions and/or thematic areas:

I. The Power Sector Reform Support Program (PSRSP) by the African Development Bank

The objective of the PSRSP is to promote inclusive economic growth by improving operational and cost efficiency in the power sector and consolidating public financial management reforms through three main components, namely:

- i. Restructuring the energy sector and improving its regulatory environment;
- ii. Fostering private sector investment in the energy sector; and
- iii. Enhancing transparency and efficiency in public financial management.

The Programme's *Technical Assistance Facility for Strengthening Institutional Capacity* focusses on key areas of relevance to the Programme. Particularly the first two areas listed below represent overlaps;

- Institutional capacity development of the regulatory authority, IRSE;
- Commercial operation of utilities, specifically ENDE, and establishing a General Ledger;
- Improvement of billing, metering and collection of revenue;
- Preparation of Terms of Reference and RFPs for capacity development projects;
- Improvement to the institutional arrangements of MINEA, IRSE, PRODEL, RNT, and ENDE;
- Settlement of financial transactions among the utilities.

The Programme has established a seemingly appropriate and pragmatic relationship with AfDB. As of today, the two organizations have agreed on a division of work implying that NVE will exit the ENDE cooperation and energy efficiency work, while NVE alone will focus on the capacity building and framework related tasks in IRSEA. To the Team's knowledge the division of work in the area related to strategies and policies for improved deployment of renewable energy has not yet been fully agreed, but it is clear that to the extent NVE will be involved, it will be through concrete outputs that supports AfDB programme's activities and objectives.

Since the start in 2014, PSRSP has produced a number of policy and strategy documents for the Angolan government³⁰. While these documents were not well known on the operational level³⁰, AfDB appears to be positioned to ensure political support and exercise influence on the political level.

II. The Water Sector Institutional Development Project (PDISA) by the World Bank

Despite references in the Programme Document to the activities under the PDISA, no mechanism for coordination and work division with this programme was established.

PDISA was initiated in 2008 and commenced in 2010. In 2011 the World Bank secured additional financing for the project. PDISA's Component 2 includes several subcomponents and activities which are related to and/or overlapping with Activity 3 tasks, including;

- Provision of technical assistance to MINEA to develop regulatory frameworks and studies to enable the creation of INRH;
- Provision of technical assistance formulate pilot schemes designed to develop integrated basin management plans for two river basins; and
- Support to rehabilitation of the hydrometric network and development of information management systems.

³⁰ Interviews with AfDB, IRSEA and MINEA during field mission

In 2014 MINEA through the PDISA³¹ contracted the Serveng³² for 36 months to provide technical assistance to INRH. After this, Norconsult made notable efforts to clarify work allocation and harmonize tasks with the TA consultants. While this informal contact between the consultants is important, the Team's opinion is that an explicit coordination mechanism on a programme level (i.e. between NVE and the World Bank) would have been more effective.

The Programme managers have established contact with both these important programmes. Attempts to align, coordinate and allocate responsibility have so far been more successful with regard to the AfDB programme than the PDISA. It is noted that the coordination between Norconsult and PDISA has improved.

7.4 Formal Reporting

The formal reporting requirements are set out in the Contracts. Annex II provides a summary of the requirements and the Programme's reporting to date.

Overall, the Programme has adhered to the formal reporting requirements. NVE's Programme manager has submitted Annual and Progress Reports on time, with the required elements included and following a relatively consistent structure over time. MINEA has reviewed the reports and invited other beneficiaries to provide comments.

In spite of this, the reporting is insufficient to provide full clarity and overview of the actual deliveries and results:

- The level of detail in the narrative parts is limited and does not allow for a good understanding of the achievements
- The Annual reports provide tables with detailed summaries of achievements for the relevant period. These tables are not fully consistent with the Programme's goal hierarchy. New outputs as well as output indicators are introduced. Therefore, the tables do not allow measurement of outputs *as compared to planned outputs*.
- With regard to Support to INRH under Activity 3, the Progress and Annual reports provide little detail from Norconsult's work. An example may illustrate this: In the Inception phase Norconsult carried out a sound baseline assessment. The Inception report contains, among other things, important information about potential challenges such as staffing problems, problems in financing the HYDSTRA database license, slow or lacking response from the INRH management, and need for cooperation with the World Bank PDISA financed TA. The Programme documentation does not provide any evidence that these messages have been brought forward, nor evidence of proposed actions and recommendations to follow up.
- Annual Financial Statements are required according to the Contracts. Overviews of use of funds versus budgets are consistently provided in the Annual Reports. However, the information is on a highly aggregated level. A better understanding of the costs require detailed review of invoices.
- Annual meetings have been held regularly and in line with the Contracts, and NVE as secretary has provided Minutes of Meeting in a timely manner. As noted above, the Team has not been informed as to how widely the reports or meeting minutes are distributed.

In summary, **reporting has been timely and consistent**, but does not fully capture the changes and organic development of the Programme. This makes it **difficult follow the flow of the Programme from planning through implementation to results**.

7.5 Financial management

The Programme governance structure gives NVE the control of funds management on the Programme side. This implies that RNE pays NVE based on invoices that MINEA first approves. NVE manages payments to sub-contractors as well as funds to cover relevant Angolan counterparts' costs, such as training and travel costs. Thus, no funds flow through the Angolan government budget or public systems.

³¹ Financed through an IDA (International Development Association) loan

³² [SERVENG](#)

It is a basic principle Norwegian Development Assistance's that where feasible, funds should be channelled through the recipient country's systems. This is considered a way to promote good governance and increase ownership. RNE's Appropriation Document³³ emphasizes that channelling payments directly to NVE minimizes the risk for financial irregularities.

The Team notes that this approach also mitigates other risks, including:

- Payment delays, and resulting requirement for extensive follow up from the donor side
- Exchange rate fluctuations.

A quick review of the invoices³⁴ shows good transparency with regard to use of hours and rates. Invoicing has been regular and according to Contract. The invoices also provide a good overview of accumulated project cost.

Beyond this, the information on financial management provided in the reports is not sufficient to fully understand the quality of the Programme's financial management. The invoices explicitly note total travel expenses but does not provide details on travel expenditure, nor copies of invoices or payment evidence for services by contracted parties.

The low level of detail in invoicing and consequent lack of insight for reviews are consistent with findings from reviews of other NVE programmes. As the review of the programme in Liberia notes³⁵, "NVE (as a government institution, red.) appear to be exempted from the transparency that Norwegian taxpayers and the beneficiaries would expect from comparable programs implemented by a private company or non-governmental organization."

The Team emphasizes that although we cannot confirm the funds management quality, **the review has not revealed any indication of financial mismanagement.**

8 Risk management

In assessing how risk has been identified and managed, there is a danger of judging by hindsight. While programme planning tries to look into the future, a review has the benefit of looking back. The following assessment attempts to take this into consideration.

The Team finds that **the risk identification in the planning phase, as well as the risk management during implementation, have been active, thorough and relatively consistent.**

NVE identified a broad range of risks when designing the Program. Risks factors were classified according to *likelihood* and the *severity* of the potential impact. The risk identification exercise also included consideration of possible mitigation action for each risk element.

Risks have been regularly monitored during Programme implementation. The Annual Reports present risk assessments through progressively updated risks matrices with suggested mitigation actions.

Several issues that were not foreseen in the planning phase have materialized, and affected the ability to reach Programme targets.

To provide a basis for discussion on how the Program has dealt with risk, some reflection with regard to the factors that have had the most severe impact is worthwhile:

I. The Programme has lacked a driving force on a number of tasks

Annual Reports of 2014 and 2015 reported a lack of attention from MINEA staff that has affected all Activities. NVE particularly highlighted to the Team that it has been challenging to get attention from the political level for activities that require clear policy vision and direction.

NVE made notable efforts to identify meaningful ways to support DNER in developing strategies and policies for renewable energy and rural electrification. Unfortunately, the necessary direction and

³³ Appropriation Document dated 29.11.2012

³⁴ The Team has reviewed all but one of the invoices from Programme start until Q42015.

³⁵ End-review of Institutional Cooperation NVE-MLME 2010-16, Multiconsult, May 2016.

guidance appears to have been missing. Turning focus to the regulator was an appropriate response. This also reflects the focus of the initial request, which was on regulatory issues. Also with regard to NVE's core competence, regulatory issues are more natural part of an NVE programme than renewable and rural energy related matters.

II. Power sector reform has stolen attention

The Power sector reform was known at the time of the Programme planning, but the parties did not foresee the large impact it had on the energy efficiency tasks planned with EDEL. In hindsight it is not surprising that such major change necessarily would take much attention. However, NVE notes that the time of operationalization of the new structure was highly uncertain at the start of the Programme. Further, the financial constraints that the new company has been facing were not predictable.

Programme Management made a notable effort to adjust focus accordingly by initiating activities that might improve ENDE's financial situation. The Energy Efficiency campaign was put on hold, and work related to loss reduction initiated.

III. Lack of staff at INRH has constrained implementation

The risk related to staffing of the new Institute (INRH) was identified in the Programme Document. The emphasis in the risk assessment was on mobility risk, i.e. trained staff leaving for other employment. Yet it was the sudden oil price fall and the resulting moratorium on employment in the public sector that materialized as the real threat. These incidents could hardly have been predicted. On the other hand, it is somewhat surprising that the aggressive recruitment and expansion plans for INRH (61 staff within a few years of operation and several regional offices) were not considered as an uncertain element.

In the Team's opinion, the optimism that the situation would 'soon' change may have prevailed too long, with the result that annual work planning was not adjusted to the prevailing situation. The result was consistently over-ambitious training plans and below budget spending.

The decision to turn to the water sector and the potential income from tariffs to respond to the difficult staffing situation was pragmatic and sensible.

The Programme's risk monitoring identified these and several other challenges over the course of the Programme. **Overall, it is found that NVE has made significant and valuable efforts to respond and adjust in the face of the challenges.** It is nevertheless likely that three additional mitigation measures would have improved performance:

- **Better use of 'institutional memory'**. Insufficient capability and capacity of participating institutions was a persistent threat in previous NVE cooperation programmes in Angola (NAWASMA and NESMA³⁶). Such risks are also well known from other capacity building interventions. The lessons learned could have influenced planning to a larger extent. For example through considering mitigation of insufficient staff with more flexible definition of executable tasks, outputs and outcomes.
- **More in-country presence.** Although this would have increased the cost of the intervention, it might have improved the ability to get the necessary focus and attention from various institutions. This could have strengthened ownership of the activities and might have improved communication and information flow. Better communication could also have shortened time elapsed between visits. NVE might have been informed earlier about relevant developments (e.g. the Renewable Energy Strategy, the revision of the General Electricity Act).
- **Faster response.** However, the Programme managers remained optimistic about fast resolution of the several challenges, including as an example, INRH's human resources constraints. Communication challenges may have caused further delays in response and adaptation of focus and activities.

³⁶ NAWASMA - The National Water Sector Management Project
NESMA - National Energy Sector Management

9 Conclusion and recommendations

9.1 Conclusion

The Programme has achieved potentially lasting results in some, but not all targeted areas.

In the area related to the legal and regulatory framework for renewable energy, the beneficiary IRSEA (Instituto Regulador dos Serviços de Electricidade e de Água) appears to have strengthened competence within economic regulation. NVE contributed to the process of revising the General Electricity Act, and several new regulations that are expected to contribute to adjusting the framework to current needs are in process.

In the area of management of hydrological resources, the beneficiary INRH (Instituto Nacional de Recursos Hídricos) now has an operational database of hydrological data, and two employees are able to operate it. A study on water taxation has created a basis for regulation of water abstraction that is expected to be implemented in the near future. Introduction of levying of water abstraction fees will support the management of Angola's water resources and improve the sustainability of INRH through generation of funds that can be used e.g. for hiring people.

In areas related to renewable energy policy and deployment, as well as in the energy efficiency area, the achievements are very limited. It should be noted that the initial budget allocated 44% of the budget (except contingencies) to these areas.

The planned high level of activities related to training has not been possible due to various factors, most importantly in the hydrological area where lack of INRH staff to train has hindered implementation of planned training sessions.

This implies that the Programme achievements *as compared to planned results* is moderate to poor. It should however be noted that through the annual planning cycles, changes have been made to the work programmes and ensured creation on non-planned outputs that are valuable to the beneficiaries (ref. the results referred above). The total Programme cost of NOK 15.5 million until mid-2016, is still considered high compared to the outputs that have been delivered to date.

The Programme design contains some weaknesses that may have contributed to the lack of progress. First, the Programme has lacked a mechanism for effective communication with and among Programme stakeholders. Combined with limited in-country presence by NVE this appears to have constrained communication and information flow. Second, the Programme lacks baselines and thorough needs assessments to guide the capacity building components. This also makes it difficult to measure progress in capacity and competence enhancement. The Programme also lacks an exit strategy to guide the stakeholders towards a clearly defined and time-specific end-situation.

Many activities have been outsourced, but have been implemented relatively efficiently. NVE's experts have contributed in procurement, implementation, quality assurance and supervision of the assignments. It is nevertheless the Team's opinion that outsourcing has reduced the transfer of NVE's own knowledge and competence to the Angolan counterparts.

There is no doubt that several of the challenges that have impeded progress stem from external factors beyond the Programme's control. The Programme management has been active and made notable efforts to respond to these challenges. In the mentioned renewable energy/energy efficiency areas, the changes implemented as response have not managed to ensure the achievement of good and lasting results. The responses have proven more effective in the regulatory framework area, and to a certain extent in the hydrology area.

In the period that remains, the Programme should concentrate efforts on leveraging the achievements and progress to date, and ensure sustainability of the results that have been achieved. Communication flow and information sharing as well as coordination with relevant ongoing programmes could be strengthened to increase efficiency. At the same time, it is important that Angolan partners clearly demonstrate interest in the Programme and commitment to provide political ownership and Programme guidance.

9.2 Recommendations

The recommendations below assume a Programme duration until the end of 2017, and focus on ensuring a sustainable exit. They are limited to concrete actions that require limited time and effort and that do not require major changes to scope or management.

9.2.1 Recommendations related to Programme duration

I. Set a maximum time limit, in addition to the budget limit

As of third quarter 2016, approximately NOK 8.5 Million remained of the original NOK 24 million budget. Extension until end 2017 is already approved. The Programme will then have lasted for five full years.

Although Norway's increased emphasis on concentration of efforts to a few key countries³⁷ weakens the political case for continued support, continuation of the support until the completion of the current activities would be relevant for Norway. This would not only improve the sustainability of the Programme's achievements, but also solidify relations between Angola and Norway established through a long-term and sustained cooperation in the Energy sector.

The Programme scope has been reduced, naturally decreasing the expected rate of expenditure:

- No activity planned in Activity 2
- Reduced scope in Activity 3 (training, rehabilitation, and basin studies)
- Possible discontinuation of part of Activity 1 (please see 9.2.3 below)

The full Programme budget will maybe not be spent by end 2017. In this case, it is possible that RNE will receive an additional no-cost extension request. However, duration beyond 2017 should only happen after an overhaul of the results framework as well as the governance structure, including a better mechanism for involvement of and communication with all stakeholders.

II. Establish a clear exit strategy

As noted above, the Programme has not established an exit strategy. Once the final date of the Programme has been agreed, the parties should work out measures to ensure that the Programme resources can be withdrawn in a responsible manner. The exit strategy should focus on how to ensure that activities are either completed before Programme exit, or may effectively be taken over by partners. It should include parameters to measure successful exit, including indicators for activities that should be completed, and processes that should be taken over by partners.

9.2.2 Recommendations related to Programme management

III. Consider the impact of changes on the results management framework

The Programme has developed over time. As a result, the Programme Document's result management framework does not fully reflect the current Programme. This is natural for multi-year programmes in changing environments. The Programme management and RNE should consider the need to ensure a better basis for assessment of achievements. Making the changes explicit would be an opportunity for stakeholders to set clear targets and fine-tune strategies for the final period. While the original goal hierarchy will remain an important basis for possible final review or later evaluation, an addendum with a revised goal hierarchy could be considered.

