



Evaluation of Norwegian Power-related Assistance

Final Report



Norad

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Acronyms and Abbreviations

DAC	Development Assistance Committee (of OECD)
Danida	Danish Development Cooperation
DNE	National Directorate of Energy (in MIREME, Mozambique)
EDM	<i>Electricidade de Moçambique</i> (National Electric Utility)
e.g.	<i>exempli gratia</i> (Latin), as for, or an example
ERAP	Energy Reform and Access Project (World Bank)
Eskom	South Africa's national power utility
GDP	Gross Domestic Product
HCB	<i>Hidroeléctrica de Cahora Bassa</i> – largest HEP in Southern Africa, 2,075 MW
HEP	Hydro Electric Project
ICH	International Centre for Hydropower
i.e.	id est (Latin), that is
KPI	Key Performance Indicator
ME	Ministry of Energy
MFA	Ministry of Foreign Affairs (of Norway)
MOZ	Norad code for Mozambique
NOK	Currency: Norwegian <i>Kroner</i> 21 April 2007 – 1 NOK= 0.168 USD
Norad	Norwegian Development Agency
NPL	Norad code for Nepal
NPR	Currency: Nepali Rupee – 70 NPR = approx. 1 USD
NTNU	<i>Norges Teknisk-Naturvitenskapelige Universitet</i> – Norwegian University of Science and Technology, Trondheim
NVE	<i>Norges Vassdrags- og Energidirktoratet</i> , Norwegian Water Resources and Energy Directorate
PPP	Purchase Power Parity, used in USD-PPP
SADC	Southern Africa Development Community
SAPP	Southern Africa Power Pool
Sida	Swedish International Development Agency
TA	Technical Assistance
TAU	Technical and Administrative Unit (on energy of SADC, Luanda)
TOR	Terms of Reference (of the evaluation, unless specified otherwise)
USD	Currency: United States Dollar 21 April 2007 – 1USD = 5.96 NOK
UTIP	<i>Unidade Técnica de Implementação dos Projetos Hidroeléctricos</i> (Technical Unit for Implementation of Hydroelectric Projects)
W, Wh	Watt, Watt hour: Basic units
ZIB	Norad code for Zimbabwe

Energy Units

kWh	kilo Watt hour, unit of energy used for electricity = 1,000 Wh
kW	Kilo Watt, unit of power capacity = 1,000 Watt
MJ	Mega Joule = 0.278 kWh, standard unit of energy
MW	Mega Watt = 1,000 kW
GW	Giga Watt = 1,000,000 kW
GWh	Giga Watt hour
Koe	Kilogram of oil equivalent

Unit Conversion

	MJ	kWh	koe
1 Mega Joule (MJ)	1.00	0.278	0.024
1 kilo Watt hour (kWh)	3.60	1.00	0.086
1 kilo oil equivalent (koe)	41.87	11.63	1.00

Tip: Use the unit converter at: <http://www.eva.ac.at/enz/converter.htm>

Prefixes

K	Kilo	10 ³	Examples
M	Mega	10 ⁶	1 MW = 1,000 kW = 1,000,000 Watt
G	Giga	10 ⁹	GW = 1,000 MW = 1,000,000 kW
T	Tera	10 ¹²	1,000 TWh=1 PWh=1,000,000,000 MWh
P	Peta	10 ¹⁵	

Energy Unit Definitions¹

Power: Electrical power is the rate at which electrical energy is converted to another form, such as motion, heat, or an electromagnetic field. The common symbol for power is the uppercase letter P. The standard unit is the watt, symbolized by W. In utility circuits, the kilowatt (kW) is often specified instead; 1 kW = 1,000 W. One watt is the power resulting from an energy dissipation, conversion, or storage process equivalent to one joule per second.

Energy: In electrical circuits, energy is a measure of power expended over time. In this sense, one joule (1 J) is equivalent to one Watt (1 W) dissipated or radiated for one second (1 s). A common unit of energy in electric networks is the kilowatt-hour (kWh), which is the equivalent of one kilowatt (kW) dissipated or expended for one hour (1 h). Because 1 kW = 1,000 W and 1 h = 3,600 s, 1 kWh = 3.6 x 10⁶ J.

It follows: Energy is power applied over a time period, and is calculated power multiplied with time, e.g. kW x h = kWh.

¹ From: <http://searchsmb.techtarget.com/>

1 Executive Summary

The evaluation department of Norad has planned and tendered for an evaluation of the Norwegian power related assistance. The evaluation has been carried out by a consortium of consultants, led by Scanteam of Oslo, in the period from January to October 2007.

Assistance to power sector development has been an important component of Norway's development cooperation for the past 25 years. More than NOK 10 billion have been granted to over 70 countries. In accordance with the Terms of Reference (TOR), this evaluation is based primarily on project case studies in Mozambique and Nepal, two of the main partner countries that together have received over NOK 2 billion, and using available information from Angola and Uganda.

Assistance to Nepal has focused on the sub-national level small hydropower development and rural electrification, starting in the late 1960s, in a situation where rural infrastructure of any kind was largely absent. This was later complemented by support to the legal sector, privatisation efforts, training, water resources research and institution building, feasibility studies of hydropower schemes, assistance to renewable energy development, and environmental management. It is estimated that in the period from 1980 to 2006, Norwegian assistance to the power sector amounted to about 7% of total donor assistance to the sector. The evaluation has covered eight projects, plus the impact of the fellowship training programme on the sector.

Norwegian assistance to Mozambique was at the mainstream national level, and began in 1977, at a time of civil war, when the existing power infrastructure became increasingly derelict, nationwide power consumption dropped dramatically, and skilled personnel was lacking. Norway provided financial assistance to a personnel fund, equipment and spare parts supply, the finance for and introduction of a management information system in the national utility *Electricidade de Mozambique* (EDM), institutional cooperation both at EDM and the Ministry of Energy and its predecessor, and massive funding of transmission lines, sub-stations and distribution networks, including rural electrification. In the period up to 1992 Norwegian assistance to the sector amounted to about one quarter of total donor assistance, while this dropped to around 20% in the period since then. The evaluation has covered nine projects, plus Mozambique's benefits in the regional context of the Southern African Power Pool (SAPP) cooperation.

Results of Assistance

The results achieved through the power sector support are substantial, though the profiles of the programmes have been quite different in the two countries. Norwegian assistance to Nepal has focused on developing its hydro-resources through a gradual increase in the size, complexity and thus financing needs of the power generation sub-sector, and has maintained a largely local institutional development approach. A number of projects had a distinct poverty focus, resulting in effective improvements in the living standards.

In Mozambique, the focus has instead been on taking advantage of the large-volume and low-cost hydropower available from Cahora Bassa, leading to national transmission and then localized distribution networks expansion. The small-scale hydropower schemes during the 1980s and early 1990s were largely supported for political reasons during the conflict period. The priority has been on rehabilitation and expansion of transmission and distribution to support economic growth.

The present summary contains important findings and conclusions, following the structure laid out in the TOR.

Project Results

The assistance to implementing infrastructure projects has been successful in achieving the outputs stipulated at the outset, but this often happened with time delay and cost overruns.

Not surprisingly, the results chains in capacity building and training assistance are more difficult to discern and assess. In both countries however, a large number of training outputs were produced. In the operational area, this became a productive force in Nepal sooner than in Mozambique due to the conducive and constraining environments respectively. Institution building in the public administration sector proved elusive under difficult political conditions in both countries. Reports from Angola and Uganda draw similar conclusions.

Interventions of the knowledge building type, through study and research, are seen by the evaluation as much needed supplements to other assistance, to provide information that guides decision making in the sector. This type of assistance may be instrumental also in future, such as the Generation Master Plan in Mozambique, and potentially river-basin or watershed development studies, and pertinent non-technical subjects in other countries.

An important general result in both countries is skilled manpower throughout the sector. This skills development process has been somewhat different in the two countries. In Nepal, it has been a long-term and systematic build-up in skills. Mozambique, on the other hand, faced a large-scale and sudden crisis at independence with a total loss of technical and managerial staff when the Portuguese left. The fact that the country largely succeeded in keeping its physical network functioning during the war and subsequently expanded is testimony to both own efforts and the success of the Norwegian and Swedish training support.