IV. Improve information sharing with all counterparts

- Increase level of detail in reporting and communicate main recommendations and plans to stakeholders. This could increase ownership, inspire useful suggestions and reflections, and might enhance efficiency and effectiveness.
- Ensure communication among focal points where synergies are possible. An example is INRH and IRSEA's related responsibilities.

³⁷ The Norwegian Government's proposition to the Starting for year 2015 identified 12 'main cooperation countries' and 85 'other', where Angola is listed under 'others'.

V. Adjust ambitions to partners' absorption capacity.

There is a need to manage expectations, between the approach of technical assistance through role and on-the-job training versus the needs for gap-filling felt by institutions with a constrained staff situation.

Receiving and administering technical support from multiple partners may be demanding. Combining the technical assistance approach with development of more concrete outputs ensures that the value feels tangible for the stakeholders. This may help maintain the interest in the cooperation. Good examples in this Programme are the combination of the tasks undertaken by GESTO and NVE in the regulatory area, and the HYDSTRA database work combined with the database training.

VI. Consider the value of increased engagement by RNE to strengthen political level attention and support

The Activity-specific recommendations below imply a focus on the operational level rather than the overall, strategy and policy level. This means that political buy-in will be less of a constraint for the implementation. It is nevertheless important that both the Angolan counterparts and RNE make efforts to ensure that the Programme maintain support on political level. Sustainability of, for example, new or updated regulations is dependent on political awareness.

9.2.3 Recommendations related to Activities and Tasks

VII. Activity 1: Consider discontinuation of activities related to renewable energy and rural electrification strategy strategic and policy.

The limited achievements in the renewable energy and rural electrification on the strategy and policy level, despite considerable effort, provide little basis for significant results if limited time remains. The partners should consider discontinuing activities in this area. AfDB support MINEA and DNER and appears to interact on a higher political level. If further activities are included, they should as a minimum be well and explicitly coordinated with AfDB.

VIII. Activity 1: Focus efforts on regulatory improvements.

- The Programme should ensure that the regulations under development both by GESTO and through the direct IRSEA-NVE cooperation are completed. Further support to implement the regulations within the time frame of the Programme would be relevant if required.
- Continue training related to economic regulation of the power sector if required by MINEA/IRSEA.
- Improve communication and in-country presence.
- IRSEA mentioned several specific areas where support would be appreciated³⁸. IRSEA also emphasized that longer and more frequent work visits is desirable to ensure continuity of efforts, increase benefits, and ensure sustainability.

IX. Activity 2: Discontinue activities.

The Team concurs with the agreement the Programme has reached with RNE and AfDB regarding the discontinuation of all activities where ENDE is counterpart. AfDB will continue to work with ENDE on loss reduction.

³⁸ IRSEA explicitly mentioned:

- Water Law. The existing legal framework for the water sector is "confusing" and requires revision. If considered, this area should be coordinated with Activity 3. According to NVE, this could be relevant if not considered by PDISA -3 but the remaining time does not allow for meaningful contributions.
- Regulation for supply of electricity in isolated grids/ Regulation for small, independent power producers (with focus on renewable energy. NVE notes that the regulations do not need to differentiate between energy sources.)

X. Activity 3: Clarify INRH's priorities for further NVE support and coordinate activities with PDISA Technical Assistance

- Coordinate activities with INRH and PDISA's Technical Assistance consultant to INRH.
The work plan should reflect a clear prioritization of tasks and agreed division of work among the different TA consultants.
- INRH's human resources are limited to coordinate and absorb technical assistance from multiple sources.
- Continue provision of tangible outputs. As long as INRH capacity shortages are prevailing further assistance could be directed towards more tangible outputs, such as supplementary work with the HYDSTRA data base implementation.
- Coordinate work within the regulatory system for water supply with IRSEA. Support to implementation of the regulation or further studies could be relevant.
- As long as the constrained staff situation prevails in INRH, focus capacity building and training on continuation of tailored on-the-job training for the INRH data base operators.
- Reconsider any further support to rehabilitation of hydrometric stations. The PDISA rehabilitation program has been implemented without a sound plan for the network development, and the construction of hydrometric station has been considerably delayed. Further, to alleviate the INRH staff capacity and competence shortages, the programme plans to use an external network operator for the future network operation. In the Team's opinion, outsourcing such central tasks implies a high risk for unsustainable operation and fast network deterioration when external support is withdrawn.
- Consider whether NVE resources are available for work in the hydrology area.
Any continued tasks must be considered with respect to the completion of the Norconsult contract as of 31/8 2016. Any further work will therefore need to be undertaken by NVE or outsourced in a new contract.



ANNEXES
NORAD

DATO 29.11.2016

REVIEW OF TECHNICAL ASSISTANCE TO THE ANGOLAN
MINISTRY OF ENERGY AND WATER BY NVE

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ANNEX I. List of documents reviewed

1. FORMAL DOCUMENTS	Date of document
Original formal request from Angolan Authorities of support	28.02.2011
Award letters for the planning phase and start-up activities	25.04.2011; 10.12.12
Programme document	January 2013
Agreement between the Embassy and NVE, signed 1 February 2013	Revision 29.01.2013
Technical Assistance Contract between MINEA and NVE, signed 1 February 2013	Revision 29.01.2013
Contract between the Embassy and NVE (revision 29.01.2013)	
Minutes Annual Meetings for years 1, 2 & 3 of implementation	29.01.2014; 18.02.2015; 15.02.2016
Minutes of Meeting	17.06.2015
Quarterly progress reports	each quarter from 2013Q1 until 2016Q2
2. OTHER RELEVANT DOCUMENTS:	
<i>End-Review of the Norwegian Support to the Non-Petroleum Energy Sector in Angola with a focus on 2002–2006 and Identification of Opportunities for Future Cooperation, SAD-ELEC Ltd</i>	March 2007
<i>Memo: Main Conclusions from Fact-Finding Mission to Angola May 2011 and Possibilities for Cooperation between MINEA and NVE</i>	not dated; presumably May/June 2011
ACTIVITY 1: - TOR: <i>Development review and update of energy sector regulations in Angola</i> - TOR for consultant regarding IPP tariff related issues	not dated not dated
ACTIVITY 2: - TOR for Electricity Survey - Electricity Survey of Luanda (Portuguese) - Summary of Electricity Survey of Luanda (PPT) - TOR for Energy Efficiency Campaign - Plan for Energy Efficiency Campaign - TOR for Loss control Distribution - Report on Loss control EDEL (Norwegian and Portuguese)	not dated not dated not dated not dated April 2015 not dated 18.04.2015
ACTIVITY 3: - TOR: Inception report by Norconsult - Progress report - Memo TOR for River Basin IWRM - Annual Report	22.01.2014 not dated 01.04.2014 February 2015 06.06.2016

- Study report: Unit Cost of Water	
ACTIVITY 4:	
- TOR for FactFinding Unbundling process	not dated
Overview of home-base and field staff time	October 2016
Semi-annual invoices from NVE to RNE (12 invoices)	

ANNEX II. Overview of reporting requirements and adherence

Reporting Requirements	Deadline	Report contents required	Deliveries
Progress reports	Each quarter	Quarterly progress reports including <ul style="list-style-type: none"> - description of actual outputs compared to planned outputs - brief summary of the use of funds compared to budget - explanation of major deviations from plans, schedule and costs and mitigating actions 	QPRs for all quarters from Q12013 to Q22016 (total 14).
Annual Reports	Each year, three weeks before Annual Meeting	Annual reports including <ul style="list-style-type: none"> - summary of the information from the QPRs for the entire year - assessment of the efficiency of the Programme - assessment of problems and risks - assessment of the need for adjustments to activity plans and/or inputs and outputs, - actions for risk mitigation - Work Plan for the following year. 	Annual report 2013, 2014 and 2015, with following Work Plans for 2014, 2015 and 2016.
Annual Financial Statements	Each year, three weeks before Annual Meeting	Income and expenditures for previous period, structured as and compared to approved budgets and accumulated; Notes describing accounting policies and other explanatory material	Limited to aggregated financial information in the Annual reports. Detailed information provided in invoices
Final Report	3 months after completion of the Programme		Not due yet
Annual meetings and Meeting minutes	Each year		Annual meetings held regularly and Minutes of Meetings delivered timely.

ANNEX III. List of people met

#	Organization	Name	Title	
IN NORWAY				
1		Mr. Jonas Sandgren	NVE – Norwegian Water Resource and Energy Directorate	
2		Ms. Mi Lagergren		
3		Mr. Morten Due		
4		Mr. Ola		
5		Ms. Benedicte		
6		Ms. Inger Annette Dahlen Sandvand	Senior Adviser	Norad
7		Ms. Kristin Wæringsaasen	Senior Adviser	
IN LUANDA				
1		Ms. Sandra Cristovão	Director	MINEA – National Directorate of Renewable Energy
2		Mr. Pierre Kiala	Director	MINEA – International Cooperation Cabinet
3		Mr. Manuel Quintino	Director General	INRH – National Institute of Water Resources
4		Mr. Francisco Quipuco	Assistant Director General, Technical area	
5				
7		Ms. Mónica Cypriano	Technical Assistant INRH	SERVENG (TA to INRH)
8		Mr. Manuel Almeida	Technical Assistant INRH	
9		Mr. José Quarta	Member of Board	IRSEA – Energy and Water Sector Regulatory Institute
10		Mr. Adriano Sebastião de Almeida	Member of Board	
11		Ms. Augusta Rodrigues	Chief Tech-Jur Department	
12		Ms. Sandra Mónica Kiffen	Chief Board support Department	
13		Mr. Marino Bulles	(JURISTA)	
14		Mr. António Manuel da Silva	Electro-engineer	
16		Mr. Adérito Pedro Manico	Chief of Department, Technical fiscalization & electricity services quality	
17		Mr. José Afonso	Head of Commercial Relations, Rates and Prices	
18		Ms. Clara Sanchez	Member of Board	ENDE – National Electricity Distribution Company
19		Mr. Septime Martins	Resident Representative	AfDB
20		Mr. Neves Alfonso	Translator	

ANNEX IV. Budget and expenditure overview

Programme Budget (Programme Document) and expenditure until 2015

Task/budget (NOK x1000)	Year	2 013	2 014	2 015	Total	% of total
Activity 1: Renewable Energy & Rural Electrification						
1.1 Identification of suitable delivery mechanisms		1 032	85		1 117	5 %
1.2 Strategy and Action Plan (RE)		269	138		407	2 %
1.3 Review and development of legal framework		684	525	420	1 629	7 %
1.4 Pilot projects		49	1 260	1 211	2 520	11 %
Total/year		2 034	2 008	1 631	5 673	24 %
Activity 2: Energy Efficiency						
2.1 Understanding power consumption		1 765			1 765	7 %
2.2 Energy Efficiency Campaign(s)		432	1 116	935	2 483	10 %
2.3 Strategy and Action Plan (EE)		113	113	227	453	2 %
2.4 Accelerated introduction of pre-payment meters			152	756	908	4 %
Total/year		2 310	1 381	1 917	5 608	23 %
Activity 3: Support to DNHR & National Water Resources Institute						
3.1 Establishing National Water Resources Institute		277	277		554	2 %
3.2 Rehabilitation of hydrometrie network		173	432	432	1 037	4 %
3.3 Planning and management of basin studies		425	425		850	4 %
3.4 Capacity building and training		369	739	1 108	2 216	9 %
Total/year		1 243	1 873	1 540	4 656	19 %
Activity 4: Coordination by NVE, Backstopping and Training						
4.1 Programme administration		1 164	1 164	1 164	3 492	15 %
4.2 Training and study visits		704	496	495	1 695	7 %
4.3 Backstopping by NVE		232	232	232	695	3 %
Total/year		2 100	1 892	1 890	5 881	25 %
Contingency						
Contingency		313	849	1 020	2 182	
Programme total/year		7 999	8 003	7 998	24 000	100 %

Revised budget (2015)	Expenditure			% of total	Remain 2016 onw.	Remaining in % of Revised Activity
	2013-14	2015	Total			
6673	1957	2 565	4 522	36 %	2 151	32 %
4609	1498	1 793	3 291	26 %	1 318	29 %
4657	1352	581	1 933	15 %	2 724	58 %
7379	1588	1 359	2 947	23 %	4 432	60 %
682	0	-	-		682	
24 000	6 395	6 299	12 694	100 %	11 306	47 %

Budget expenditure by cost category

Programme activity:	Fee	Consul- tants	Travel	Misc.	Total
Activity 1: Renewable Energy & Rural Electrification	1 949	1 347	883	343	4 522
Activity 2: Energy Efficiency	823	2 048	420	-	3 291
Activity 3: Support to DNHR & National Water Resources Institute	296	1 520	117	-	1 933
Activity 4: Coordination by NVE, Backstopping and Training	1 591	96	1 122	138	2 947
of which training	37	-	109	97	243
Programme total	4 659	5 011	2 542	481	12 694
Percentage	37 %	39 %	20 %	4 %	

ANNEX V. Terms of reference

TERMS OF REFERENCE FOR REVIEW OF TECHNICAL ASSISTANCE TO THE ANGOLAN MINISTRY OF ENERGY AND WATER

1. ABOUT THE CONTRACT

1.1 Description of the services required

1.1.1 Objective

The objective of the consultancy contract is to conduct a review of 'The Technical Assistance to the Angolan Ministry of Energy and Water programme'. The objective of the review is for Norad and the Embassy to get an impartial assessment of the implementation of the programme and its effects compared to plans, and to receive input on possible improvements that can be implemented in the final period of the programme.

1.1.2 Background

The Embassy received a request for technical assistance from the Angolan Ministry of Water and Energy (MINEA) in February 2011. Based on the request, The Norwegian Water Resources and Energy Directorate (NVE) conducted a fact-finding mission to Angola and together with MINEA identified three main areas of cooperation;

Activity 1: Renewable Energy & Rural Electrification

- Comprehensive strategy and action plan for use of renewable energy solutions in rural areas.
- Necessary amendments to legal framework.

Activity 2: Energy Efficiency

- An investment programme for pre-payment meters presented for funding.
- Energy efficiency campaign(s) implemented.
- Energy efficiency strategy and action plan.

Activity 3: Support to DNHR (Angolan Water and Energy Directorate) & National Water Resources Institute

- National Institute of Water Resources staff competent.
- Hydrometric network effectively managed.
- National Hydrometric Data Base re-established

A joint project proposal was presented in September 2012. The agreement between the Embassy and NVE was signed in February 2013 for a period ending in 2015. A no cost extension was granted until end of 2016, but a further extension of the agreement period beyond 2016 is expected.

The goal of the programme is to develop the country's renewable energy resources and to promote efficient use of electricity.

The purpose of the programme is to increase the capacity and knowledge base within MINEA and its daughter institutions in the areas selected for the technical assistance.

1.1.3 Scope

The review must address, but not necessarily be limited to the following review criteria / questions and issues:

AREA OF FOCUS	ISSUES TO BE EXPLORED
1. Appropriateness and relevance	<ul style="list-style-type: none"> • The results of the programme so far, taking into consideration approved changes and adjustments in the programme. Positive and negative unintended results shall be included. • The extent to which the objectives of the programme are consistent with national needs and are aligned with the Angolan and Norwegian government priorities to improve access to renewable energy. • How appropriate are the activities conducted in order to develop Angola's renewable energy resources and to promote efficient use of electricity? • How far the programme complements the ongoing efforts at national level to develop its renewable energy sources.
2. Efficiency	<ul style="list-style-type: none"> • The extent to which the programme's resources/inputs (funds, expertise, time, administrative costs) have been converted into outputs. • Compared to implemented activities, how cost-effective was the programme?
3. Effectiveness/ impact	<ul style="list-style-type: none"> • The degree of achievement of the outputs and the extent to which outputs have contributed or are likely to contribute to the achievement of the purpose of the programme? • To what extent have the programme components contributed to the overall goal? • How successful was the capacity building and training?
4. Coherence and Coordination	<ul style="list-style-type: none"> • How efficient was programme coordination between NVE, MINEA and The Embassy, including clarity of roles and responsibilities; monitoring and reporting; and potential added value? • Did the programme coordinate successfully with other stakeholders and donors?
5. Financial management	<ul style="list-style-type: none"> • Assessment of financial management: are the implementing partner's financial management systems and capabilities sufficient for the implementation of the programme? Are the internal control systems and measures to prevent and avoid financial irregularities functioning satisfactorily? • Make recommendations on how to strengthen the financial management system in the final period of the programme.
6. Risk management	<ul style="list-style-type: none"> • Assess the key risk factors that have been identified or occurred and measures taken to mitigate or manage them.