Seen in the light of cost-efficiency and financial performance of EDM, which is a declared goal, assistance measures and EDM's own efforts have not been effective in attaining financial sustainability, which is troubling, given the long-term and large-scale assistance. It is seen that income is growing significantly, based on higher sales volume at higher tariffs, and that costs increase in proportion with income, indicating a lack of rigorous cost management. This results in unchanged loss-making performance, and if the trend continues, it remains distant from a turn around.

National Level Impacts

In general, assistance to the power sectors of Nepal and Mozambique has a positive economic impact. This was also found in other reviews and evaluations in Angola and Uganda. The net benefit from the electrification projects was positive and of considerable magnitude. However, results vary and depend on the specific circumstances of the project. In Nepal, the power production impact is a plus of about 470 GWh annually (more than 20% of the total), which also contributes significantly to reduced load shedding. Institutional support has resulted in more competence at large in the sector, and less monopolistic structures in both countries, and this is also observed in Uganda.

In Mozambique, the impact from generation projects is around plus 15 GWh on average annually, a marginal less than 1% of total supply, but it is noted that small hydro development has not been the main focus. Power supply has increased due to a number of transmission and electrification projects, and in this, the volume attributable to Norwegian assistance is about 250 GWh per year, mostly at the provincial level. This amounts to roughly 15% of total supply, and contributes significantly to reduction in imports of diesel fuel and kerosene, as it displaces diesel generators at the local level and kerosene lights in households.

Rural Electrification

In sum, impacts on electrified rural areas are more economic activity and higher living standards for which electricity is not the sole cause, but a major contributor. Direct benefits at the household level is from electric light, resulting in kerosene saving and better indoors environment. Indirect benefits that accrue are found in the health and education sectors. In Gurué, home to the principal institutions in both sectors at the district level, survey respondents have the perception that without electricity their services could not have improved as they did. This is a trend that is continuing, although the impact in terms of better

health and better education cannot be measured over a time period of no more than six or seven years. In the rural areas in Nepal, where higher level health and education facilities are not available, such positive signs are less discernible.

Impact on industry is found to be massive in Mozambique, where reliable electricity supply has allowed growth in the tea and agro industries. The arrival of grid electricity has triggered substantial rehabilitation and expansion investments. Project areas in Nepal had no such industrial potentials, and the support to small scale enterprise development has brought only modest results, documented by the fact that “industrial” power use is only about 15 kWh per day and enterprise, and there are only somewhat more than 1% industrial consumers.

Impact on Poverty

As one would expect, electrification benefits the poor more, when the project focus is on the poor, but obviously such a focus is not always rationally possible. While the whole population benefits from indirect electrification impact, only those with own electricity access derive direct benefits. Therefore another important criterion in rural electrification is the access rate. It has been easier in Nepal to achieve almost full coverage in two of three electrification projects and approximately 40% access in the third, where even the latter is better than national average.

In Mozambique, the increase of access overall, has been marginal for many years. It remained stagnant during the war, but began accelerating around 2003, and stands now at about 8.6%. One of the key issues for even development in Mozambique is accelerated increase of electricity access, and the challenge for EDM has been to surpass population growth, and it is clear that this would not have been possible without Norwegian (and World Bank, Sida) funding. The long-term Scandinavian assistance has been particularly important.

In Nepal, in the project with the longest impact period, it was possible to measure a significant reduction of (income) poverty that occurred in the period after electrification, in fact reversing the earlier trend. This is not considered the effect of electrification alone, but is attributed to overall economic growth in the area, driven by money from remittances of out-migrated workers, but to which electricity has contributed. The projects in Gurué, Mozambique and Jhimruk, Nepal, both of more recent origin, did not show significant measurable poverty reduction results, but a positive trend, in terms of living conditions and non-income poverty dimensions, could nonetheless be identified. An obvious explanation is that only very few household connections were provided in Gurué. In Jhimruk it appears that overall economic impact has been slow, and remained below the threshold of measurability, and “industrial” development is almost non-existent. Analysis of impact on poverty using benchmarking, calculating direct and indirect benefits, on the other hand, showed positive net impacts over the life of the projects, but there is large variance from project to project in total benefit when this is related to the investment.

Hydropower Development

The strategy of developing hydropower from the bottom up, in conjunction with institutional development and training has paid off for Nepal. It is seen as coherent and effective, and has resulted in capabilities conducive to further indigenous developments on a larger scale.

Small hydro development in Mozambique can be regarded as a deviation from the overall strategy of distributing Cahora Bassa power. This strategy deviation was a logical result of the war, but unfortunately it also led to a disruption of the capacity development process in hydro development.

Regional Context

Due to unfavorable developments in Zimbabwe, the impact of the transmission line from Mozambique is moderate in economic terms, but important for regional integration. One may argue that economics had been doubtful in the first place. Mozambique could have continued to export the same energy to South Africa over the existing line, without additional

investment. Hence, the remaining valid rationale is political and regional: without lines such as these, the concept of SAPP could not have progressed as far as it did.

There has been no regional dimension to assistance in Nepal and Uganda in the past. However, it is clear that this may gain importance in the future, in particular in Nepal, as power trading with India has become a burning issue.

Success Factors and Constraints

The most important success factors appear to be:

A vision of development and persistence in pursuing it; the assembly of a comprehensive portfolio of complementary interventions; a project focus that considers recipient capacity and the entire value chain where possible, and emphasises strong local anchoring; the willingness to take calculated risks; Norway's consistency and predictability as a donor, leading to the building of good relationships and trust among partners; and finally participatory processes.

The major causes for failure have been structural. The most important was the armed conflicts that affected both countries. The second most important are institutional changes within the sectors that led to disruptions and waste of resources particularly from capacity development investments. A final key concern is lack of capacity and political will to implement agreed-upon strategies and plans.

Concerning risk management, at the technical and project level good engineering practice has mitigated risk while economic risk has been less in focus. Political risk assessment has generally not been done or is not documented. An exception is found in Nepal where a study was carried out in relation to hydropower investments. Environmental risks were addressed appropriately in the small and medium scale projects, while the study for the Mphanda Nkuwa project is incomplete. Risks caused by faulty or delayed capacity development do not seem to have been assessed.

The power sector, more than most others, is dependent on long-term and consistent policies and priorities, because the basic investments – power stations, transmission lines and distribution systems – have such long economic lifetimes. The predictability and stability of such framework conditions are thus the basic pre-condition for successful support to the power sector. The most important factors in this are political stability, good governance and capable institutions.

Challenges and Opportunities

Norway has contributed considerably to aid effectiveness by promoting better coordination and joint-funding. It has also taken up the challenge of assisting the Mozambique government when somewhat rash reforms were intended as a condition for a large sector loan from the World Bank.

Project finance for large projects, involving private sector funding will be a challenge in the future. From international experience it appears that project finance is intricately linked to the institutional arrangements which are put in place. International and bilateral finance institutions play a large role in raising commercial funding, and in covering some of the risks. Private sector funding on the equity side may be minor and tied to contracts, by which a part of the investment flows back. National ownership may tend to be marginal. On a more general level, the perception of investment risk is formed by the track record of Good Governance in the host country. On institutional capacity development, the challenge for cooperation partners is to gain a deeper understanding of the capacity development needs, and how to address these with a view to the numerous obstructions.

Norwegian Stakeholders

Norwegian support in the power sector was to begin with tied to the use of Norwegian suppliers. This was important for many to gain international experience and later be able to compete for other contracts. The untying of aid will be a challenge to consulting firms but in particular to public institutions, since Norwegian funding is a pre-requisite for international engagement for the latter.

At the same time, Norway as a partner in the power sector and with considerable resources invested in longer-term ventures has a need to maintain its own knowledge network, both internally within its own institutions, but also its partners in the public and private sectors. How to balance the need for own trusted sources of advice and knowledge while accepting the more open competitive markets that are to ensure enhanced efficiency and effectiveness of resources will remain a challenge for political management.

Content and Quality of Inputs

Generally Norway provides grants to implement projects. Following the principle of Recipient Responsibility, it is then up to the host country to determine the contents. Particularly in the early years, the implementing partner and advisor was prescribed by Norway. From about 2002 the practice of free choice became the rule, but recipients often continued to use Norwegian equipment and services. In the case of institutional twinning, such a choice does not exist, as there is only one potential partner in the sector.

A practice benchmarking was conducted to assess the quality of inputs. Each project was scored along a number of dimensions throughout the project cycle, and each dimension was given a weight according to importance in the project.

Overall, it appears that the infrastructure projects, achieved a satisfactory quality of inputs. Planning and design was of variable quality depending to a large degree on the relevance of information available or obtained, and on the effort and resources put into the planning process.

Implementation was of even and good quality across interventions. This indicates that the routines of implementation management are in place, though for some projects there is a improvement potential compared to “best practice”.

Project completion and follow up show the largest quality variance across projects. This may be due to the fact that not all recipients have the discipline to put sufficient effort into the preparation of completion reports in time. The Norwegian system seems to lack instruments to enforce the quality of final reports and accounts, and does not track long-term performance in a systematic way.

Projects of the Capacity Development type have shown planning and project design quality that has been quite good for half of the projects. One project of Institutional Assistance to MIREME, Mozambique, was assessed as much weaker than the average because “prior needs assessment” was not done. The model of assistance chosen was twinning with the Norwegian Water Resources and Energy Directorate (NVE), and the cooperation agreement was signed without a firm plan in place.

Project implementation is quite good, indicating that players generally have high performance standards. The lowest ranking project (Legal Assistance Nepal) has attained this score due to the fact that in spite of changing circumstances no correction has been made regarding the terms of cooperation in a second phase.

In addition to input quality in terms of the process, the Development Assistance Committee (DAC) criteria of Efficiency, Effectiveness, Relevance, Sustainability and Impact were also assessed by systematic comparison of the projects. There is a wide spread in the results but a tendency that projects in Nepal achieve higher scores. This is due to the high quality of many of the Nepali projects but also the difficult conditions prevailing in Mozambique during a long period.

Value Added and Comparative Advantages

Norway has been a predictable and long-term partner in the power sector in both Nepal and Mozambique. There are indications that power may be the sector where Norway as a donor has been most consistent and predictable over time. A key reason for this seems to be the broad range of players that are involved on the Norwegian side.

This stability in the partnership is much appreciated by the local partners, as indicated by their frequent preference for Norway to continue providing support over time. It has helped build trust and thus improved efficiency and effectiveness in the collaboration.

A major reason for this is Norway's own history and experience of developing its hydro-power resources, the changes to its organisation, and thus Norway's broad range of skills and experience, not least in terms of public sector management and role in power sector development.

A particular form of collaboration used by Norway is twinning. The purpose of this approach is to make the broad range of experiences and also the "corporate culture" available to the local partner, where the implicit knowledge provided can be substantial.

Norwegian aid administration has largely been following the same procedures since the 1994 Development Cooperation Manual was produced, though the new version of 2003 has simplified certain elements with the transfer of more responsibility to the country representation and the partner. Norwegian aid management is considered flexible by local partners, but some times this seems to be prompted by a lack of rigorous planning and adherence to established milestones. Flexibility could therefore be a lack of results focus rather than pro-active adjustment to changing circumstances.

Cross Cutting Issues

Among the cross-cutting issues, the main focus of the evaluation has been on environment, gender and good governance. Overall, cross-cutting issues have been neglected in project design, and consequently in implementation, monitoring and reporting.

Environment

Norway's environmental guidelines are focused on infrastructure projects, do not cover environmental management systems of the ISO 14001-standard, and are based on "do no harm" rather than the current pro-active "do good" principles.

Formally, an obligation of the recipient to adhere by environmental laws was included in bilateral agreements from the late 1990s. However, Norway does not seem to have followed-up systematically in the course of project implementation. Overall, the attention to environmental standards and concerns has been poor and unsystematic both by the Norwegian aid administration and project management.

The most prominent actor in environmental matters (in projects evaluated, and documented in other interventions) has been NVE, which has raised environmental concerns that recipients or other stakeholders have overlooked or neglected.

Gender

Gender has been treated in a perfunctory manner. It is referred to in project documents, but not in action plans and target setting. The exceptions are found in the rural electrification projects, in particular in Nepal, where some project elements were specifically directed at women.

Good Governance

The overriding concern regarding good governance in the power sector is corruption. The power sector is globally assessed as the third-most corrupt, and Norway's partner countries are all considered to suffer from severe corruption problems.

There is thus clearly a need to improve the implementation of existing anti-corruption measures through opening up and strengthening the monitoring of all processes in the project cycle, but with particular focus on procurement and auditing, as well as privatisation processes. In this context, better business ethics need to be fostered also, with a view to "clean business" in the sector.

Legal frameworks in Mozambique and Nepal are at a relatively cursory level. While these need considerable elaboration and clarification, the more important challenge is strengthening implementation and adherence to what are considered "international good practice" standards.

Norway does so far not seem to have been pro-active in contributing to this in the power sector.

Benefits from Assistance to SAPP

Norway's support to regional power cooperation has supported rapid technology transfer, accelerated the establishment of a regional power pool that benefits both power exporting and importing countries, and in general has been much appreciated by Mozambique, which has become one of the strong supporters of the SAPP.

Future Baselines

In order to monitor progress and assess results, baselines need to be established, and most projects did not have this. The selection of indicators to include must be relevant to the objectives of the project. The evaluation provides templates for baseline information and indicators for various types of interventions providing a basis for a full DAC evaluation and most important, objective assessment of interventions through systematic comparison (benchmarking).

Conclusion and Recommendations

The results achieved through the power sector support are substantial, though the profiles of the programmes have been quite different in the two countries. Nepal has focused on developing its hydro-resources through a gradual increase in the size, complexity and thus financing needs of its power generation sub-sector, and has maintained a largely local development focus. In Mozambique, the focus has instead been on taking advantage of the large-volume and cheap hydropower available from Cahora Bassa, leading to a focus on national transmission and then localized distribution networks, where the small-scale hydropower schemes supported during the 1980s and early 1990s were largely for political reasons during the conflict period.

Conclusion

The benefits from electrification can be seen at national, regional, and social group level. The net benefits in projects have varied, but are largely positive, depending on the investment and expected maintenance costs over the lifetime of the infrastructure. The distributional impact has varied considerably. While Norway recognizes that the first-round effect of electrification will usually have little direct impact on poverty, it is important to note that those projects that have deliberately targeted the poor have succeeded better in ensuring that the poor have also seen positive effects.

The local partners are very positive about Norwegian power sector support and the results achieved. Norwegian assistance has clearly played a critical role in enhancing sector performance, and helped these countries to move towards a more modern power sector. While it is difficult to make crosssectoral comparisons, there is every reason to believe that this rather sophisticated sector has moved faster and across a broader range of issues than other sectors, while at the same time strengthening its sustainability.

Because of the consistency in the partnerships, the trust and dense set of links that have been established, the results in what is often the most difficult area for development cooperation – capacity development – must be said to be quite successful. Despite this positive assessment, it is noteworthy that neither Norway nor the local partners have been good at performance monitoring. Only two projects had a baseline. Almost all the results reporting has been at inputs utilisation and activity levels. The Outputs reporting has consisted largely of listing what was produced, but without a critical assessment of productivity, deviations compared with the original plans, etc. Of greater concern is that dimensions that are important to Norway politically – poverty reduction, distribution of benefits, environmental analyses and management, gender equity, and improvement to good governance and the combat of corruption – are largely addressed in an ad hoc manner if at all.