	<ul style="list-style-type: none"> Assess whether the risk management systems of the programme are sufficient to deal with current and possible new risks in the final period of the programme, and make recommendations on how to strengthen the risk management systems.
7. Connected-ness/ Sustainability	<ul style="list-style-type: none"> To what extent do the strategies used by the programme lend themselves to wider scalability and programme expansion. To what extent did the programme contribute to institutional capacity building for programme outcome sustainability?
8. Programme Management	<ul style="list-style-type: none"> Assess the planning, monitoring, review and reporting system, including indicators and sources used. Assess the operational, technical, institutional and administrative aspects of the programme.
9. Next period	<ul style="list-style-type: none"> Based on the above assessments, conduct an analysis of what should be the focus and priorities of the final period in order to better develop Angola's renewable energy resources and promote efficient use of electricity.

The consultants may propose additional issues to be included as relevant. The final scope will be confirmed within Norad's confirmation of accept/comments to the Mission Preparation Note.

The consulting team will undertake all necessary activities, like:

- Prepare and submit the mission preparation note including plan for field-work, detail work plan, meeting schedule and review questions, within the agreed time frame.
- Undertake data entry, analysis and write up
- Submit draft - and final report
- All logistics connected to the services and travels with support from the Norwegian Embassy.

Timeframe:

Start date for the consultancy assignment: By end September 2016

Deadline for delivery: Latest by mid-December 2016

1.2 Requirements

1.2.1 Team – proposed consultants

The consultant(s) shall have the following qualifications:

- The team should consist of a minimum of two experts in the core team with Post-graduate or Higher degree in relevant field of study.
- The team leader should have extensive (<10 years) and relevant experience as leader of review teams and writing of review reports.
- The team should demonstrate experience in the energy sector and in programme management and conducting evaluations of programmes focusing on energy, preferably in Angola.
- Experience in the field of assessment of financial management, internal control system, audits, and anti-corruption

mitigation.

- Excellent writing and communication skills in English.
- One team member with communication skills in Portuguese

1.2.2 Connected to the execution of the review

Mandatory requirements

- The review must be both quantitative and qualitative, and data must be collected through review of existing documents through desk review, visit to Luanda, key informant interview, discussions with the Embassy, and partners' staff.
-
- Relevant meeting partners in Oslo are Norad and NVE, in Luanda, the Norwegian Embassy, MINEA, IRSEA, INRH, ENDE, AfDB (see appendix 1).
-
- A mission preparation note shall be submitted and presented at a formal start-up meeting with Norad for approval prior to the departure to Angola. The note shall include the key issues identified and a detailed work plan.
-
- Field visit to Angola including start-up meeting/ telephone conference with the Embassy. The team shall present preliminary findings and conclusions at a debriefing at the Embassy at the end of the field visit.
-
- The draft report must be submitted to Norad with copy to the Embassy in Luanda, NVE, MINEA and IRSEA within fourteen days after completion of fieldwork. The draft report is to be submitted in word-format by email.
-
- Norad, the Norwegian Embassy in Luanda, NVE, MINEA, and IRSEA should be given the opportunity to provide comments to the draft report within fourteen working days after it has been received.

1.3 Deliverables and time frame

- A final report in Pdf-format must be submitted after accommodating the comments and feedbacks given. The final report must be delivered to Norad at latest week 49 with copy to the Norwegian Embassy in Luanda. Norad shall in writing accept the delivery /file a complaint within three working days.
-
- The draft and final reports should not exceed 30 pages and include an executive summary with main findings, conclusions, lessons learned and recommendations. The reports can be supplemented by annexes, if need be.

The report must be in English.

2. AWARD CRITERIA

2.1 Proposed solution for the service required

The consultants must submit a description of the proposed solution in accordance with scope of work in the Mission Preparation Note, presented in the start-up meeting.

The proposal should minimum include:

- a progress plan covering all stages of the review
- methodology including data collection instruments
- quality assurance of the report and process
- an assessment of risk factors

2.2 Expertise specific to the service required

The consultant must submit CV's with details of relevant competence and experience for each of the consultants they propose to use.

2.3 Prices

The consultants shall deliver a budget including expected travel costs.

The Consultant will be reimbursed by the hour, at an upper limit of NOK 350.000 excluding travel expenses. The total contract value included travel expenses and other expenditures is NOK 400.000 excluding VAT.

Travel expenses will be reimbursed based on invoice of accrued expenditures.

Contingency: If the scope of work increases due to additional requests from Norad, or the magnitude of the required work turns out to be greater than what could reasonably be expected, the consultant may request additional reimbursement limited upwards to 14 % of the fee. This must be preapproved by Norad.

Appendix 1: List of relevant meetings partners, cf. 2.2.2

In Oslo:

Norad

Kristin T. Wæringsaasen,
krwa@norad.no +47 91727262

NVE

Jonas Sandgren
josa@nve.no

Norconsult/Multiconsult

Johan Knudsen
johan.knudsen@multiconsult.no

Norwegian Ministry of Foreign Affairs

Thorstein Wangen
Thorstein.Wangen@mfa.no

Hans-Christian Kjølsest
Hans.Christian.Hveem.Kjolseth@mfa.no

In Luanda:

Royal Norwegian Embassy

Birgitte W. Wessel, Embassy Secretary
Birgitte.Wilhelmsen.Wessel@mfa.no +244 923 640 195
Sergio Fernandes, Political and Economic Advisor
Sergio.Fernandes@mfa.no +244 923 640 196

Ministério da energia e águas (MINEA)

Kiala Pierre, Director Gabinete de Intercambio Internacional
Kiala.pierre21@gmail.com / kiala.pierre@minea.gv.ao
+244 923 521 099

IRSEA

Luis Mourão Garcia da Silva

luis.silva@irsea.gov.ao

INRH

Manuel Quintino

manuel.quintino@inrh.gv.ao

ENDE

Clara Sanches

clarasanches@hotmail.com

African Development Bank (AfDB)

Septime Martin, Resident Representative

s.martin@afdb.org

Appendix 2: List of relevant documents

Documents to be supplied by NVE

- Project document, dated January 2013
- Agreement between the Embassy and NVE, signed 1 February 2013
- Technical Assistance Contract between MINEA and NVE, signed 1 February 2013
- Minutes annual meetings
- Quarterly progress reports
- Annual reports including work plans and budgets
- Annual financial statements

10 Appendix 1: Declaration of good conduct

This declaration concerns:

Name of enterprise		Organisation number	
Address		Country	
Postal code		City/town	

I hereby confirm that this enterprise has not been convicted of:

- Participation in a criminal organisation
- Corruption
- Fraud
- Money laundering

Furthermore, the enterprise has not been convicted of any criminal offence related to its business conduct and has not in the pursuit of its business activities committed any serious breach of professional or ethical standards in the branch concerned.

Date

General Manager

ANNEX VI. Programme Document

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REPUBUCA DE ANGOLA
MINISTÉRIO DA ENERGIA E ÁGUAS



Norwegian Water
Resources and Energy
Directorate

NVE

**PROGRAMME DOCUMENT for
TECHNICAL ASSISTANCE TO THE
ANGOLAN MINISTRY OF ENERGY & WATER
BY THE NORWEGIAN WATER RESOURCES
& ENERGY DIRECTORATE**



**Institutional Strengthening of the Energy and Water
Resources Sectors in Angola**

January 2013

PROGRAMME DOCUMENT
INSTITUTIONAL STRENGTHENING OF THE ENERGY AND
WATER RESOURCES SECTORS IN ANGOLA

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EXECUTIVE SUMMARY

Introduction

This Programme Document presents a Technical Assistance to the Ministry of Energy and Water (MINEA) of Angola by the Norwegian Water Resources and Energy Directorate (NVE). The Programme Document has been formulated taking into account the findings of the Fact-Finding Mission to Angola carried out by NVE in May 2011 and discussions, meetings and planning workshops with MINEA, held in Luanda in January 2012.

The planning has been made using a results-based and risk-management approach as defined in the Norad guide: "Results Management in Norwegian Development Cooperation" which was found a useful tool in the steps leading to the preparation of this Programme Document.

MINEA will be the executing agency for the cooperation, and will enter into an agreement with NVE for the activities as described herein. In MINEA the International Cooperation Office will be the coordinator of the Programme . Payment to NVE for services under the Programme will be effected by the Royal Norwegian Embassy in Luanda (RNE, Luanda) under a parallel agreement between NVE and RNE, Luanda.

Motivation for support

The programme targets the strengthening of Angola's institutional capacity to:

- Develop off-grid energy supply based on renewable energy in areas where the transmission system will not reach in the medium term;
- Promote efficient use of electricity in important load centres, primarily Luanda;
- Map, analyze and plan for the rational use of Angola's water resources.

All these areas are important for the continued sustainable development of Angola as a nation.

Content of programme

The cooperation is proposed to start in June 2012 and to last for 36 months. The programme is composed of 4 Activities, summarised as follows:

Activity 1 Renewable Energy & Rural Electrification

Objective: *To build capacity in MINEA's Directorates of Renewable Energy and Electrification to plan and implement programmes for electrification of rural areas using renewable energy sources.*

The Activity comprises the following tasks:

Task 1.1. Identification of suitable delivery mechanisms for renewable energy solutions in rural areas

Task 1.2. Develop a strategy and action plan for rural electrification

Task 1.3. Review of the current legal sector framework

Task 1.4. Formulation of pilot projects for testing implementation models

The estimated total cost of the Activity is NOK 5.7 million exclusive contingencies.

Activity 2 Energy Efficiency

Objective: To reduce wasteful use of electricity in Luanda.

The Activity comprises the following tasks:

Task 2.1. Building an understanding of energy consumption in the domestic and commercial sectors in MINEA and EDEL

Task 2.2. Planning and implementing energy efficiency campaigns in domestic and commercial sectors in Luanda.

Task 2.3. Strategy and action plan for energy efficiency in urban areas Task

2.4. Accelerated introduction of pre-payment meters in Luanda

The estimated costs for the activities proposed under this Activity is NOK 5.6 million exclusive contingencies.

Activity 3: Support to DNHR & National Water Resources Management Institute **Objective:** To build capacity in DNHR/INARH to manage the hydrometrie network and use hydrologic data for the formulation of policy

The Activity comprises the following tasks:

Task 3.1. Support in establishment of National Institute of Water Resources

Task 3.2. Support in Rehabilitation of Hydrometrie Stations Task 3.3.

Support in Planning and Management of Basin Studies Task 3.4. Capacity

Building & Training

The estimated total cost of the Activity is NOK4.7 million exclusive contingencies.

Activity 4: Coordination by NVE, Training and Backstopping

This Activity includes the daily coordination and communication between the NVE coordinator and MINEA's Programme Coordinator and other personnel on the Programme, as well as preparation of progress reports, assistance to MINEA in preparing reports for RNE/MFA, participation in Annual Meetings, project accounting, cost control and invoicing. The Activity furthermore contains some fund for short term courses and study visits, plus an allocation for backstopping activities. In keeping with experiences from the former programme with Angola, the budget provides for frequent visits to Angola, 8 per year.

The estimated total cost of the Activity is NOK 5.9 million exclusive contingencies.

Risk and risk mitigation

The programme is not strongly connected to ancillary activities that have not been started. However, lacking funds for following up on the results of the programme would jeopardise outcomes and reduce impact. As things stand today, this risk appears low.

Loss of trained staff is also a potential problem. It is proposed to introduce a duty to serve a certain term for trained people.

Poor political support may also reduce the effectiveness of the programme. Such problems must be dealt by through political channels, and the issue will be routinely reviewed at the annual meeting.

As a general risk abating measure the programme will be followed up with relatively frequent visits by NVE to Angola.

The risk for corruption is low since the payment routines for the programme maintains the money in public Norwegian control system.

Section 9 presents an analysis of the most relevant risk factors.

Disbursement schedule

Based on a programme commencement in June 2012 the costs of the activities of the programme activities have been estimated and budgeted on an annual basis. The total budget is NOK 24 million.

The annual disbursements under the Programme estimated as shown in the table below.

Activity	Y2013	Y2014	Y2015	All years
Activity 1: Renewable Energy & Rural Electrification	2 034	2 008	1 631	5 673
Activity 2: Energy Efficiency	2 311	1 381	1 918	5 609
Activity 3: Support to DNHR & National Water Resources Institute	1 244	1 873	1 540	4 657
Activity 4: Coordination by NVE, Backstopping and Training	2 099	1 890	1 890	5 879
Sum activities	7 687	7 151	6 979	21 818
Contingency	313	849	1 020	2 182
Total	8 000	8 000	8 000	24 000

A total of 10% Contingency has been included in the budget. It has been allocated with increasing share over time, since the uncertainty increases as the time to implementation increases. Sums in the table may not add up exactly due to rounding errors.

1 INTRODUCTION

In a letter to the Royal Norwegian Embassy in Luanda (RNE) dated 28 February 2011, Angola's Ministry of Energy and Water (MINEA) requested assistance in the fields of electricity and water. Based on this request the Royal Norwegian Embassy in Luanda engaged the Norwegian Agency for Development Cooperation (Norad) to make an assessment of the application for assistance. Norad in turn requested NVE to carry out a Fact-Finding Mission to Angola in order to engage in a dialogue with MINEA and associated institutions with a view to establish whether NVE could provide services useful to MINEA in the achievement of its priorities within the energy and water resources sector.

The Fact-Finding Mission report formed the basis for further dialogue with MINEA resulting in the identification of three main areas where MINEA could benefit from a programme of technical assistance. These areas were discussed in detail between Angolan and NVE experts in meetings in Luanda in January 2012 when workshops were held for identified priority areas of cooperation, the results of which form the basis for this Programme Document.



Discussions during the programme planning meetings at MINEA in Luanda in January 2012

The programme contains the following activities:

- | | |
|-------------|--|
| Activity 1 | Renewable Energy and Rural Electrification |
| Activity 2 | Energy Efficiency |
| Activity 3 | Support to the National Water Resources Directorate (DNHR) |
| Activity 4: | Coordination, Training and Backstopping by NVE |

The overall development objective is to *build capacity to develop the country's renewable energy resources for human development and to promote efficient use of electricity*. The intention is to prepare for private sector involvement in the future development of renewable energy resources.

The overall objective of the Programme is to build capacity in MINEA and its daughter institutions to develop the country's renewable energy resources for human development and to promote efficient use of electricity.

The implementing agency for the Programme will be the Office of International Cooperation, MINEA. Dedicated counterparts for the different activities will be appointed in the relevant MINEA directorates. The project will be implemented through the framework of an institutional co-operation agreement between MINEA and NVE and financed under a corresponding agreement between the Royal Norwegian Embassy in Luanda and NVE.

The duration of the project will be 36 months from June 2012 and hence cover 4 calendar years.

2 BACKGROUND

2.1 Geography of Angola

The Republic of Angola covers an area of 1,246,700 km², lying between latitudes 4° 22' and 18° 02' S and longitudes 11° 41' and 24° 05' E. With the exception of the enclave of Cabinda, the country forms a square with sides about 1,250 km long, touching the Atlantic Ocean on the west (giving a total coastline of about 1,600 km) and bordering the Democratic Republic of the Congo on the north and north-east, Zambia on the east, and Namibia on the south. The Cabinda enclave covers 7,200 km² north of the mouth of the Congo (or Zaire) River.