Lessons Learned

The “lessons learned” are largely in line with what has been accepted as “good practice” principles for development cooperation, though there are some specific ones to the power sector:

- All activities need to be well planned and based on clear local ownership principles. This means that Norway at the overarching country sector portfolio level has had to adjust to quite different national power sector strategies.
- The broad-based support to the power sector has made it easier to ensure synergies between the different forms of support such as infrastructure investments and capacity development.
- Collaboration with other donors has been beneficial in several ways: Joint annual meetings and joint funding of infrastructure projects, both reducing transaction costs, and gaining a stronger “voice” by agreeing on policy issues.
- The long-term and large-scale support to the power sector has given Norway unique partnerships in the sector, and it has earned the trust of recipients.
- The large number of actors engaged in the power sector both in Norway and the partner countries has probably contributed to the stability and longevity of the power sector engagement. It has also ensured that Norway has remained strongly committed and has maintained expertise that is relevant.
- The commercial aspects of the sector are becoming even more important, which means that the purely grants-based financing provided by a donor like Norway needs to be more carefully justified, using better targeting criteria to reach intended beneficiaries.
- Unless there is a clear result focus at the planning stage with specified and operational indicators in place, it will be difficult and costly to track performance over time, thus also reducing the ability of management to make adjustments when needed.
- Overall, Norwegian development priorities, such as poverty reduction, gender equality, equity, good governance and the environment, tend to be overlooked during the planning and implementation of power sector interventions. This reveals a need to renew and strengthen the way such issues are put on the agenda, followed-up on and assessed during and after projects. When poverty reduction and gender equality are specified objectives with clear operational means, positive results can in fact increase and be notable.

Recommendations

1. Norwegian engagement in the power sector is yielding good results, in large part due to long-term commitments and broad-based engagement. These should be principles for future support as well.
2. Norway should review the criteria for providing financial support to a sector that is evolving into a more commercial one. The focus should be on activities that have public goods or similar aspects, that strengthen access and benefits to the poor and disfavored regions, that addresses gender disparities and environmental concerns better, and that improve overall governance in the sector, especially in areas that are known to be vulnerable to corruption.
3. Norway should review possibilities for helping partners manage uncertainty and risk better, where Norway can assume the financial costs of the risk-management instruments;
4. In order to ensure possibilities for performance monitoring in line with a results focus, planning must include baseline preparation. Those dimensions that are important in the specific project must be included, but also distributional concerns, environmental impact and sustainability, gender equity and good governance.
5. Linked with a baseline, the parties need to establish a realistic but aggressive monitoring system and process. This must in particular include those areas that tend to be neglected or may be controversial: gender, anti-corruption measures, and poverty reduction.
6. Concerning support to power generation and transmission lines, the long time that is often required for these kinds of investments to generate significant returns in poor countries need to be recognized and taken into consideration when assessing project proposals. The finding that smaller and local-based systems tend to provide greater benefits to the poorer segments also needs to be included when deciding on the focus for Norwegian financing.
7. Increasing Norwegian funding to the power sector in poor countries requires addressing the challenge of maintaining and strengthening relevant parts of a Norwegian knowledge network. This includes assessing instruments such as institutional twinning whose utility is clearly dependent on defined pre-conditions being in place. The Energy Task Force may be a good forum for starting a forward-looking and critical review of options that are in line with the new aid modalities.

2 Introduction and Background

Norad's Evaluation Department issued an invitation to tender for the evaluation of Norway's support to the power sector towards the end of September 2006. As part of the preparations for the tender, it had commissioned two studies. The first was a statistical overview of all disbursements to Norwegian power related support to developing countries which clarify the evaluation object in general. The second was a "State-of-the-Art-Study"¹ of the long-term results of power assistance in general and of Scandinavian assistance in particular.

The statistical data base gives information on the volume and content of the Norwegian assistance, but gives no indications of results or impacts and has not been designed for that purpose. Neither is there information available on how important the Norwegian disbursements are compared to assistance from other donors. In an international context, the Norwegian assistance has in some countries been significant or a major supplement to assistance from the World Bank and/or other multi- or bilateral actors. The evaluation report was therefore to clarify the total assistance to the selected partner countries and the role Norwegian assistance has played compared to other donors (see Annex 1, TOR).

An important purpose of cooperation in the power sector has been to support economic development in general and the development of industry and trade in special. The assumption has been that increased production and supply of energy would support economic growth that would "trickle down" and reduce poverty and have other positive impacts on the inhabitants. The State-of-the-Art-Study shows, however, that reliable information on the results of power related assistance is weak, including the effects for national, regional and local economic development, on trade and industries, and for the population in general. It does, however, indicate that there are important synergies and complementarities between different types of infrastructure. The effects at community level from electrification increase significantly if other critical and interlinked infrastructure is developed, such as roads and telecommunications. Studies also show that *energy* is a basic necessity on household and enterprise level, while *electricity* is not. The actual demand, affordability and willingness to pay for electricity by industry and private business, including farming, is poorly mapped and understood. But the lack of stable electricity is one of the main barriers to new investments.

A major challenge identified for this evaluation was thus the lack of reliable baseline data and the fact that indicators and monitoring of socio-economic impacts largely are absent. The methods for such data collection and analyses do, however, exist. An important objective for the evaluation was therefore to contribute to a selected sample of baselines for future evaluations and for the introduction of such methods in Norwegian power assistance management.

2.1 Objectives of the Evaluation

The focus of the evaluation is on the quality and the more long term results of Norwegian assistance so far, the reasons for successes and failures, but also look at the potential for improving Norwegian assistance in the future and preconditions for successful assistance in former and new partner countries. Three broad objectives were formulated:

- Document and assess the results of the Norwegian power related assistance,
- Assess the content and quality of the Norwegian assistance and how it may be improved, and
- Collect information from a selected sample of projects and programmes which can constitute a baseline for measuring results of key elements in the new "action plan" for the energy sector.

¹ State-of-the-Art-Study. The long-term effects of assistance to the power sector. Final Report September 2006, Norad and Nordic Consulting Group

2.2 Design, Methods, Information Sources and Study

The TOR asks that a comparative study of the power sector support to Mozambique and Nepal be the focus of the evaluation. These are among the major recipients of Norwegian assistance, with more than NOK 2 billion in total aid. The study is to cover Norwegian assistance from its start and up to 2007, but with an emphasis on the period after 1992.

A specific part of the evaluation is rural electrification impact studies in both countries. For the purpose of data collection, a questionnaire was developed and used in several household surveys, with two studies carried out in Nepal and one in Mozambique. Further, as determined in the inception phase and mutually agreed, systematic comparison of interventions was to be done, and for this purpose, an approach based on benchmarking was developed and used.

2.2.1 Design of the Study

The evaluation is based on the case studies of the two partner countries, and a limited study of the results on Southern African Development Community (SADC) and the Southern Africa Power Pool (SAPP) frameworks for regional cooperation. The evaluation built on information produced by earlier reviews, appraisals and study reports, but the main material is the first-hand empirical data generated by the country-specific studies.

A benchmarking approach has been used to achieve more objective assessment by systematic comparison across all types of intervention and countries.

The analytical framework for the evaluation clarified the types of interventions identified, and at what level the evaluation is to be directed in the project cycle:

- assessments at the activity level in terms of quality of inputs;
- evaluation of results following the normal *results chain* that looks at the causal relationships between achievement or the occurrence of *outputs, outcome, impacts*;
- assessment to derive findings, using DAC criteria of *efficiency, effectiveness, relevance, impact* and *sustainability*.

2.2.2 Methodology

The different levels in the project cycle require different methodologies in evaluation. Annex 2 contains a description of all methods and tools used.

Of particular importance is the description of the benchmarking approach which has been developed, and which is considered useful and necessary for systematic comparison between interventions and countries. Benchmarking attempts to put percentage points on performance for each criterion, and the average of all projects is then calculated as 100%, and each intervention is compared to this. For the DAC criteria, the following calculations and scoring/weighting were done.

- Efficiency: Intervention cost in relation to results
- Effectiveness: Level of fulfilment of objectives including cross cutting issues
- Relevance: Goal alignment with the needs of the target groups
- Sustainability: The continuation of benefits after the end of the intervention
- Impact: The sum effects of the intervention including direct and indirect, intended and unintended effects in the longer term, calculated as costs and benefits in constant USD.
- In addition, on the infrastructure projects, net benefits were calculated over the life time.

The team believes the benchmarking approach has proved useful. However, it is a complex and work-intensive method. Shortcomings in results reliability are certain to exist, and these are caused on the one hand by the paucity of data, which has been severely felt, and on the other hand the prototype nature of the method. The time required to obtain the required data from all stakeholders, normalize the data to make them comparable, prepare and use the calculation sheets was severely underestimated. Despite the challenges, the team's experience is that a benchmarking approach can be a new, useful element in monitoring, review and evaluation. Hence, it is felt that further development of the method is worthwhile.

2.2.3 Information Sources

The following information sources were identified and used:

- Primary project information, consisting of reports, proposals, minutes of management meetings, correspondence, budgets, and other planning and reporting documents.
- Secondary sources of information such as review and evaluation reports, Norad's state-of-the-art study, and also review reports from Uganda and Angola.
- Key informant interviews, in general from among stakeholders and where possible project participants, from Norway and the respective study countries.
- Relevant literature, statistics and documentation on the broader contexts of power sector development and impact evaluation in general, as well as experiences of others (Annex 8 lists documents consulted and Annex 9 key informants).

2.2.4 Work Carried Out

A document review was carried out prior to an inception visit to Mozambique and Nepal by the team leader, for preliminary information collection and preparatory work with the local teams.

The main field work consisted of:

- Clarifying the products and services that were delivered to the recipients, through stakeholder interviews.
- An assessment of the effects of capacity building and training, through interviews of participants who received training, including, where possible people who had changed jobs.
- Interviews with staff working in sector entities and other key informants, with the aim to cover all levels and relevant actors in the sector.
- Local teams carried out the designated rural field studies and surveys. For this purpose, previously prepared questionnaires needed to be adapted to the local context, but keep key content identical.

Dates 2007	Activity
14-20 January	Inception Phase: Preparation and information collection in Nepal
22-27 January	Inception Phase: Preparation and information collection in Mozambique
February	Preparation of Inception Report
18 March - 5 April	Field Work Nepal: Interviews and site visits
20 March - 2 April	Rural field study and Surveys: Andhi Khola and Jhimruk, Nepal
12 April - 5 May	Field Work Mozambique: Interviews and survey preparations
18 April - 4 May	Rural field study and Survey: Gurué, Mozambique
June - July	Drafting of Country Annexes and Field Study Annexes and Main Report
Sept. - October	Finalisation of Evaluation Report

Table 1: Schedule of Field Mission Visits, Rural Studies and Writing Tasks

2.3 Limitations and Challenges

The evaluation has used state-of-the-art methods and tools in order to make the evaluation rigorous and evidence-based. Data collection and verification has therefore taken considerable time, though in several cases accurate data were not possible to come by and an informed estimates had to be used.

In both Mozambique and Nepal there are severe data limitations, especially regarding time series data. Furthermore, data available tend to be at a level that is too aggregate, so it is not possible to attribute identified changes to a specific infrastructure intervention.

Most importantly, however, not a single project evaluated had developed indicators at the Output or higher level. Internal monitoring was therefore limited to simple Input or Activity levels, like counting the number of trainees in a course. Implementing institutions focused entirely on activity reporting, and as a consequence, essential project data on *results* are simply missing. As a consequence, assessment of results is constrained by lack of results reporting (see Annexes 3 and 4).

Due to time constraints, data collection in rural areas had to be done as a one-off exercise, with limited possibilities to re-survey in cases of unclear responses. This also meant that the time available for questionnaire testing has been insufficient. Weaknesses in the analyses because of this are discussed in the field study reports (Annexes 5 and 6).

There are important differences between the study areas in Nepal and Mozambique. In Nepal, both study areas are rural and away from district centres, while in Mozambique the study area is the district centre itself. In Nepal, the health and education facilities in the study area are basic, so electrification impact is modest. In Gurué, Mozambique, since it is a district centre, both health and education facilities are at a higher level, and here the impact of electricity was more profound. The same applies to government offices: Gurué has the full district administration as a beneficiary from electricity, while in the Nepal study areas only basic local administration exists.

Further, there are methodological challenges. In benchmarking, historical expenditures are converted to United States Dollars (USD) using that year's "purchasing power parity" (PPP) exchange rate, so figures used are in USD-PPP. This is necessary for establishing a basis for comparison, but it needs to be noted that PPP calculations assume a perfect market. Comparability suffers from this deficiency and constitutes an inherent weakness which cannot be removed.

Another methodological weakness is that DAC criteria are subjective rather than objective. Hence it depends on the perception of stakeholders and the evaluator's interpretation. Triangulation helped to make assessments less biased, and the evaluation has attempted a degree of objectivity by using uniform valuation standards across interventions, and by benchmarking, including sensitivity analysis of key data. Where data were not adequate, these were constructed from available evidence. Data constraints have been specified directly in the context, where applicable, so that the reader of the report is able to assess the credibility of the results.

Finally, the TOR for the evaluation include *good governance, environment and gender* under the term "*cross-cutting issues*", and asked to check data quality in the statistical database regarding these. The finding is that there is no reference to good governance in database, project documents and reporting. There is also no systematic affirmative reference to environment and gender in the database. Project documentation on the other hand includes some reference to environment, and this is generally considered relevant in many power sector interventions, but very rarely on gender. In the absence of profound project information on gender and good governance, the challenge for the evaluation is to comment on these aspects. It is not possible at the project level, and has to be treated in more general at the overall level.

2.4 Organization of the Report

The report contains four substantive chapters and nine annexes:

- Chapter one is the Executive Summary
- Chapter two contains background and introductory information, with detailed information in a series of annexes, as follows:
 - Annex 1: Terms of reference for the evaluation
 - Annex 2: Methodologies and tools used
 - Annex 8: Documents consulted
 - Annex 9: Persons contacted
 - Annex 10: Reaction to comments received
- Chapter three discusses the overall context, policies, strategies and assistance provided
- Chapter four presents the evaluation results in a comparative manner. Supporting evidence and full descriptions and detail information is provided in various annexes:

- Annex 3: Nepal Case Study
- Annex 4: Mozambique Case Study
- Annex 5: Nepal Rural Field Study Report, survey data as SPSS file
- Annex 6: Mozambique Rural Field Study Report, surveydata as SPSS file
- Annex 7: Benchmark Summary Report, (all data in electronic workbook)
- Chapter five discusses the contribution to baselines for future projects
- Chapter six summarises conclusions, lessons learned and makes recommendations

2.5 Acknowledgement and Disclaimer

This evaluation was carried out by a team led by Scanteam of Norway, with participation from the Chr. Michelsen Institute, Bergen, Energidata AS, Tønsberg, the Centre for Development and the Environment of the University of Oslo; Entec Nepal, and two independent researchers in Nepal, and Verde Azul Consultoría and Econ Policy Research Group from Mozambique.

The teams received full support from all recipient staff, government and donor offices approached, and many individuals that were interviewed. For the valuable time given and the willingness to share information, sincere thanks are given.

Given the complex realities on the ground, this report no doubt contains its fair share of factual mistakes and misunderstandings. But there may also be conclusions and recommendations that actors may be less happy with, and which are not simply attributable to such background errors, but reflect differences of opinion and weighting of factors when carrying out the analysis and reaching conclusions. The evaluation's task is to take a critical view, but to do this in a fair manner, and based on evidence. A degree of subjective assessment remains, no doubt, and this report and its findings are therefore the sole responsibility of the evaluators, and do not necessarily reflect the views of the client, the collaborating bilateral funding agencies, project staff, government officials or any other informants.

3 Context and Norwegian Assistance

3.1 Norwegian Policy and Strategy

Norad in 1994 prepared a strategy paper that established a set of main principles for energy sector activities². As noted in the State-of-the-Art-Study, a key condition for achieving sustainable development is access to energy at affordable prices based on sustainable natural resources management. It also postulated that there is a close correlation between economic growth and energy consumption, and that in most developing countries, the energy sector is a high priority area for development cooperation. The strategy paper stated that the fields of hydropower development, power transmission and distribution and the petroleum sector, would constitute the focus areas of Norwegian energy sector aid.

On the basis of this interpretation of development cooperation priorities the strategy formulated for the Norwegian energy sector support was rooted in the assumption that Norway was able to supply appropriate and relevant skills and that the Norwegian suppliers had available capacity to handle aid funded energy sector activities.