The following four major geographic regions can be distinguished:

- The coastal plain, also found in the west of Cabinda, with a width varying from 25 km in the south to 100 to 200 km in the north.
- The central highlands with an average height between 1000 and 1300 m, covering almost two-thirds of the country. They are dominated by several mountain chains forming a crescent lying in a roughly southwest to northeast direction and including the Serra Moco, the highest point in the country (2620 m). This region is one of the main sources of water for southern Africa.
- The northern foothills of the highlands toward the Congo basin, north of latitude 10° S, where most of the country's closed forests are found, the remainder being located in eastern Cabinda.
- The eastern and southern foothills of the highlands towards the central depression of southern Africa and the Kalahari basin.

2.2 Economy

Angola has experienced a relatively high growth rate in recent years driven by high international prices for oil. Oil production and the related activities is the most important industry, contributing about 85% of the GDP. Angola became a member of OPEC in late 2006 and its current assigned a production quota of 1.65 million barrels a day (bbl/day).

The second most important industry is diamond mining, the export of which contributes an additional 5% of the GDP. However, the livelihood of the majority of Angolans continues to depend on subsistence agriculture, and yet half of the country's food is still imported.

Increased oil production supported growth averaging more than 17% per year from 2004 to 2008.

Lower prices for oil and diamonds during the global recession slowed GDP growth to 2.4% in 2009 and to 3.4% in 2010, and many construction projects stopped because Luanda accrued \$9 billion in arrears to foreign construction companies when government revenue fell in 2008 and

2009. Higher oil prices in 2011 helped Angola climb out of a budget deficit of 8.6 % of GDP in 2009 to an estimated fiscal surplus of 7.5 % of GDP in 2010.

A postwar reconstruction boom and resettlement of displaced persons has led to high rates of growth in construction and agriculture as well. Much of the country's infrastructure is still damaged or undeveloped from the 27-year-long civil war, and land mines left from the war still mar the countryside.

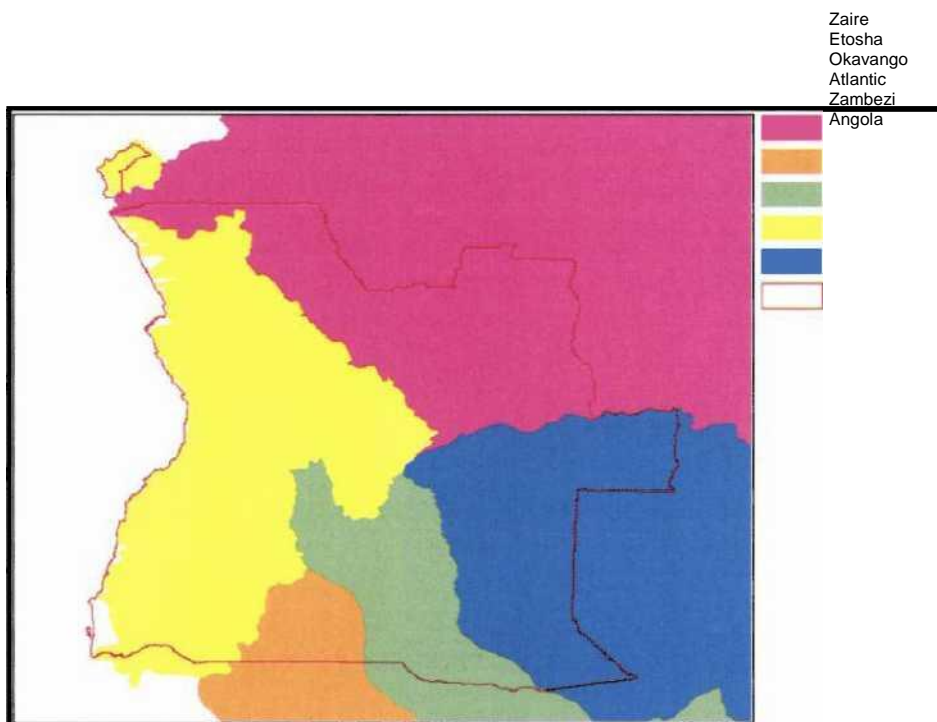
Providing a stable power supply is an important prerequisite for further growth in the economy.

2.3 Water resources in Angola

Most of Angola's rivers rise in the central mountains and drain either to the Atlantic Ocean or the Congo River, but those in the southeast drain to the Okavango swamps in Botswana.

The climate is generally tropical in type, tempered by sea and altitude, but it does vary considerably depending on latitude, as well as the effects of the cold Benguela current along the coast. Rainfall reaches 1800 mm and more in inland Cabinda and decreases rapidly along the coast, dropping to under 100 mm in the south (Namibe province). It is over 1500 mm in the highest parts of the highlands, especially in Huambo, Lunda and Uige provinces. The wet season lasts from October to May. Temperatures in the coastal plain region average about 21°C in January and about 16°C in June. The central plateau is cooler.

The annual drainage from Angola is calculated as some 140 km³ and is among the highest in southern Africa. There are 77 hydrological basins forming five main drainage areas: the Atlantic with 41 % of the surface of the country, Zaire (Congo) with 22%, Zambezi with 18%, Okavango with 12% and Etosha with 4%. Lakes and lagoons are relatively few in number, covering a small area of land of approximately 5,500 km².



Main Drainage Areas of Angola

The mean annual rainfall in Angola is calculated as some 1014 mm, but exhibits great differences in spatial distribution. Along the south-western coast, in the Namibe region, the mean annual precipitation is at its lowest with around 50 mm a year. The coastal region has a gradually increasing annual precipitation northwards and from the coastal areas and inland. The central

highlands have an annual precipitation of approximately 1300 to 1400 mm and the highest precipitation is to be found in the north-eastern part of the country, in the province of Lunda Norte, with approximately 1600 mm. The hydrology in Angola generally reflects these precipitation patterns.

Hydropower is destined to be a major activity in Angola and is a non-consumptive water user and provider of clean energy. Hydropower development may also lead to other benefits such as flood control and increased agricultural output. It is estimated that presently the existing hydropower schemes in Angola generate only about 4% of the total potential of the country, which has been estimated to be some 75,600 GWh/year.

Most of the hydropower production will occur in the central-eastern region of the country, where rivers fall rapidly before reaching the Atlantic Ocean. The region between the Cuanza and Catumbela rivers contains 80% of the inventoried hydropower potential of the country. Most of the Angolan hydropower schemes are located in the following river basins: Cuanza (Upper Cuanza and Middle Cuanza), Lucala, Catumbela, Cunene (Angola), Cunene (international), Cubango, Queve, Longa, Ngunza, Quicombo, Evale and Balombo.

The river with the majority of Angola's hydropower resources is the Cuanza, containing some 45% of the country's hydropower potential. In all 11 hydropower schemes have been identified along the entire reach of the Cuanza River, which would produce 30,000 GWh/annum of hydroelectric energy. Two schemes, namely Cambambe and Capanda are already built. As far as Capanda hydropower scheme is concerned, its first phase is concluded. The second phase is now under construction including heightening of the dam by 20 m and a new surface power station.

2.4 Previous Norwegian development assistance to Angola

Development cooperation in the energy sector between Angola and Norway dates back to 1987, and in 1996 a three year country agreement for institutional cooperation between the Secretariado do Estado da Energia e Aguas (SEEA), Empresa de Distribuicao de Luanda (EDEL) and NVE was signed. The purpose of this programme was to strengthen the technical and administrative capacity of SEEA and EDEL in their roles as government bodies. Support for development of adequate legislation was also a part.

In 2000 an addendum was signed to the cooperation agreement that led to the implementation of a new phase in the years 2000 - 2006. This programme consisted of components for following up on the National Energy Sector Management, institutional strengthening of EDEL, provision of spares to utilities, and English courses for executives. The budget for this support was NOK 52 million.

A review of the cooperation in the period 2002 - 2006 pointed out that the programme had not delivered up to expectations. Several good results were achieved, but some activities failed and overall results could have been better. The concurrent change in 1994 in Norwegian development assistance policy and Angolan priorities is believed to have marginalized the programme, and this is identified as a contributing factor to the lower than hoped for performance. The review also considers that the Norwegian presence in-country was too low, *i.e.* generally too few, too short visits.

It is pointed out in the review that the comprehensive reform agenda that Angola embarked on in 2006 is a long-term proposition, probably requiring more than the 3-5 year horizon indicated in policy documents. The review further proposes a number of potential opportunities relevant for further cooperation between Angola and Norway, such as:

- Norsk Hydro's involvement in a large aluminium smelter and hydropower plant.
- Development and deployment of a micro-hydro concept.
- Development of a framework for access to transmission networks and pricing of transmission system services.
- Rural electrification initiatives
- Planning frameworks and tools for supporting rehabilitation and expansion of Angolan power networks, particularly to cater for the rapid expansion of networks in and around Luanda.

It is also mentioned that Angolan integration in regional cooperation programmes in the context of the South African Power Pool (SAPP), Energy Pool of Central Africa (PEAC) and the Regional Association of Energy Regulators (RERA) might be areas worthy of Norwegian support.

For future cooperations, the review proposes that they should be built around shorter-term and focused interventions combined with support for longer-term capacity building in the country. The importance of maintaining an adequate presence in Luanda and providing a sustained support to assure results is also emphasized, as is the need to be able to adapt to a dynamic Angolan environment. Co-financing initial investigations by potential investors is believed to have merit.

During programme development NVE and Norad have discussed with persons involved in the previous cooperations. The comments and recommendations emerging from these consultations have been considered in the design of the programme implementation and management structures.

2.5 Institutional structure of the Energy and Water Sectors

The Ministry of Energy and Waters, MINEA, is the responsible body of the Government for the energy and water sectors, being responsible for the development of sector policies and planning, coordination, supervision and control of activities related to recovery and rational use of the national water and energy resources.

The Ministry has directorates for water resources, water and sanitation, electric power, electrification and renewable energy. The organizational structure and responsibilities of the Ministry of Energy and Water and its directorates are given in Appendix 1.

MINEA has a number of directorates with their respective sub-sector responsibilities. In addition, the Instituto Regulador do Sector Electrico (IRSE) has an important role as regulator of the power sector. This institution was created in 2002. It is currently integrated in MINEA, but not part of the formal line organisation.

The responsibility for the development of water resources belongs to the National Directorate of Hydrological Resources (DNHR) within MINEA. However, the institutional framework for the water sector is currently under reform, since it was considered that the old Direcção Nacional de Aguas was primarily focusing on water supply and sanitation, and not enough on planning and management of water as a resource for the nation. As a result an Instituto Nacional de Recursos Hidricos (INARH) was created by Presidential Decree in the last quarter of 2010. The new institute had its management appointed on 18th May 2012, but is currently otherwise not staffed. The set-up of the INARH is budgeted for in the fiscal year of 2012. Assistance to DNRH for the build-up of the new Institute is one of the activities of the proposed programme .

Although a new institution, the INARM remains within the framework of the Ministry of Energy and Waters. The idea is to introduce a more holistic management of water resources, and it is possible that DNHR and INARE1 may co-exist in the future, each with its dedicated responsibilities. INARH's main priorities will be execution of projects and programmes in the field of water resource management. DNHR would become smaller, but could still be important as an advisory body to M1NEA in relation to strategy' and policy' development. It is expected that the programme will contribute experience to the decisions that have to be made regarding the future roles of DNRH and INARH.

While most of the collaboration will target staff in MINE A, but one component will to a significant extent involve EDEL. EDEL is a public company with economic and juridical autonomy, dedicated to the distribution of electricity in Luanda. The organization can trace its roots as a public utility⁷ back to 1933. As mentioned earlier, EDEL has been a beneficiary' of previous Angolan-Norwegian cooperations.

2.6 Main focus areas for development of the Energy Sector

In the autumn of 2011, MINEA developed a "National Energy Security Strategy and Policy"¹¹. This document identifies a need to rapidly increase access to a regular and reliable power supply at competitive prices in order to assure an economic growth that is a prerequisite for poverty reduction. It is further seen as important to promote a balanced development of the Angolan economy and society, reducing social and geographical differences and develop a diversified energy mix that favours endogenous sources, security of supply and environmental sustainability. Fortunately⁷, given that Angola is endowed with very large energy resources, this is achievable.

The document includes a diagnosis of the power sector, which identifies a number of factors currently restricting access to energy:

- the transmission and distribution infrastructure is confined to a few areas, and the system suffers from bottlenecks;
- the generating capacity is not sufficient to cover the demand in the areas that do have⁷ access to the grid, with much of the existing generating park being in a poor state of repair; and
- structural financial deficits of the public enterprises in the sector result in an unsustainable situation in a strict business perspective, preventing the mobilization of private capital and burdening the state with an excessive commitment given the value of the underlying assets.

Due to the situation described above, consumers receive an irregular and poor quality service, constraining economic and social development of the country⁷. In order to safeguard economic growth it is considered necessary to:

- Significantly increase access to energy both in areas currently⁷ covered by grid and in off- grid areas.
- Reduce the high subsidies to end-use consumers and the high cost of supply, the latter being caused by high technical losses and inadequacy and inefficiency of the generation infrastructure.
- Improve the human resource skills in the sector.

- Remedy the financial deficits in the public enterprises of the sector.

On a policy level, the following objectives are set:

- Create a generation mix that promotes efficiency and use endogenous sources.
- Expand electrification to between 50 to 60% of the population by 2025, prioritizing equally power supply to agricultural and industrial development centres.
- Gradually approach the consumer price to the full cost of electricity in order to assure the economic and financial sustainability of the power sector, still maintaining the possibility of keeping some subsidies in favour of socially disadvantaged population strata.
- Improve security of supply and efficiency of generation assets by expanding and interconnecting the various power networks.
- Promote the use of renewable energy technologies as a preferred choice in isolated systems.

The policy recognises that there is a need both to address short-term challenges (within what is called a stabilization phase) and at the same time work on the systemic problems (within what is called a consolidation horizon). Currently it is expected that about 627 MW of generation capacity is available². The ongoing "Power Sector Executive Program" contains several activities aimed at addressing pressing needs, for example increasing generation capacity in the power networks and strengthening the existing transmission system in order to reduce bottlenecks and improve power quality. Projects are under implementation that is expected to add 1 100 MW in 2012. While this will alleviate the situation, it is expected that the demand will soon surpass this capacity, and additional capacity must thus be developed. In 2016 it is expected that the peak load (if supplied) will surpass 3 000 MW.

In the longer perspective, it is considered necessary to increase access to electricity both by extending the grid and introducing off-grid solutions in isolated systems, based on locally available and renewable energy sources. Off-grid solutions like photo-voltaic (PV) energy and micro- and mini-hydro will be of particular importance. In order to lead this development, a department for renewable energy has been established in MINEA.

Another key area needing attention will be the transition to a financially sustainable regime for the public enterprises working in the sector. This will both require a gradual removal of subsidies and an improvement of equipment and operations. Currently, distribution systems are frequently overloaded, a fact that is difficult to address while most customers are presently unmetered. In

Priority actions for the power sub-sector ("National Energy Security Strategy and Policy", 2011):

1. Conclude the investment monitoring structure and begin the regular progress monitoring process.
2. Ensure the implementation of the investment program, accelerate the launch of the projects on future energies (CCGT and hydro) as well as the transmission and distribution projects.
3. Implement the plan regarding the restructuring of the public private participation framework in the sub-sector according to the business model terms and organization target, and strengthen the internal capacities through the recruitment and training of skilled technicians;
4. Develop policy and regulatory framework for renewable energy;
5. Promote IRSE empowerment (roles and abilities strengthening) and undertake a revision of the regulatory framework for the sub-sector progress;
6. Define a private investment attracting framework as well as its regulatory framework;
7. Propose a progressive tariffs evolution in order to ensure the reduction of subsidies to the final consumer tariffs and uniform prices all over the country.
8. Restructure and strengthen the public sector capacities and efficiency in the entire subsector.