Norad's Development Cooperation Manual (2003) emphasised environmental issues, and it focused on initial screening of legal and policy framework and national EIA standards. Monitoring and implementation issues, beneficial and adverse environmental impacts, off-site effects, impacts on local populations, and mitigation measures were emphasised.

The energy strategy implies that the assistance would be allocated in such ways that it would be tied to Norwegian supplies of goods and services. Two issues on the international development cooperation agenda since the 1990s were not made key direct goals of power sector cooperation:

- Tied aid, which Norway has strived to abolish among donor countries, was retained as practice for significant parts of Norwegian power and energy sector aid cooperation.
- Poverty reduction – while an overarching goal for Norwegian development cooperation in general – was not explicitly addressed. This was justified by the assumption that such impacts are of a long-term nature and will come in the form of “trickle down effects” from the contribution to overall modernization facilitated by infrastructure investments in power plants, transmission- and distribution systems, and the complementary technical assistance for institution building and training of staff.

Norwegian power sector funded activities during the past 25 years must be assessed against such a background. Sector assistance is first and foremost designed to facilitate the longer term transition to a modern power-based economy and as part of the process helps develop legislation, regulatory systems and institutions based on the “best practices” and experience from modern and developed economies. Capacity building and training is provided based on the same line of thinking.

The Norwegian power sector aid strategy thus has a long-term perspective. Since most of Norway's partner countries had poorly developed institutions, legislation and regulatory authorities, lack of transparency, and governance unable to prevent corrupt practices and misuse of aid money, it was decided that long-term aid for institution building at a policy level and management/administrative level was needed along with technical sector expertise.

The strategy further required the local implementing agencies/institutions to apply sound economic principles and thus make the real capital- and operating costs transparent, and equally important, reveal design and monitoring of subsidies so that their impacts could be traced.

² Hovedprinsipper for Norads innsatser på energisektoren, 1994

At the turn of the Millennium, infrastructure investments – including in energy– had lost much of its momentum as development drivers in foreign aid portfolios, including that of Norway. Beginning around 2003, properly functioning infrastructure was again recognized as important for development and poverty reduction.

3.2 Assistance to Nepal

In its assistance to Nepal, Norway has focused on hydropower development. The approach has been bottom-up, building capacity to plan and implement, and gradually move from small projects to larger, more challenging schemes. Assistance has been channelled through an NGO, the United Mission to Nepal (UMN), whose strategy includes a broad-based socio-economic development agenda including health, education, agriculture, industry and economic development at large.

3.2.1 Context

Nepal is among the poorest and least developed countries in the world with almost one-third of its population living below the poverty line. Agriculture is the main stay of the economy, providing a livelihood for three-fourths of the population and accounting for 38% of Gross Domestic Product (GDP). The country is endowed with a very large hydropower potential, estimated at 40,000 MW, mostly on perennial rivers.

Industrial activity mainly involves the processing of agricultural produce including jute, sugarcane, tobacco, and grain, characterized by the absence of large units with high power demand. Nevertheless, the development of hydropower resources is ongoing, and nationwide power consumption has increased from 200 GWh in 1980 to 2,000 GWh in 2006. On a per capita basis, this is still little, i.e. no more than 70 kWh per annum. About 40% of the population has access to electricity. It is widely believed that growth is suppressed, for two reasons. Firstly, the Maoist insurgency has held back economic activity, and adding new generating capacity is delayed for various reasons.

The international donor community and multilateral finance institutions have provided an estimated USD 1.2 billion for the development of the power sector over the years. This is channelled through the governments' electric utility Nepal Electricity Authority (NEA). However, Norwegian assistance is provided to other actors in the private and NGO sectors.

3.2.2 Nepal's Policy and Strategy

Prior to 1992, the sector had a monopoly structure. The Nepal Electricity Authority (NEA) and its predecessors were responsible for building and operating the needed generating capacity, and for transmission, distribution, sale, and exchange with India of power. NEA was also the sole agency that was legally authorised to engage in power sector activities. However, small decentralised developments were tolerated, and sometimes licensed by the Department of Industry, such as the Butwal Power Company (BPC) in 1965.

In the early 1990s Nepal initiated an opening of the power sector. This was encouraged by Norway, and other donors such as Austria and Switzerland, who had helped to build small hydro schemes in remote areas. A Hydropower Development Policy was published 1992, which opened the sector to private investment. This was followed by the required laws, the Electricity Act 1992 and the Water Resources Development Act 1992. Regulations, providing an interpretation of the laws' application followed in 1993.

By the end of 2006, the laws mentioned above were still in force, but the Hydropower Policy had been updated (2001), and Acts and Regulations to implement the new policy exist in draft form.

3.2.3 Assistance from Norway

Norwegian power sector assistance began with support to the UMN through the Tibetmisjon more than 40 years ago. The evaluation, however, only looks at the last 26 years, where total assistance provided has amounted to NOK 310 million, or about 7% of total sector assistance. Most of the funding has been for hydropower development, but has also covered training and other forms for capacity development, such as assistance to the development of environmental assessment and mitigation in hydro development guidelines and manuals, legal assistance,

support to civil society strengthening through assistance to various sector organisations, the conduct of studies on further development of small and large hydro schemes, and the study of political risk. The goal has been improved and accelerated development of the power sector, with one purpose being the facilitation of private sector participation in investments.

The evaluation has looked at 8 projects out of a total of around 35 that Norway has supported. These represent about two thirds of funding provided. The projects are the following:

- Andhi Khola 5.1 MW AHREP
- Jhimruk Khola 12.3 MW , JHEREP, including later mitigation & rehabilitation
- Khimti Khola 60 MW Hydro Electric Project: Assistance to rural electrification (Jhankre)
- Assistance to the Ministry of Water Resources (MOWR) on legislation
- Hydro Lab pvt. Ltd. Research laboratory
- Khimti Khola 60 MW Hydro Electric Project 1990-1995: Assistance to training of personnel
- Fellowship Programme: Education of Professionals
- Butwal Power Company (BPC) privatisation
- Khimti Khola 60 MW: Feasibility Study

3.3 Assistance to Mozambique

Norway began providing assistance to Mozambique's power utility, Electricidade de Mozambique (EDM), in 1977. The country had gained independence only two years previously, at which time most of the Portuguese managers and technicians had left the country. Early assistance was therefore provided to assist EDM in maintaining and expanding operations under very adverse conditions.

3.3.1 Context

The early phase of assistance coincided with a period of economic downturn and unrest that was largely caused by the armed conflict that began in earnest around 1980 and lasted until the peace agreement was signed in 1992. By the early 1990s, a large part of the country's physical and administrative infrastructure had been destroyed. According to World Bank statistics, the country had the world's lowest GDP per capita, and while the country has seen considerable economic progress over the last ten years, poverty is still widespread.

The country is endowed with a large hydropower potential, estimated at about 6,000 MW, mostly on the Zambezi river. More than 2,000 MW has been developed at Cahora Bassa during colonial times, mostly for power supply to South Africa. The transmission lines, including the main one to South Africa, was sabotaged during the war, and power production was restricted by this for many years. Once the conflict was over, the line to South Africa was rehabilitated fairly quickly, so power started flowing again to southern Mozambique through the southern transmission system. The rehabilitation and expansion of the transmission supply to the central and northern provinces has taken more time, and much of the energy needs there have been provided by diesel plants that became more and more dysfunctional and suffered from a lack spare parts and fuel.

3.3.2 Mozambique's Strategy

At the level of EDM, the utility has focused on three strategies:

- To provide reliable power to provincial and district capitals and nearby industry through the provision of small hydro schemes. This was valid throughout the 1980s.
- To develop the transmission system so that low-cost Cahora Bassa power could be distributed within the country. This was formulated well before cheap power from Cahora Bassa was actually available.
- To participate in the development of regional power exchange by building transmission interconnections to neighbouring countries.