² Energias Renováveis. Livro Azul. Versão Preliminar. Outubro 2011.

Luanda, where the vast majority of present connections in the country are, 330 000 out of 400 000 customers are unmetered.

In order to speed up the development of the sector there is a need to attract private sector finance. According to the legislation, generation and distribution of electricity can be performed by companies which are not included in the public sector through concession contracts, which allows private investment especially in the form of Public-Private Partnerships. Public-Private Partnerships is seen as a key lever for realizing larger projects, while standardized feed-in tariffs will be used to promote the realization of smaller projects. However, these lines of action will require regulatory attention to clarify the rules of the game. The current regulatory framework lags behind the intentions of the law, and therefore needs urgent attention.

It is recognized by the new strategy and policy that strengthening of the powers of the regulator, IRSL, is a priority both for effecting reform the tariff regime and providing the private sector with the confidence necessary for advancing on a route towards participation in the power sector.

In order to assure finance for the many investments necessary in the energy and water sectors, the Government will set up a special fund. The fund will receive the revenue from 100 000 barrels of oil per day, but could also receive revenue from taxes and concession fees. An administrative body to be in charge of fund management was nominated by the Cabinet in March 2012. The detailed rules for use of the fund remain to be decided.

³ **PROGRAMME DESCRIPTION AND EXECUTION**

3.1 Selection of programme areas

The letter³ where MI AT. A requests assistance in the fields of electricity and water, specifies a number of potential areas of cooperation:

1. Drawing up regulations regarding the utilisation of renewable energy.
2. Assistance in the preparation of projects eligible for the clean development mechanism (CDM).
3. Training technical personnel, preferably in Spanish- or Portuguese-speaking countries.
4. Drawing up studies of the hydrographic basins.
5. Cooperation between Angolan and Norwegian universities with a view¹ to the development of Masters courses in energy.
6. Studies on energy efficiency and energy saving.

The Fact-Finding Mission in May 2011 collected further information on these areas. Based on discussions over e-mail and telephone, it was agreed to focus on the areas Renewable Energy and Rural Electrification, Energy Efficiency, and Support to the National Water Resources Directorate (DNHR). These areas were selected in terms of priority for Angola, relevance for N VE's capabilities and potential for rapid start-up.

A second mission from WE visited Angola in January 2012 for discussing cooperation in these three areas with relevant staff at MINE A and EDF.L and draw up the outline of a cooperation

3 Letter to the Royal Norwegian Embassy in Luanda from Angola's Ministry of Energy and Water dated 28 February 2011.

programme. The work with detailing the cooperation has since continued with discussion over email. The planned activities are further described in section 3.5.

The CDM is currently under redesign to reduce transaction costs and facilitate implementation in least developed countries. These issues, as well as the future as such of the CDM, are under negotiation between the parties to the Kyoto protocol. Since these negotiations will be going on for most of 2012, it was agreed that assistance related to CDM is better left until the future of this funding mechanism has been clarified. Such assistance is hence not included in the programme, but may be reconsidered for a later phase.

Cooperation between Angolan and Norwegian universities is an issue that will require time to develop. Norwegian universities have good capabilities in the requested fields, but the language barrier may prove an important practical problem and it is unclear if the most indicated Norwegian actors have capacity at the moment to engage heavily in this. Depending on the training needs identified, training models designed to handle the language problems may be tested within the context of the current programme, and based on the experiences a proposal for university to university cooperation may be developed for a later phase.

3.2 Current MINEA resources relevant for the Programme

MINEA is an institution that has a comprehensive organization (see appendix I) covering all its areas of responsibility. With regard to the proposed programme, the following units deserve to be highlighted:

1. The Office for International Cooperation: This unit has an overall responsibility for organizing and coordinating international cooperation. The Office has six professional staff (4 women) and will be the principal counterpart for the proposed programme.
2. The National Directorate for Electrification: This directorate is responsible for formulating policy for and promoting electrification of the country, that is extending services to new areas. The directorate has 9 professional staff, of which two are women.
3. The National Directorate for Renewable Energy: This directorate is responsible for formulating policy for and promoting the use of renewable energy for covering Angola's need for energy. It hence has an important role in bringing in new technologies to respond to the population's needs. The directorate has a professional staff of 10, of which 6 are women.
4. The National Directorate for Electrical Energy: This directorate is responsible for formulating policy for electrical energy, including the efficient use of such energy. It will hence have an important role, together with EDEL, in the component for Energy Efficiency. The directorate has a professional staff of 16, of which 7 are women.
5. The National Directorate for Water Resources: This directorate is responsible for formulating policy for the management of Angola's water resources, including the gathering, analysis and disbursement of hydrological data from the many rivers of the country, as well as management of the water resources and hydraulic works in the basins, including dam safety. It counts on a professional staff of 11, of which 3 are women.

All the involved directorates will have to provide a technical counterpart for the activity they are involved in. As mentioned, the institutional framework for the water sector is currently under reform, and the new National Institute for Water Resources will complement the picture when it is staffed.

It is expected that during the work a need to revise or update the regulatory framework may arise. Interaction with the regulator, Instituto Regulador do Sector Electrico (IRSE) will therefore be called upon during the course of work.

IRSE, which is integrated in MIXEA, is the entity that regulates the power sector in Angola. Its powers and competences derive from the General Law of Electricity and covers regulation of the production, transportation, distribution and marketing of power in the Public Electric System (Sistema Electrico Publico). IRSE also regulates the commercial relationship between this system and the agents not subject to it. IRSE does not grant concessions and/or licences. This is the responsibility of the Council of Ministers and the local authorities, respectively.

EDEE, the utility in Luanda, will be involved together with MIXEA in Activity 2:Energy Efficiency. It is mainly the department of planning and engineering that will participate in the work.

3.3 NVE as a development partner to MINEA

NVE is the Norwegian Governments principal authority for public administration of non-fossil energy and water resources. The directorate is organized in departments for Energy, Hydrology, Licensing, and Landslides and Watercourses.

The Energy Department is responsible for regulation and supervision of the national energy system, including generation, transmission and distribution, sales and use of energy. The department continuously monitors and analyses the technical, economic and commercial state of affairs, and develops the regulatory framework for the sector, including the supervision of most incentive systems for directing the development of the energy supply system.

The department counts on about a 100 staff, many with international experience, and is organized in sections for analysis, emergency preparedness, energy use, power markets, power networks, pricing of network services, energy resources, renewable energy and economic regulation of the sector.

In relation to the proposed activities, it is the sections for energy use, energy resources and economic regulation that will provide expertise to MIXEA:

- The section for energy use has experience from 25 years work with monitoring and analysis of the end use of energy in society and with use of incentive systems for changing end user behavior. The section will provide key expertise for the design of data collection campaigns on energy use, for analyzing survey results and for assessing the different options for effecting energy efficiency.
- The section for energy resources has thorough experience from mapping and analysis of different energy resources, and assessment of the socio-economic benefits associated with different supply options. The section has pioneered several pilot installations for off-grid power supply.
- The section for economic regulation has the responsibility for analysis of the performance of grid companies and may thus be valuable for assessing performance and proposing improvements in EDEL's operations.

The Licensing Department has experience from all aspects of licensing of energy installations. The staff of the department has extensive international experience and is hence familiar with different regulatory systems. Together with NVE's legal department, this department has a key role in assisting Angola with developing new regulations.

The department of hydrology is the oldest part of NVE, with roots well into the 19th century. It has responsibility for collecting, analyzing and communicating information on the hydrologic cycle in Norway. The department is one of the principal Norwegian research environments in hydrology, and the staff, many of which has extensive international experience, will play a key role in advising the newly established 1NARH.

Finally the international department in NVE counts on staff members fluent in Portuguese, with long experience in use of renewable energy in developing countries and with on- and off-grid rural electrification.

3.4 DEVELOPMENT OBJECTIVE OF THE PROGRAMME

The overall development objective is *to develop the country's renewable energy resources for human development and to promote efficient use of electricity*. It is a goal that the private sector shall be involved in the future development of renewable energy resources.

The Technical assistance aims at achieving the objectives through increasing the capacity and knowledge base within MINEA and its daughter institutions in the identified areas.

3.5 Programme activities

The programme is divided in four main activities:

- Activity 1: Renewable Energy & Rural Electrification**
- Activity 2: Energy Efficiency**
- Activity 3: Support to DNHR & National Water Resources Institute**
- Activity 4: Coordination by NVE, Backstopping and Training**

The activities, further subdivided into tasks, are described in detail below.

Activity 1: Renewable Energy & Rural Electrification

Objective: To build capacity in MINEA's Directorates of Renewable Energy and Electrification to develop, plan and implement programmes for electrification of rural areas using renewable energy sources.

The Activity comprises the following tasks:

- Task 7.7. Identification of suitable delivery mechanism⁴s for renewable energy solutions in rural areas
- Task 1.2. Develop a strategy and action plan for rural electrification
- Task 1.3. Review of the current legal sector framework
- Task 1.4. Formulation of pilot projects for testing implementation models

The Activity supports the Angolan priorities of expanding electrification and promoting the use of renewable energy technologies in isolated systems (see section 2.6) through developing institutional capacity to develop, plan and implement interventions.

⁴ Meaning the logistics, business models and financing mechanisms involved in providing the population with the energy services.

Background

This activity supports the development objective by developing MINEA's capacity to implement programmes for rural electrification based on use of renewable energy. In this context the term "programme" should be taken to represent a context of regulations, development policy and objectives, incentive structures and public funding to achieve a specific goal, not a collection of investment projects.

Access to electricity in rural areas in Angola is presently very inadequate. This is partly due to the past internal conflict, but also to the typical demographic situation in Africa, which makes it exceedingly expensive to service large segments of the population through conventional grid based solutions. Angola is presently starting up activities for piloting off-grid energy solutions in rural areas.

The obvious solutions for the rural population are to rely on diesel or petrol generators, if they can afford them, to acquire PV systems, or to use kerosene and batteries of different kinds. Use of gensets implies very high operating cost with today's oil prices, and there are so far very few businesses offering PV technology in Angola. Relying on batteries implies an expensive solution condemning the user to eternal energy starvation.

The fast development of more energy efficient electrical appliances and the strong drop in cost for PV technology in recent years have made this a strong candidate for improving access to modern energy services in sectors like health, education, administration and in households and small businesses. Locally produced biofuel solutions have also been tested in large parts of Africa and shown good results for energizing local development.

Several African countries have significant experience with programmes for disseminating off-grid technologies and for organising distribution grids in rural areas. Such programmes offer valuable experience to be shared with interested governments.

In the last few years the private sector has developed a number of innovative business models for making it viable to deliver energy services to the ordinary rural populations, and a number of pilot, demonstration and scaling-up efforts are in different stages of implementation. The most successful of these business models have a potential for transforming the market for rural energy services.

In order to choose the most effective and efficient methods for reaching the rural population, the policy makers must be well informed about lessons learned and new initiatives, and the actors behind them. This activity therefore emphasises the need to inform the relevant departments in MINEA and to guide the integration of the information into a strategy and policy for rural electrification in Angola.

At present no significant donor activity has been identified. JICA has financed a feasibility study for a mini-hydro project, wind measurements are taken in the south-west with Spanish assistance, and IFC expresses an interest for the sector, specifically wanting to provide resident advisers, but without any power sector programmes being initiated yet.

Task 1.1: Identification of suitable delivery mechanisms for renewable energy solutions in rural areas Whereas there are technologies available for meeting the energy needs of rural populations, there are a number of challenges associated with dissemination of such technologies:

- Access to technologies must be rolled out on a wide scale in order to reach a large number of people.
- Maintenance and repair services must be available close to the end-users.

- In the case of the domestic and commercial sectors, the cost of deploying the technologies must be within reach of the rural population's means. In the case of public sectors, the sustainability of the systems over time must be ensured.

A number of countries, in Africa and on other continents, have implemented large scale programmes for dissemination of off-grid energy solutions, both for use in institutions and for private use. A considerable source of experience with technologies, delivery mechanisms and challenges with maintenance and repair issues thus exist, and should be drawn from before starting a wide scale programme for rural electrification based on renewable energy in Angola.

This task aims at:

1. Collecting evidence from selected countries through study visits to countries like Mozambique, Tanzania, Kenya, Ghana, Laos, etc.
2. Analysing these experiences in light of Angolan circumstances in terms of culture, economy, local governance, technical capacity, existing businesses and business relationships, etc.
3. Recommend delivery mechanisms suitable for different priority sectors like health, education, administration, domestic and commercial.

Task 1.2: Develop a strategy and action plan for rural electrification

Based on the results from the previous tasks, a strategy and action plan for scaling up use of renewable energy for rural electrification shall be developed. This work will mainly be performed in-house in MINEA with process support from NVE experts.

Task 1.3: Review and development of legal framework

It is likely that the delivery mechanism identified in Task 1.1 and the strategy developed in Task 1.2 will call for revision of existing and development of new regulations in the areas of small scale generation, rights to renewable energy resources, access to transmission systems, construction and operation of distribution systems and commercialisation of power and financial incentive structures for renewable energy and rural electrification.

This task will provide support to IRSE to respond to these needs.

Task 1.4: Formulation of pilot projects for testing implementation models

Based on the delivery mechanism identified as suitable in Task 1.1 and the strategy developed in Task 1.2, scalable pilot projects for sustainable dissemination of rural energy solutions based on renewable energy are to be formulated and presented for financing. Consulting services are foreseen for fact-finding.

The pilot projects are assumed to be financed through Angolan funds or development assistance outside of this programme. The actual implementation will not take place in the time frame of this cooperation programme.

Activity 2: Energy Efficiency

Objective: To reduce wasteful use of electricity in Luanda.

The Activity comprises the following tasks:

- Task 2.1. Building an understanding of energy consumption in the domestic and commercial sectors in MINEA and EDEL

Task 2.2. Planning and implementing energy efficiency campaigns in domestic and commercial sectors in Luanda.

Task 2.3. Strategy and action plan for energy efficiency in urban areas

Task 2.4. Accelerated introduction of prepayment meters in Luanda

The Activity contributes to the Angolan priority (see section 2.6) of assuring the economic and financial sustainability of the power sector, by reducing technical and commercial losses. The outcomes of the project will also contribute to reducing the cost of supply, for the same reasons.

Background

EDEL experiences significant problems with overloading of distribution transformers in Luanda. At the same time, energy supply is currently inadequate to cover demand, leading to the need to periodically disconnect areas in a rotating manner (*brown-outs*).

Out of about 400 000 consumers, only some 70 000 are currently metered. The ones that are not metered pay a fixed charge, independent of actual consumption. The unmetered customers therefore have no economic incentive to economise on their use of electricity. In addition, they pay the same fee irrespective of whether they have been without power for a considerable period of the month. The lack of meters therefore creates dissatisfaction among the users, who typically responds by consuming as much as possible when power is available.

EDEL has a pilot project for installing pre-payment meters and in January 2012 had almost 10 000 meters installed. The experiences are generally positive for both EDEL, who notices that loads go down in areas where the meters are installed, and for the consumer, who now pays for what he or she consumes, no more, no less.

EDEL has considered launching an efficient lighting campaign, exchanging Compact Fluorescent Light-bulbs (CFL-bulbs) for conventional incandescent ones. EDEL has discussed such an initiative with MINEA. Such campaigns have been tested in a number of countries, industrialized and developing, over a 15 year period.

It is the opinion of NVE that while an efficient lighting campaign may have some impact in the short term (until the bulbs break down), it is not likely to effect behavioural change in the current setting with poor quality supply and unmetered consumption. Campaigns in general, unless accompanied by economic subsidies, are also not very effective at effecting change, but can be important for communicating the justification for government (or corporate) policy.

A fundamental prerequisite for changing the attitude to power consumption is that there is a clear correlation between consumption of electricity and the bill the customer pays. Only then will it be possible to effect behavioural change among consumers. However, designing effective campaigns also presupposes that the authorities (or other entities launching the campaign) are aware of the actual use of energy and understand the consumers' motivation for acting as they do. Changing people's attitude therefore requires a good understanding of energy consumption in different sectors.

Whereas the first priority should be to install meters at all consumers, retrofitting about 330 000 consumers represents an investment of the order of 200 million \OK. It is thus a major investment, that will have to be financed off the balance sheet of EDEL. It is likely that the net benefit from metering all consumer is actually positive, but in order to justify and finance the investment, facts about consumption and costs to society and EDEL must be brought on the table.

This activity aims at developing a fact based understanding of energy consumption, test campaigns for effecting a change and document the case for investing heavily in installing meters

at all consumers. The work will significantly advance the understanding in the energy authorities of energy consumption, as well as producing a funding proposal for accelerated introduction of prepayment meters.

Task 2.1: Building an understanding in MINEA and EDEL of energy consumption in the domestic and commercial sectors

In order to develop an adequate understanding of how electricity is consumed and why, it is necessary to collect facts on power consumption in the domestic and commercial sectors, those being by far the most important in Luanda. To that end a survey will be carried out in Luanda. The survey must cover unmetered consumers and consumers with conventional and prepayment meters in all sectors. The activities will comprise:

- Planning the survey
- Developing survey tools
- Testing survey tools
- Implementing survey
- Consolidating data and analysis of results

The work will be controlled from MINEA, but the survey will be carried out in close cooperation with EDEL. The output of the survey will, in addition to provide a general understanding of power consumption, serve to substantiate the socio-economic impact of unmetered consumption. Local consultants will be hired for carrying out the survey.

Task 2.2: Planning and implementing energy efficiency campaigns in domestic and commercial sectors in Luanda.

Based on the results from Task 2.1, a few targeted energy efficiency campaigns will be tested in the domestic and commercial sectors in Luanda. It is premature to indicate either target groups or focus of the campaigns at this moment, since this will depend on the outcome of the Task 2.1, but activities will comprise, but not necessarily be limited to:

- Selecting objective for the campaign(s)
- Selecting target groups
- Carry out baseline study
- Designing campaign
- Testing campaign tools
- Implementing campaign
- Measure impact

Local consultants will be hired for implementation of the campaign(s).

Task 2.3: Develop a strategy and action plan for energy efficiency in urban areas

Based on the experiences from Task 2.1 and Task 2.2, a strategy and action plan for energy efficiency in urban areas shall be developed.

Task 2.4: Accelerated introduction of pre-payment meters in Luanda

The most important action for reducing wasteful use of electricity in Luanda is to equip the consumers with meters, preferably pre-payment meters, and the sooner, the better. EDEL is in the process of doing so, but given the size of the task, with about 330 000 meters needed, the current pace is inadequately slow. An accelerated pace will need significant financing, either from the Government of Angola or a development partner.

This task will establish the socio-economic case for investing in meters and prepare an investment project for financing.

Activity 3: Support to DNHR & National Water Resources Institute

Objective: To build capacity in DNHR/INARH to manage the hydrometrie network and use hydrologic data for the formulation of policy.

The Activity comprises the following tasks:

- Task 3.1. Support in establishment of National Institute of Water Resources
- Task 3.2. Support in Rehabilitation of Hydrometrie Stations
- Task 3.3. Support in Planning and Management of Basin Studies
- Task 3.4. Capacity Building & Training

The Activity will contribute to the Angolan priority of increasing access in grid based systems (see section 2.6) by backing generation projects with hydrometrie data. However, it will also contribute to better utilisation of water for other purposes, like potable water and irrigation.

Background

The previously mentioned National Institute of Water Resources will have to start from zero - there is very little done on water resources so far in Angola after the colonial time. However, given the importance of Angola as a source of water for the whole region, it is very important that Angola has a well informed water policy, both for its own development and for the water security of some of its neighbouring countries.

The Ministry is currently carrying out an Integrated Water Resources Master Plan (IWRM) which is partly financed By a World Bank loan. This project, Water Sector Institutional Development Project (PDISA), includes components of Water Resources Management; Hydrometrie Stations Rehabilitation; Training; Integrated Water Resources Master Plans for the Cuanza basin and for a group of small river basins in the coastal area of the Benguela province. This latter group of river basins includes Cubal da Hanha, Catumbela, Cavaco and Coporolo. Consulting studies financed by other sources are in progress for the Okavanga and the Zambezi basins which are both shared international transboundary basins.

The World Bank loan provides for the upgrading of some 189 of the country's 200 hydrometrie stations within a time frame of 36 months. Angola is refurbishing 38 stations with its own funds. This latter work has been contracted and will start in 2012.

Task 3.1: Support in establishment of National Institute of Water Resources

The country is divided into 4 regions and each region will have its own regional office under the new National Water Resources Institute: the Northern, Western, Eastern and Southern regions. Each regional office will be staffed as follows:

- Director
- Hydrologist
- Civil Engineer
- Water Quality Expert
- Topographer
- Hvdrometrists

- Ancillary staff, drivers etc.

The newly recruited staff of the regional offices will need training in installation, operation and maintenance of the hydrometric gauging stations and other water resources aspects. Support will also be provided to the development of routines to update, maintain and operate the hydrological database.

There is also a need to establish a new hydrological database system with a new data server and database and other software which is included in the programme. Currently the DNHR is using the HYDATA software. However, they plan to migrate to the HYDSTRA software in order to make the system compatible with the hydrometric networks of other SADC countries. It is expected that Angola will be able to finance the migration to the HYDSTRA platform through the SADC-HYCOS project. If this should prove not to be the case, a reallocation of funds in this activity may be considered to allow financing of the software.

Training will be one of the most important aspects of the cooperation. They will need to populate the Institute with additional staff who will need training in all aspects of hydrology and water resources management.

Task 3.2 Support in Rehabilitation of Hydrometric Stations

Angola aims at rehabilitating some 50 hydrometric stations per year under financing arrangements with external and own funds. In addition, a small allowance has been included in the Programme for rehabilitation of a few key stations in basins which are important for the development of clean renewable energy hydropower projects.

There is no training of hydrometrics in the World Bank loan, and it is proposed to fill this gap with the current programme. This activity hence focuses on developing the capacity of the INARH as regards specification of needs, installation, operation and maintenance for stations.

For the hydrometric stations rehabilitation the needs of each station are different according to the local conditions. The general plan is to establish them with Photovoltaic power supplies and remote satellite transfer of measurement data etc. Station rehabilitation involves four main steps:

1. Assessment of condition of each station;
2. Make rehabilitation plan for each station;
3. Prepare an area plan for rehabilitation;
4. Procurement, construction and installation of equipment.

Training in all of the above steps is essential to ensure the sustainability of the network, which again will secure the necessary data for development of the country's clean energy hydropower resources.

With respect to budget estimates for new stations, in remote areas/strategic areas with automatic data collection and transfer a budget of some 25,000-30,000 USD per station is required. For conventional stations the budget is some USD 15,000.- depending on the individual station and the local conditions.

Task 3,3 Support in Planning and Management of Basin Studies

The energy sector in Angola has plans for developing the hydropower resources of the country but they do not have an integrated water resources master plan to assist them. The basis for such a plan are detailed basin studies. The costs per basin study are of the order of 3 million USD, with a time frame of about 30 months per basin.

The new National Water Resources Institute will be responsible for the 77 river basins in Angola and there are plans to carry out Integrated Water Resources Management Master Plan studies for 22 of the river basins by 2016. As mentioned above in this section, the partly World Bank loan- financed PDISA project has started this work.

There is a need for further financing of studies, which is, however, beyond the scope of the present programme. Support to DNHR/INHR is instead included for project planning and management and procurement support for the basin studies. Procurement of consulting services for master plans will be according to the new procurement laws of the Ministry of Finance.

Task 3.4 Capacity Building & Training

The Directorate is today understaffed and once the Institute is established there will be a need for further increasing staffing levels, (see organogram for the new Institute of Water Resources Management, INARH). INARH will require Technical Assistance in its first 3 to 5 years of activities.

The following capacity building and training is envisaged under the Programme :

- Training of DNHR/INARH staff in hydrometrics and station construction, operation and maintenance
- Training of DNHR/ INARH staff in the re-establishment of the Data Server and facilities
- Training of DNHR/ INARH staff in hydrological data processing, analysis and reporting
- Training of DNHR/ INARH staff in Integrated Water Resources Management and related fields including dam safety.
- Training in Project Planning & Management (basin studies)
- Training of staff in the 4 regional offices under the new Institute

Activity 4: Coordination by NVE, Backstopping and Training

Objective: To ensure timely implementation of the programme, efficient use of resources and good quality results.

The activity comprises the following tasks:

- Task 4.1. Programme administration
- Task 4.2. Training and study visits
- Task 4.3. Backstopping by NVE

Task 4.7 Programme administration

This task includes the general programme administration, such as planning, procurement and recruiting, reporting and follow up on progress.

Task 4.2 Training and study visits

The budget for this task provides the means for funding training needs not covered in Task 1.1 and Task 3.4. The foreseen training modalities are workshops, short term courses and study visits. The activity will start with a training needs assessment among MINEA staff.

Task 4.3 Backstopping by NVE

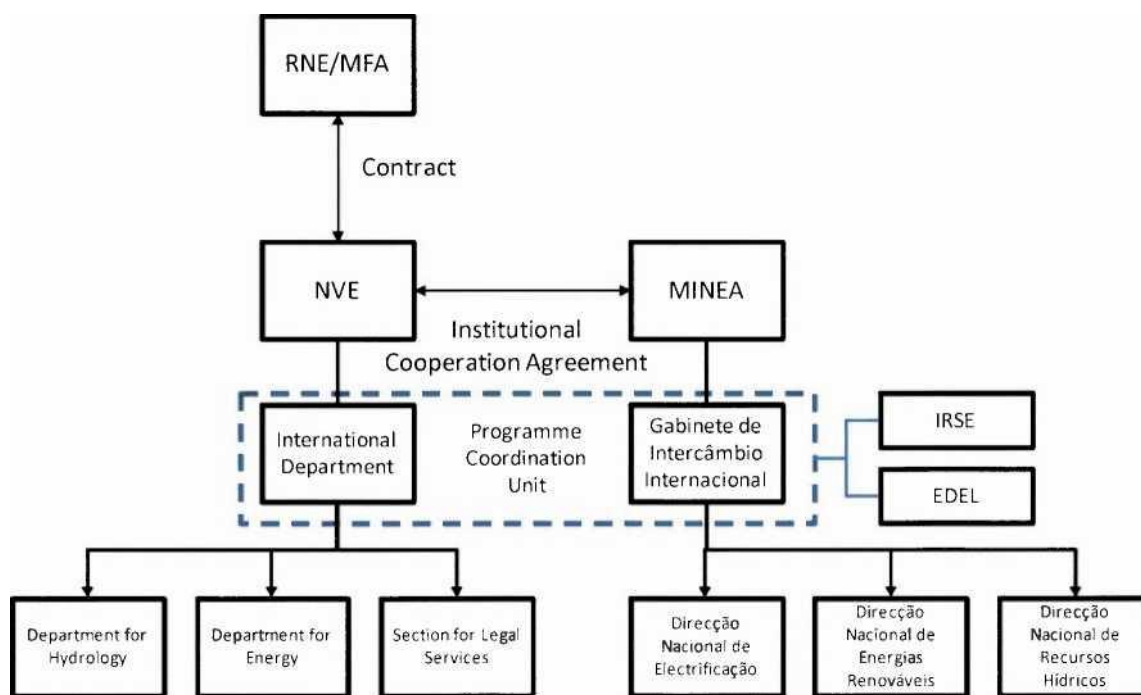
The budget for this task provides the means for mobilizing expert resources at NVE to respond to any needs that may arise during the progress of the programme.

4 ARRANGEMENT FOR MANAGEMENT AND COORDINATION

The following agreements will govern the implementation of the programme:

- MINEA will enter into a Cooperation Agreement with NVE for execution of the programme, where NVE will undertake to support the activities as specified in section 3.5 of this Programme Document for the Technical Assistance.
- The Royal Norwegian Embassy in Luanda will enter into a Contract with NVE for funding of the programme. The embassy will make payments for activities and services carried out according to the Terms of Reference directly to NVE based on invoices for the services. Invoices shall be approved by MINEA's Office of International Cooperation.
- MINEA will be the executing agency of the Programme. The agreements between NVE and MINEA and between NVE and RNE shall be back-to-back and based on the same services provided by NVE under the Technical assistance Programme.

The relationships described above are shown in the organogram below.



- | | |
|----------|---|
| RNE/MFA: | Royal Norwegian Embassy, Luanda/Ministry of Foreign Affairs, Norway |
| MINEA: | Ministry of Energy and Water, Angola |
| NVE: | Norwegian Water Resources and Energy Directorate |
| EDEL: | Electricidade de Luanda |
| IRSE: | Instituto Regulador do Sector Electrico |

The coordination by MINEA will be handled by the Office of International Cooperation and at NVE the coordination will be handled by the International Section. MINEA and NVE will both nominate a coordinator. Together they will form a Programme Coordination Unit.

IRSE, the Angolan regulator, and EDEL, the utility in Luanda will be involved in some project activities. Their work will also be coordinated through the Cabinet for International Exchange, although they are not organisationally integrated in MINEA.

The NVE Coordinator will communicate with the International Coordination Office of MINEA and the NVE project personnel in the daily coordination of activities. Counterparts in the technical departments taking part in activities will be appointed, and they will communicate directly with technical staff in NVE.

Based on progress and circumstances, the various tasks and activities will be modified from time to time and budgets re-estimated. Such changes will be reflected in the quarterly progress reports to be prepared by the NVE coordinator. NVE and MINEA will jointly prepare annual reports to RNE/MFA and both will participate in the Annual Meetings. Following recommendations from persons involved in the previous cooperation with Angola, the budget provides for frequent visits to Angola, 6 per year.

The International Section of NVE will handle the project accounts and carry out first-hand checking of all reimbursable costs, and will prepare the invoices to RNE/MFA for work carried out under all activities of the programme. Invoices will be approved by MINEA prior to payment by the RNE/MFA. The rationale for this payment routine is the considerable administrative difficulties that proved to result from the more traditional arrangement in the previous cooperation between NVE and MINEA, where funds were channelled through MINEA. There is no concern regarding MINEA's capacity to handle funds, nor is it an objective of this programme to work with such capacity. A more practicable arrangement should therefore be satisfactory. It is also the opinion of MINEA that the arrangement in the previous cooperation was not in compliance with Angolan law.

The head of the International Section of NVE will sign all important documents and exert top-level control of the work of NVE.

5 ARRANGEMENT FOR REPORTING

The following reports shall be prepared and submitted.

NVE will submit brief quarterly progress reports in connection with invoicing. The progress reports shall include - but not be limited to - the following information:

- A description of actual outputs compared to planned outputs (as defined in the work plans),
- a brief summary of the use of funds compared to budget,
- an explanation of major deviations from plans, schedule and costs, including mitigating actions.

A work plan and budget shall be submitted annually within three weeks before the Annual Meeting. The work plan shall specify planned outputs and time schedules for the next 12 months period with an updated work plan for the whole Programme period. The work plan shall further include:

- an assessment of the efficiency of the Programme (how efficiently resources/ inputs are converted into outputs),
- an assessment of problems and risks (internal or external to the Programme) that may affect the success of the Programme,

- an assessment of the need for adjustments to activity plans and/or inputs and outputs, including actions for risk mitigation,

The budget for the coming 12 month period shall show planned expenditures as well as the updated budget for the whole Programme period.

The annual financial statement for the Programme shall be submitted within three weeks before the Annual Meeting. The statement shall consist of:

- A statement showing income and expenditures for the previous period, structured as and compared to approved budgets for such previous period as well as accumulated for the Agreement period.
- Relevant notes to the above mentioned statements including a description of the accounting policies used and any other explanatory material necessary for transparent financial reporting of the Programme.

The financial statement and budget shall give complete and detailed information on the financing of the Programme.