Mozambique formulated an Energy Strategy in 2000, and relevant from this for the power sector are the following:

- To increase the availability of energy for the domestic sector, particularly coal, kerosene, gas and electricity; not relevant items left out on purpose.
- To strengthen the institutional capacity of the main agencies that supply energy, in order to improve their performance;

- To promote economically viable investment programmes, with a view to the development of energy resources (hydro-electricity, forests, coal and natural gas), not relevant items left out on purpose.
- To increase the exports of energy products;
- The participation of the private sector and the development of competitive markets in energy supply are important aspects of the energy policy approved by the government. However, market forces on their own are not sufficient to attain all the socio-economic, environmental and safety objectives in supply, because these objectives may be ignored by the private sector. It becomes necessary to define the appropriate regulatory framework for investors, financing bodies and operators.
- The Energy Strategy is guided by the objectives laid down in the Energy Policy approved by the government, and fits into the general objectives of economic development, namely:
 - the eradication of absolute poverty;
 - the reduction of development imbalances among the country's regions;
 - the development of the national business class.

A perceived weakness of the strategy is the lack of priority-setting. The strategy has not been substantially implemented, and is today considered in need of an overhaul.

3.3.3 Assistance from Norway

Mozambique became a “main cooperation country” for Norway in 1977, when Norway was requested to support the power sector. The evaluation has looked at the period from 1980 to 2006, during which time the total financial support to the energy sector added up to NOK 1.6 billion, by far the largest sum to any country. The projects have covered hydropower studies and implementation, supply of equipment and spare parts, institutional cooperation between NVE and EDM, which was later to be cooperation between NVE and the Ministry of Energy and its predecessor. In the mid-1990s Norwegian support moved to the government unit for the development of large hydro projects (UTIP), and transmission line projects, some of which had a rural electrification component.

In the support to EDM, Norway frequently collaborated with Sweden by joint-funding of investment projects, and by coordinating technical assistance and training inputs.

The evaluation has looked at the following ten projects :

- Small Hydro Studies including implementation of: Lichinga small hydropower project, 730 kW, Cuamba hydroelectric project, 1 MW, and Corrumana hydroelectric project, 14 MW;
- Cahora Bassa–Zimbabwe interconnection: feasibility study and implementation;
- Alto Molocue–Gurué transmission line project;
- Institutional Development, including assistance to: EDM on institutional cooperation and training, MIREME/ME³ Institutional Support, and UTIP for the promotion of mega projects;
- Regional Assistance SADCC/SAPP, with reference to Mozambique.

3 MIREME = Ministry of Energy and Mineral Resources upto 2005, afterwards ME = Ministry of Energy (Mozambique)

4 Evaluation Results

This chapter presents the main findings from the project case studies. The chapter is organized according to the evaluation questions, using the sequence in the TOR. Titles and sub-titles are chosen to reflect the subject of main and additional questions. The country case studies findings can be found in Annex 3 (Nepal) and Annex 4 (Mozambique), with information from the rural case studies in Annex 5 (Nepal) and Annex 6 (Mozambique), and from benchmarking in Annex 7.

4.1 Results of Norwegian Assistance

Evaluation Question EQ 1: What have been the results of Norwegian assistance to the partner country/ region, its power sector, institutions and participating staff and when applicable to local communities, industries and households?

This evaluation identified a considerable list of results. An overview is presented along two dimensions in the following sections. First is according to *type* of intervention, a) infrastructure investments, b) capacity development projects, and c) study and knowledge building projects. Here the results are shown in terms of the results chain: Outputs, Outcome and Impact.

The second set looks at results according to the societal dimensions given in the evaluation question itself: national level, the power sector, and beneficiary group.

4.1.1 Results Chains in Infrastructure Projects

The background data analysis showed that nearly 60% of Norwegian power sector funding during the years 1999-2004 was for infrastructure projects, in particular transmission and distribution systems (Mozambique). In Nepal on the other hand, emphasis was on investments in generation in the years before 2000. But there have also been projects that supported the physical build-up of power-relevant organizations, and specific information and knowledge generating projects.

Project/ Beneficiary	Output	Outcome	Impact
Nepal: Andhi Khola Hydro Electric + Rural Electrification Project – AHREP Input: approx. NOK 21 mill.	5.1 MW hydro power station, distribution grid, connection to the transmission grid and customer connections. Local personnel were trained for construction and operation. Irrigation system constructed. Rural development implemented. Implementation capacity built.	40 GWh of energy production annually + stable generation. Local supply is increasing with new customers connected +el. use increases modestly. A total of 20,400 customers are connected. Cost of electricity is about NPR 3/kWh. 300 ha of agricultural land received gravity irrigation.	Increasing impact of rural electrification, replacement of kerosene, increased commercial + productive activities + indirect benefits, in education, health. Impact of irrigation is significant. Overall, poverty reduced to a level below the district and the national average.

Project/ Beneficiary	Output	Outcome	Impact
Nepal: Jhimruk Kholra Hydro Electric + Rural Electrification Project - JHEREP Input: NOK 134.75 mill.	12 MW hydro power station, reservoir, distrib. grid + user connections as per plan. 150 ha of land lost irrigation for pre-monsoon crop. Local personnel trained for O&M. Provision of drinking water, river training and some other mitigation works carried out. JIDCO has been established. HEP implementation capacity further strengthened.	6,000 connections by the end of 2006. Cost of electricity is about NPR 4/kWh. Productions table except for 2003 downtime due to Maoist sabotage. Reservoir was silted up so peak power supply not possible. Farm production reduced due to loss of irrigation. Not all measures successful. Hence, strained relations with local people.	Most important impact from the selling of electricity to the grid, but also benefits from local electrification, including replacement of kerosene, and commercial activities. Loss of irrigation water gives significant negative impact. Support to mitigate this loss is ongoing under a new project. Poverty somewhat reduced.
Nepal: Jhankre Rural Electrification + Development Project – JREDP Input: Approx. NOK 19.3 mill.	500 kW hydro power station, rehabilitated after Maoist sabotage, and upgraded to 635 kW, extensive distribution grid. In addition, project produced range of rural + social development outputs: literacy classes, enterprise devt., road + trail construction, mothers, forest users, water users groups, rural electric coop.	Provision of electricity to 4,160 households. There is a high connection rate of households, almost 100%. Electricity, other services i.e. drinking water, sanitation + improved schools. Institutional + organisational devt, Rural electric cooperative is functional. Electricity is available at a cost of NPR 3.0 per kWh on average.	Overall living standard lifted above the level outside the project. Improved sanitation, drinking water, more diversified energy provision and use, and a broad diversification of income possibilities. Overall, poverty reported reduced to a level below the district and the national average.
Mozambique: Lichinga small Hydropower Project Input: Approx. NOK 19.7 mill.	0.73 MW hydropower station with 66,000 m ³ reservoir + transformer station connecting to local grid. Unskilled labourers and local personnel trained to maintain and operate.	The production varies with water availability. After main grid reached the town, the station's importance has diminished. Currently out of operation due lack of maintenance.	High benefits in terms of boosting morale during war + bringing activity to remote area, but low economically due to high cost of investment. Overall plant utilisation is low at 31%.
Mozambique: Cuamba small Hydropower Project Input: Approx. NOK 66.76 mill.	1 MW hydropower station, +2,600 m ³ reservoir + high voltage distribution grid. 35km roads upgraded and 10 km built. EDM personnel trained to operate station.	Power to Cuamba by 28 km line improved situation. Variable production + lower than estimated. After grid reached area, station's importance diminished + is out of operation.	High benefits in terms of boosting morale during war, but financial benefits are low due to the high cost of investment. Overall plant utilisation is low at 28%.
Mozambique: Corumana small Hydropower Proj Input: Approx. NOK 91.16 mill. +doubled by Sida.	14.5 MW installed capacity hydro plant + sub station. Minor civil works due to existing dam.	Output capacity below design due to lacking flood gates. Water dept. imposed water fee resulting in conflict and non-use of plant.	Initially high political impact during SA apartheid. Today plant use for peaking at high cost due to water fee. Overall plant utilisation is very low at 18%.