A final report shall be submitted within three months after the completion of the Programme.

The final report shall include:

- the topics listed for progress reports above for the whole Agreement period,
- the topics listed for financial statements above for the whole Agreement period,
- an assessment of the effectiveness of the Programme, i.e. the extent to which the Purpose has been achieved,
- an assessment of outcome (as far as possible), i.e. the changes and effects positive or negative, planned and unforeseen of the Programme seen in relation to target groups and others who are affected,
- an assessment of sustainability of the Programme, i.e. an assessment of the extent to which the positive effects of the Programme will still continue after the external assistance has been concluded,
- a summary of main "lessons learned".

NVE has the responsibility to prepare the quarterly reports and annual financial statements, whereas MINEA has the responsibility for preparing the work plan and budget and the final report, with assistance from NVE.

6 PROCEDURES

For all areas and activities, funds will be held by the RNE, Luanda, and disbursed to NVE according to invoices of expenses and fees incurred in the execution of the activities.

NVE will prepare invoices for its work and costs incurred under all activities and will submit these quarterly to the Royal Norwegian Embassy in Luanda who will effect payment of the invoices. A copy of all invoices will be forwarded to MINEA for information and approval. If MINEA has not provided a comment within 3 weeks, it shall be considered that the invoice is approved.

The work to be carried out by NVE will primarily be based on its in-house expertise. Should relevant resources not be available within NVE, external expertise may be engaged in consultations with MINEA. It is also foreseen to organise courses on specific subjects, like public procurement, or to send participants to available courses.

Procurement of any equipment or services required for the project will follow the public procurement rules of Norway.

The Royal Norwegian Embassy in Luanda shall approve the following beforehand:

- purchase of equipment with a value over USD 1000;
- contracting of external expertise and consultants with a value over USD 10 000;
- any reallocation of funds between activities, use of contingency funds or major deviations of the work plan between the Annual Meetings.

NVE will carry out cost control to check that budgets and contracts are followed. The general accounts of NVE are audited by the Auditor General of Norway according to Norwegian Government procedures. NVE will assist MINEA in preparing formal reports to the Royal Norwegian Embassy, Luanda / Ministry of Foreign Affairs, Norway in preparation for the Annual Meetings.

7 TIME SCHEDULE AND BUDGET

The programme is of 4 years duration, expected to start by January 2013 and extends until the end of 36 months.

The budget is based on estimates made by MINEA and NVE (using the present fee rates for NVE experts as defined in NVE's framework agreement with NORAD).

Summary of budget (NOK 1000):

Activity	Y2013	Y2014	Y2015	All years
Activity 1: Renewable Energy & Rural Electrification	2 034	2 008	1 631	5 673
Activity 2: Energy Efficiency	2 311	1 381	1 918	5 609
Activity 3: Support to DNHR & National Water Resources Institute	1 244	1 873	1 540	4 657
Activity 4: Coordination by NVE, Backstopping and Training	2 099	1 890	1 890	5 879
Sum activities	7 687	7 151	6 979	21 818
Contingency	313	849	1 020	2 182
Total	8 000	8 000	8 000	24 000

A total of 10% Contingency has been included in the budget. It has been allocated with increasing share over time, since the uncertainty increases as the time to implementation increases. Sums in the table may not add up exactly due to rounding errors.

Appendix II gives details regarding the time schedule and budget. Figures may differ marginally from those above due to rounding errors. It should be noted that the cost estimates for the different tasks within each Activity are tentative. Changes in tasks within each Activity and distribution of budgets between activities should be a matter between MINEA and NVE, whereas changes in the overall budget and other significant modifications shall be consulted and agreed with RNE, Luanda/MFA in accordance with procedures to be set out in the Project Agreement.

8 PROGRAMME GOAL HIERARCHY

According to the recommendations of Norad for adequate management of assistance programmes, a detailed results based management system is proposed based on the work from the Project Planning Workshops and meetings held in Luanda in January 2012. The system is defined in the Performance Measurement Frameworks below for each area at the Impact, Outcome and Output levels.

Wherever possible, baselines, indicators and means of verification are based on existing systems in the institutions in Angola, in order to eliminate duplication of work.



Scene from the programme planning workshop at MINEA in Luanda in January 2012

In the following, the programme goal hierarchy as identified in the Logical Framework Analysis from the project planning workshop and discussion meetings held in Luanda on 23 - 27 January 2012 are given for each of the Programme Activities.

Activity 1: Renewable Energy & Rural Electrification

Objective: To build capacity in MINEA's Directorates of Renewable Energy and Electrification to develop, plan and implement programmes for electrification of rural areas using renewable energy sources.

<p>Impact (5 years post)</p> <p>Renewable energy technologies available to the population and public services in rural areas.</p> <p>Reduced CO₂- emissions from gen-sets.</p>	<p>Indicators</p> <p>5% increase in population with access to modern energy services.</p> <p>15% of off-grid public services* equipped with RE solution.</p> <p>Off-grid RE supply contributing to added value processes in 50 villages in rural areas.</p> <p>Gen-sets not used on a daily basis in RE intervention areas.</p>	
<p>Outcome</p> <p>Pilot programmes for dissemination of renewable energy solutions implemented and replicated.</p> <p>Regulator's framework adapted to needs of dissemination programmes.</p>	<p>Indicators</p> <p>Pilot programmes funded and implemented.</p> <p>Plans for replication adopted and included in budget.</p> <p>Regulatory barriers to programmes absent.</p>	<p>Assumptions</p> <p>Adequate political support given.</p> <p>Adequate economic ability of Angola to fund implementation.</p>
<p>Outputs.</p> <p>Comprehensive strategy and action plan for use of renewable energy solutions in rural areas.</p> <p>Necessary amendments to legal framework.</p>	<p>Indicators</p> <p>Outputs</p>	<p>Assumptions</p> <p>Programme carried out according to plan.</p>
<p>Activities</p> <p>Task 1.1 <i>Identification of suitable delivery mechanisms for renewable energy solutions in rural areas.</i></p> <p>Task 1.2 <i>Develop a strategy and action plan for rural electrification.</i></p> <p>Task 1.3 <i>Review of the current legal sector framework</i></p> <p>Task 1.4 <i>Formulation of pilot projects for testing implementation models.</i></p>	<p>Inputs</p> <p>Funds</p> <p>Training</p> <p>Expertise</p> <p>MINE A staff's time</p>	

t Health facilities/ secondary schools/ administrative posts / police stations

Activity 2: _____ Energy Efficiency

Objective: To reduce wasteful use of electricity in Luanda.

<p>Impact (10 years post)</p> <p>Reduced waste of electricity in urban areas</p>	<p>Indicators</p> <p>Per consumer load for today's appliances significantly reduced. (Per consumer load may increase, due to more appliances being added). (Must be verified with surveys)</p>	
<p>Outcome</p> <p>Reduced power consumption in areas where meters are introduced. Better understanding of power consumption in the domestic and commercial sectors in MINEA and EDEL</p>	<p>Indicators</p> <p>15 - 25% reduction in peak power consumption at substation level in targeted urban supply points. Informed, fact based policy</p>	<p>Assumptions</p> <p>Adequate political support given. Adequate economic ability of Angola to fund implementation.</p>
<p>Outputs.</p> <p>An investment programme for pre-payment meters presented for funding. Energy efficiency campaign(s) implemented. Energy efficiency strategy and action plan.</p>	<p>Indicators</p> <p>Outputs</p>	<p>Assumptions</p> <p>Programme carried out according to plan.</p>
<p>Activities</p> <p>Task 2.1 <i>Building an understanding of energy consumption in the domestic and commercial sectors in MINEA and EDEL</i></p> <p>Task 2.2 <i>Planning and implementing energy efficiency campaigns in domestic and commercial sectors in Luanda.</i></p> <p>Task 2.3 <i>Strategy and action plan for energy efficiency in urban areas</i></p> <p>Task 2.4 <i>Accelerated introduction of pre-payment meters in Luanda</i></p>	<p>Inputs</p> <p>Funds Expertise MINEA and EDEL staff's time</p>	

Activity 3: Support to DNHR & National Water Resources Institute

Objective: To build capacity in DNHR/INARH to manage the hydrometrie network and use hydrologic data for the formulation of policy

<p>Impact (5 years post)</p> <p>Improved access to design data for clean energy hydropower developments and other uses of water Resources.</p>	<p>Indicators</p> <p>Projects for sustainable exploitation of water resources initiated.</p>	
<p>Outcome</p> <p>Hydrometrie data base available and regularly kept up to date.</p>	<p>Indicators</p> <p>Outcome</p> <p>Other institutions using hydrometrie data.</p>	<p>Assumptions</p> <p>Government funding for National Water Resources Institute Budget and staff available</p>
<p>Outputs.</p> <p>National Institute of Water Resources staff competent.</p> <p>Hydrometrie network effectively managed.</p> <p>National Hydrometrie Data Base re-established</p>	<p>Indicators</p> <p>Adequate and qualified staffing of INARH</p> <p>Data regularly collected and processed.</p> <p>Data server running and hydrometrie data base secured</p>	<p>Assumptions</p> <p>Progress of basin studies and rehabilitation carried out by external actors/funders</p> <p>Government funding for National Water Resources Institute Budget and staff available</p>
<p>Activities</p> <p>Task 3.1 <i>Support in establishment of National Institute of Water Resources</i></p> <p>Task 3.2 <i>Support in Rehabilitation of Hydrometrie Stations</i></p> <p>Task 3.3 <i>Support in Planning and Management of Basin Studies</i></p> <p>Task 3.4 <i>Capacity Building & Training</i></p>	<p>Inputs</p> <p>Funds</p> <p>Training</p> <p>Expertise</p> <p>MINE A staff's time</p>	

9 SUSTAINABILITY & RISK ASSESSMENT

During the planning process for the Programme a number of critical assumptions and risk factors, which might threaten the materialisation and sustainability of the intended outputs and outcomes, were identified. These factors are analysed and discussed below, and mitigating actions are proposed where feasible.

Table 1. Critical assumptions and risk factors relevant to the programme

<i>Risk</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Mitigating action</i>
<i>A. Inadequate political focus, resulting in absence of necessary decisions. Such a situation can derive from external factors driving the politicians' attention to more pressing matters or from inertia in a limited political institution.</i>	Low to medium	Mild to severe	An active involvement of the top levels of MINEA in programme activities, wherever suitable, is probably the best way to safeguard against this risk. If external factors force attention to other areas, it will be little that can be done except to scale down activities. In the case of a more limited problem, identifiable as one or several persons, the issue must be addressed through political channels. The political backing that the programme receives must be closely followed, and any signs of a problem will be a matter of discussion at the annual meetings, where mitigating actions and budget adaptations will be discussed. <i>The issue can be a fixed item on the agenda to assure its consideration.</i>
<i>B. Changes in top management in MINEA, leading to loss of political focus, or in the worst case political resistance.</i>	Low to medium	Mild to severe	Same as for A

<i>Risk</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Mitigating action</i>
<p>C. No funding for pilot projects.</p> <p>The programme is aimed <i>at</i> preparing the ground for investments. The investments themselves are not included. Full realization of all outcomes and impact requires investments to be financed, either from Angolan sources or development partners. Factors causing non-financing of well prepared proposals could be a general economic crisis in the country or lacking focus on rural electrification, the vagaries of development partners' policies may also contain <i>a</i> risk element.</p>	Low	Medium	<p>It is beyond the power of the programme to handle the impact of a general economic crisis. As for lacking focus, Angola is setting up a fund for energy projects with a credible replenishment mechanism. Funds are likely to be available, if projects can be shown to deserve priority.</p> <p>Donor co-finance for pilots appears likely in today's policy context. However, even if rural energy and energy efficiency should fall out of fashion, Norway would in principle be able to see the initiative through, if desired.</p> <p>Even if it should prove difficult to achieve finance for the proposed investments at the end of the programme, this does not automatically mean that the capacity building has been lost. Projects may eventually be implemented.</p>
<p>D. Keeping trained staff. Loss of trained staff from <i>the</i> public <i>to</i> the private sector is a problem in many countries, and is indeed a quite normal procedure also in the developed world. However, if it becomes too pronounced <i>it</i> cripples the ability <i>of the</i> public sector to function.</p>	Low to medium	Low to medium	<p>Except for the new INARH, the capacity of the participating directorates appears adequate as a starting point. Staff members in M1NEA, most of which were recruited after the last cooperation between NVE and MIXEA, appear motivated and suitable for further capacity building. Some loss of staff is natural and must be accepted. The best safe guard in the short run is to provide a challenging learning experience. However, it is debatable whether most of the capacity' to be built has a significant market in the private sector in today's Angola.</p> <p>In the long run it is important to institutionalise knowledge in MINEA in the form of regulations, guidelines and policy, remaining even when people leave.</p>

<i>Risk</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Mitigating action</i>
<p>E. Inadequate capacity to implement. The design of the programme presupposes that some work is done in MIN'EA between visits of experts from WE.</p>	Medium	Medium	<p>It will be important to achieve a good start of activities, rising expectations and eagerness to participate. Achieving adequate political focus will also contribute to reducing this risk.</p> <p>The progress will be followed closely with frequent visits to Angola, and the work to be carried out between visits will be broken down to reasonable steps with clear results. This implementation strategy will discipline and commit both parties.</p>
<p>F. Inadequate private sector involvement. The private sector is indispensable for the implementation of future investments. If the private sector is unable or disinterested to engage in the investments, this will cripple the follow up of the programme.</p>	Low	Severe	<p>The private sector will be consulted at an early stage to map its interests and the challenges they perceive. If important barriers are identified, this may call for a reorientation of the activities. In such a case, the matter will have to be raised with the Embassy, together with proposed mitigating actions. Such actions must be tailored to the cause of the problem.</p>
<p>G. Inadequate regulatory framework not rectified.</p> <p>Programme activities do not primarily target institutional reform but practical actions and capacity in mid-rank professionals. However, it is expected there will arise a need to revise and complement the legal framework. If necessary regulations are not adopted, this may hamper implementation of follow-up investments.</p>	Low to medium	Medium	<p>The implementation of identified needs for new regulations depends largely on the political focus, and the risk is thus linked to that. For individual projects a work-around will often be possible, but this will of course not be adequate for assuring replication.</p> <p>The recent strategy emphasises the need for developing the regulatory framework, thus indicating a political focus on this issue.</p>

<i>Risk</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Mitigating action</i>
H. Poor acceptance of metering of consumption. Activity 2 is largely aimed at achieving wide-spread metering of consumption. If people resist installation of meters, this will affect the impact of the programme.	Low	Medium	The early experiences indicate that pre-payment meters are well received by consumers. The introduction of metering will be accompanied by awareness raising campaigns in Luanda. In the worst case it may be possible to shift focus to areas where electricity is introduced.
I. Inability to staff INARH. INARH has been established and management appointed. However, the successful development of the institution depends on adequate staffing of the institution.	Medium	Medium	Attracting people is not foreseen to be the largest problem, but retaining them as they gain experience can be a bigger one. Being a new institution, INARH will be more vulnerable to loss of staff than MINEA. It should be considered to connect training to obligations to stay at the job for a specified term.
J. Other programmes not taking off. Activity 3: counts on basin studies being carried out and relies on other programmes for rehabilitation of the hydrometrie network. If these programmes, which are already funded, are not implemented, it will materially change the premises for the activity.	Low	Medium to severe	Angola has contracted refurbishment of 38 hydrometrie stations with own funds, and two basin studies are currently under way. The risk for non-achievement of these are very low. A limited amount has been set aside for equipment such as database server or hydrometrie stations as a safeguard to ensure that there will be real hardware to connect to the capacity building efforts.
K. Inadequate funding of INARH. Inadequate funding will lead to a general crippling of the institution and its ability to benefit from support.	Low	Medium to severe	This issue is linked to political focus and will be followed by the annual meeting.
L. Friction in MINEA related to the reorganization of the water sector. A new institution like INARH may encounter resistance among other institutions that are supposed to hand over tasks and authority.	Low to medium	Low	The support to the water sector covers both MINEA and INARH, and may thus adapt to the situation as it develops. Most of the work is targeting the hydrometrie network, which is a clear responsibility of INARH. The impact of any institutional disagreement is thus not likely to impact much on Activity 3:.

<i>Risk</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Mitigating action</i>
<i>M. Corruption</i> has a potential for reducing effectiveness of cooperation by misallocating funds and in general directing attention to other things than the business at hand.	Low	Low	All funds will be used through NVE, with MIXEA approving the invoices <i>to</i> the embassy. Spending will <i>thus</i> be subject to <i>normal</i> budget <i>control</i> in <i>Norway</i> . Only 200 000 have been allocated for equipment, as a safeguard for the support to INAHR, the rest will be used on services.

Not all identified risk factors are relevant to all activities. The table below indicates which risks may impact on which activity.

<i>Activity</i>	<i>Relevant risk factors</i>
Activity 1: Renewable Energy & Rural Electrification	A, B, C, D, E, F, G, M
Activity 2: Energy Efficiency	A, B, C, E, G?, H, M
Activity 3: Support to DNHR & National Water Resources Institute	A, B, D, E, I, J, K, L, M

Activity 4: Coordination by NVE, Backstopping and Training will not be directly affected by the risk factors.

10 GENDER PROFILES & SUSTAINABLE DEVELOPMENT

Women fulfil important roles as managers and users of natural resources. They have the knowledge, experience and skills of fetching, handling and use of energy and water resources. However, no matter the level of responsibility, in many countries they often have limited opportunity to participate in the development process of this important resource for a variety of reasons.

Sustainable development and environmental protection require the involvement of women in economic and social development, equal opportunities and the full and equal participation of women and men as agents and beneficiaries. In Angola it is fully recognised that women's empowerment and full participation in all spheres of society are fundamental for a successful development path.



Scene from the programme planning workshop at MINEA, Luanda in January 2012

In Angola gender issues and the empowerment of women have a long-standing history which has resulted in women attaining positions of high status both in civil and public society. This is also reflected in the institutions of the electricity and water sector where equal opportunities are given to women and men. The identified key departments for the cooperation have a female share of the professional staff of 43%.

On a general level it is difficult to discern between the needs and priorities of women and men when it comes to electricity supply. The same is true for general aspects of generation, transmission and distribution. However, this changes as you deal with specific investment projects affecting specific households, or with issues directly related to end-user power consumption. At these levels men and women may be differently affected by measures and have different priorities.

Both for the work on energy solutions in rural areas and on the surveys of energy consumption in Luanda, specific consideration will be given to ensure the inclusion of views and experiences of both women and men, and activities will be designed to safeguard gender balance in project implementation. Through the surveys carried out in the context of the project, important new knowledge on gender perspectives in the energy sector may be generated. When selecting people for training, a balanced gender profile will be strived for under the constraint of need and merit.

APPENDICES:

- I. MINEA Organisation
- II. Planning sheets with time schedule and budget
- III Workshop Participants

Appendix I. MINEA - ORGANIZATION

Estrutura Orgânica .

1. A estrutura orgânica do Ministério da Energia e Aguas compreende os Órgãos de Apoio Instrumental, Serviços de Apoio Técnico, Serviços Executivos Centrais e Órgãos Consultivos.

2. São Órgãos de Apoio Instrumental:

- a) Gabinete do Ministro;
- b) Gabinete do Secretário de Estado da Energia;
- c) Gabinete do Secretário de Estado das Aguas;

3. São Serviços de Apoio Técnico:

- a) Secretaria Geral;
- b) Gabinete Jurídico;
- c) Gabinete de Estudos, Planeamento e Estatística;
- d) Gabinete de Inspeção;
- e) Gabinete de Intercâmbio Internacional;
- f) Centro de Documentação e Informação;
- g) Departamento de Tecnologias de Informação.

4. São Serviços Executivos Centrais:

- a) Direcção Nacional de Energia Eléctrica;
- b) Direcção Nacional de Electrificação;
- c) Direcção Nacional de Energias Renováveis;
- d) Direcção Nacional de Abastecimento de Água e Saneamento;
- e) Direcção Nacional de Recursos Hídricos.

5. São Órgãos Consultivos:

- a) Conselho Consultivo;
- b) Conselho Directivo;
- c) Conselho Técnico.

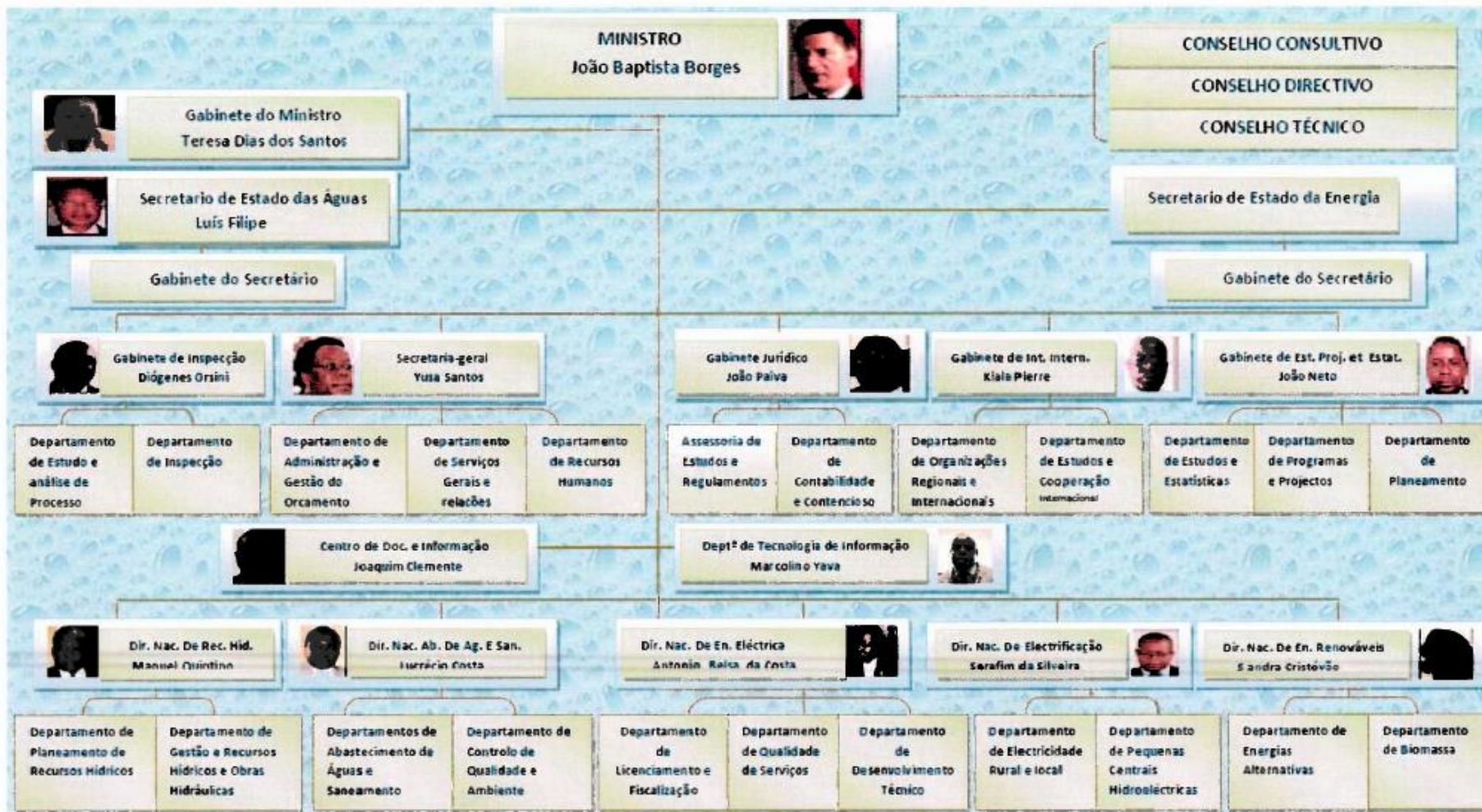
Tutela e Superintendência

O Ministério da Energia e Aguas tutela e superintende, nos termos da legislação em vigor, Empresas, Institutos, Gabinetes de Administração de Bacias Hidrográficas, outros órgãos especializados, existentes ou a criar, para execução de actividades específicas, no âmbito da sua esfera de actuação.

The Ministry has the following mandates:

- Propose and promote the implementation Government policy in the Energy and Water sectors;
- Define, promote and ensure the quality of public services in their areas of operation;
- Prepare, under the general planning of economic and social development of the country, sectoral plans for their areas of operation;
- Promote research activities within their areas of operation;
- Establish strategies, promote and coordinate the recovery and rational use of water resources and energy, ensuring the sustainable development of the same;
- Propose and produce legislation establishing the legal framework and legal activity in the sectors of Energy and Water, in particular that on licensing and create the necessary mechanisms to monitor the observance thereof;
- Licensing and inspecting the operation of services and facilities in the energy sector;
- Licensing and inspection of hydraulic systems for water and sanitation;
- Promote actions of international exchange and cooperation in their areas of operation;
- Promoting human resources development in energy and water;
- Establish standards to ensure the quality of service of water and energy;

MINEA – ORGANIZATION



Appendix II. Planning Sheets with Time Schedule and Budget

APPENDIX II

INSTITUTIONAL STRENGTHENING OF THE ENERGY AND WATER RESOURCES SECTORS IN ANGOLA
 Planning and budget sheets for project activities

Date of preparation/revision: 13.01.2013

Summary sheet - Overall budget and time schedule

Activity No.	Name of activity	Year	Schedule				Costs (NOK x 1000)				Total
			2012	2013	2014	2015	2012	2013	2014	2015	
1	Renewable Energy & Rural Electrification						2034	2008	1631	5673	
2	Energy Efficiency						2311	1381	1918	5609	
3	Support to DNHR and the National Institute for Water Resources Management						1244	1873	1540	4657	
4	Coordination and backstopping by NVE						2099	1890	1890	5879	
Sum							7687	7151	6979	21818	
Contingency 10%							313	849	1020	2182	
Total							8000	8000	8000	24000	

Reporting and Meetings Milestones:

Quarterly Reports
 Annual Reports & Audits
 Annual Meetings in Luanda:

Total Annual Disbursements:

■ ■ ■ ** ■ < ■ **

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Budget 0| 8000| 8000| 8000| 24000|

Notes: - Costs are estimated at the time work is carried out and expenses are incurred. There will be a time lag of 2-3 months

INSTITUTIONAL STRENGTHENING OF THE ENERGY AND WATER RESOURCES SECTORS IN ANGOLA Planning sheet for activities
Date of preparation/revision: 13.01.2013

Activity no.: 1 **Name:** Renewable Energy & Rural Electrification

Objectives:

To build capacity in MINEA's Directorates of Renewable Energy and Electrification to develop, plan and implement programmes for electrification of rural areas using renewable energy sources.

Work plan

- Task 1.1 Identification of suitable delivery mechanisms
- 1.2 Strategy and Action Plan (RE)
- 1.3 Review and development of legal framework
- 1.4 Pilot projects

Handled by:

NVE/MIN
MINEA
MINEA
MINEA

Schedule/Tentative budget

Task/schedule	Year	2012	2013	2014	2015
1.1 Identification of suitable delivery mechanisms					
1.2 Strategy and Action Plan (RE)					
1.3 Review and development of legal framework					
1.4 Pilot projects					
Task/budget (NOK x1000)	Year	2 012	2 013	2 014	2 015
1.1 Identification of suitable delivery mechanisms			1 032	85	
1.2 Strategy and Action Plan (RE)			269	138	
1.3 Review and development of legal framework			684	525	420
1.4 Pilot projects			49	1 260	1 211
Total/year			2 034	2 008	1 631

Total (NOK x 1000) 5674

Basis for the estimate:

NVE hourly rates according to current
Norad/NVE framework agreement Norwegian
State Regulations for travel expenses

INSTITUTIONAL STRENGTHENING OF THE ENERGY AND WATER RESOURCES SECTORS IN ANGOLA Planning sheet for activities
Date of preparation/revision: 13.01.2013

Activity no.: 2 **Name:** Energy Efficiency

Objectives:

To reduce wasteful use of electricity in Luanda.

Work plan

<p>Task 2.1 Understanding power consumption 2.2 Energy Efficiency Campaign(s) 2.3 Strategy and Action Plan (EE) 2.4 Accelerated introduction of pre-payment meters</p>	<p>Handled by: NVE/MINEA MINEA MINEA EDEL/MINEA</p>
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Schedule/Tentative budget

Task/schedule	Year	2012	2013	2014	2015
2.1 Understanding power consumption					
2.2 Energy Efficiency Campaign(s)					
2.3 Strategy and Action Plan (EE)					
2.4 Accelerated introduction of pre-payment meters					
Task/budget (NOK x1000)	Year	2 012	2 013	2 014	2015
2.1 Understanding power consumption			1 765		
2.2 Energy Efficiency Campaign(s)			432	1 116	935
2.3 Strategy and Action Plan (EE)			113	113	227
2.4 Accelerated introduction of pre-payment meters				152	756
Total/year			2311	1 381	1 918

Total (NOK x 1000) 5611

Basis for the estimate:
 NVE hourly rates according to current
 Norad/NVE framework agreement Norwegian
 State Regulations for travel expenses

INSTITUTIONAL STRENGTHENING OF THE ENERGY AND WATER RESOURCES SECTORS IN ANGOLA Planning sheet for activities
Date of preparation/revision: 13.01.2013

Activity no.: 3
 Managerm

Name: Support to DNHR and the new National Institute for Water Resources

Objectives:

To build capacity in DNHR / INARH to manage the hydrometrie network and use hydrologic data for the formulation of policy

Wort« plan

Tas

- 3.1 Establishing National Water Resources Institute
- 3.2 Rehabilitation of hydrometrie network
- 3.3 Planning and management of basin studies
- 3.4 Capacity building and training

Handled by:

MINEA
 INARH
 DNHR/IN
 INARH/N

Schedule/Tentative budget

Task/schedule	Year	2012	2013	2014	2015
3.1 Establishing National Water Resources Institute					
3.2 Rehabilitation of hydrometrie network					
3.3 Planning and management of basin studies					
3.4 Capacity building and training					
Task/budget (NOK x1000)	Year	2012	2013	2014	2015
3.1 Establishing National Water Resources			277	277	
3.2 Rehabilitation of hydrometrie network			173	432	432
3.3 Planning and management of basin studies			425	425	
3.4 Capacity building and training			369	739	
					1 108
	Total/year		1 244	1 873	1 540

Total (NOK x 1000) _____ 4657

NVE hourly rates according to current
 Norad/NVE framework agreement Norwegian
 State Regulations for travel expenses

INSTITUTIONAL STRENGTHENING OF THE ENERGY AND WATER RESOURCES SECTORS IN ANGOLA Planning
sheet for activities
13.01.2013
Date of preparation/revision:

Activity no.: 4 **Name:** Coordination by NVE. backstopping and training

Objectives:

To ensure timely implementation of the programme, efficient use of resources and good quality results.

Work plan

- Tas
- 4.1 Programme administration
- 4.2 Training and study visits
- 4.3 Backstopping by NVE

Handled by:
 NVE
 NVE/MIN
 NVE

Schedule/Tentative budget

Task/schedule	Year	2012	2013	2014	2015
4.1 Programme administration					
4.2 Training and study visits					
4.3 Backstopping by NVE					
Task/budget (NOK x1000)	Year	2 012	013	014	015
4.1 Programme administration			164 704	164 496	164 495
4.2 Training and study visits			232	232	232
4.3 Backstopping by NVE					
Total/year		0	2099	1890	1890

Total (NOKx 1000) **58761**

Basis for the estimate:
 NVE hourly rates according to current
 Norad/NVE framework agreement
 Norwegian State Regulations for travel
 expenses