Project/ Beneficiary	Output	Outcome	Impact
Mozambique: Alto-Molocue – Gurué Transmission Line – AMG Input: Approx. NOK 64.8 mill.	75 km 110 kV line, RT station for Gurué town and 42 km of high voltage line, rehab. of existing line and customer connections, +12 distribution stations. Also provided on-the-job training for workers in construction and maintenance.	Energy transported on the line has shown a rapid increase. Grid connection and rehabilitated local network has ensured delivery at acceptable quality level. More than 2900 customers connected + line transports about 7.4 GWh of energy (2006)	Main benefits are replacement of diesel power and local electrification, including replacement of kerosene for lighting, and indirect benefits from commercial activities, higher level of education, health benefits, and other public services.
Mozambique: Cahora Bassa – Zimbabwe Transmission Line – CBZ Input: Approx. NOK 165 mill.	250 km of 330/400 kV line and the necessary RT stations for transformation. The Mozambican part of the line up to the border was connected to the line built on ZIB side	Line transported between 1.400 and 3.500 GWh annually between 1998 and 2006, but volume is expected reduced to 50 GWh per year by 2009 due to under-balance in Mozambique.	Long-term economics are doubtful, due to future regional power shortage, and economic downturn in ZIB, but the project has achieved the political objective of an alternative route for power exports.

Table 2: Result Chains of Assistance to Infrastructure Projects

Findings on Infrastructure Projects

Overall, infrastructure assistance projects are successful in achieving the planned *outputs*. Often this is possible within budget allocations, but cost overrun is frequent for different reasons. *Outcomes* have generally been achievable, but are less predictable. Very frequently, outcome targets in terms of generation, transport and distribution volumes are not achieved, so projections were too optimistic. This directly bears on impact, where most projects do not achieve the expected economic benefits, though wide variations exist. In Mozambique, infrastructure projects were priority targets of sabotage during the war, while after the war that ended in 1992 a slow recovery began, but appreciable economic growth took place only after 1995, though from a very low base.

Nepal fared better in the first half of the evaluation period. It enjoyed political stability, and massive aid influx from a large number of donors. Although poverty was rampant, there was a spirit of development, of which projects could benefit. Projects completed during the early 1990s were quickly on a path of *outcome* achievement and *impacts* started to become visible. Nepal started from a similar level of poverty as in Mozambique and growth was slow, but nonetheless impacting poverty little by little and steadily. The last ten years, by contrast, saw Nepal increasingly affected by the Maoist insurgency, in recent years directly affecting project assets and constraining further impacts.

4.1.2 Result Chains in Capacity Development

Project/ Beneficiary	Output	Outcome	Impact
Nepal: Butwal Power Company privatisation effort. Input: NOK 22.2 mill.	Feasible proposal of using funds for rehabilitation of Jhimruk to advance privatisation of PBC.	Private investors commit themselves to buy all BPC shares from government at full price.	Impact of private utility is considerable. Became a player attracting donor funding for rural electrif. +leverages new investments from local sources in small hydro development.
Nepal: Legal assistance to he Ministry of Water Resources Input: NOK 2.75 mill.	Influenced Hydropower policy 1992 and Electricity Act, Water Resources Act. Coached and trained Ministry staff.	Change of law made private sector investment in generation possible. However, no progress achieved in harmonising other laws.	100 MW of capacity were built within 5 years of introducing new laws. Local private small hydro is on the increase. The lack of harmonisation is increasingly causing investor irritation.

Project/ Beneficiary	Output	Outcome	Impact
Nepal: Training of Khimti Contractor Personnel Input: NOK 4.96 mill.	Large volume of training for workers, skilled workers and technicians in categories of : Operators, tradesmen, supervisors + engineers	Capability and competence of contractors and utility at the operational level is significantly improved.	The companies supported have become industry leaders in their respective fields.
Nepal: Fellowship Education of Sector Personnel Input: Approx. NOK 30 mill.	More than 100 Norway trained degree holders (Master and equivalent).	Large majority finds employment in power sector, including high management and government positions.	Increased professional capacity of sector results in reduced need for expatriate expertise. Development of local institutions advances.
Mozambique: Institutional Development of MIREME Input: Approx. NOK 36.7 mill.	80 ministry staff were trained incl. provincial staff. Regulations produced and made into law for private distribution concessions. Rural electrification strategy was elaborated.	The Development Objective of the institutional cooperation of assisting "[to] perform as a credible authority with a relevant set of legal instruments and regulat. tools in place" not achieved as DNE ceased to exist. New Ministry established meant time lost.	Direct impact was the award of distribution license to private sector participant (Inhambane). Other impact cannot be assessed. Expect. is power sector development with more private sector participation, despite limited replication potential.
Mozambique: Institutional Development of UTIP, for the promotion of large hydro projects Input: Approx. NOK 34.9 mill.	10 UTIP staff trained in large number of courses, seminars, workshops. Promotion materials produced for Mphanda Nkuwa (MN). Proponents concerns addressed through further studies.	UTIP strengthened and transformed into professional promotion unit. Numerous promotion campaigns conducted. MN did not become a reality within time-frame envisioned. However, MN attracted increased interest by private investors, and MOUs were signed.	UTIP's main task remains to develop large hydropower resources in the Zambesi River Basin. The impact of the Program could be significant if a project is realized. However risk is high to end in more delay or non-implementation.
Mozambique: Institutional Development + Training in EDM Input: Approx. NOK 68.7 mill.	More than 697 EDM staff received training in: - admin + management - electricity distribution, - transmission & operation - electronics, mechanics	By 1990, less than 40% of EDM staff were unskilled. Utility developed and business grew with less dependence on expatriates.	EDM has shifted its human resources profile from an unskilled to mostly skilled labour force. EDM has structure, management +output delivery that permits performance monitoring.

Table 3: Result Chains of Capacity Development Assistance

Findings on Capacity Development Projects

The results chains in institutional development projects are usually less clear, though in some cases impact is obvious, such as in private sector licensing of hydro generation in Nepal and the concession award for isolated rural power distribution in Mozambique. The assistance output has in both cases been the change of laws and regulations.

Capacity building at the central government levels has shown mixed results. In Nepal, early success was achieved through legal assistance, by bringing water resources and electricity Acts into force, along with associated regulations. This was followed by a stalemate, i.e. the inability over an extended period to develop initial legislation further and to harmonise with other legislation. In Mozambique, over time, the training output in EDM has been of a large volume, and the outcome was a significant increase in the skills levels of staff, and associated work performance. These manpower outputs, which came about both through formal training and more informal on-the-job mentoring, can be traced through a number of Outcomes, such as a better functioning EDM, power availability to industry, trade and households, and to national growth and development Impact.

Institutional assistance to MIREME faced a number of constraints, the most severe the initial lack of staff, and then the establishment of a new Ministry. This resulted in non-production of some of the outputs, delayed training, and weak administration and reporting. Impacts of institution building are therefore not clear. UTIP, which also received assistance to build up the institution, presents a clearer results profile. After a weak starting phase outputs were produced according to plan, and the outcome is a credible promotion and planning institution. The ultimate impact however, would be the implementation of at least one large hydropower project, and this has not yet been achieved.

4.1.3 Result Chains in Study and Knowledge Building Projects

Project/ Beneficiary	Output	Outcome	Impact
Nepal: Hydro Lab, Knowledgebuilding* Input: NOK 8.4 mill.	Adequately equipped lab formally established. Local staff trained to operate lab facilities.	Fully competent problem study capacity is established and functioning. Institution is increasingly recognized.	At sector level, acquired knowledge has visible positive impact. At project level, specifically created knowledge has significant on economics of project investment cost and operation expenses.
Nepal: Khimti Khola Feasibility Study Input: NOK 3.78 mill.	Feasibility Report, which has been widely circulated and accepted by ADB, IFC, along with other funding agencies.	Positive financing decision on Khimti I hydro scheme. Built working relationship with other sector actors. BPC helped implementing new private sector policy.	Main impact is the Khimti HEP, adding capacity to Nepal's national grid. Buyer of power claims negative impact due to high power price.
Mozambique: Small Hydro Studies Input: Approx. NOK 45 mill.	More than 20 feasibility studies of small hydro projects	3 projects implemented. Important political signal sent. Poor economic performance	No lasting impact beyond immediate impact of 3 schemes, which is marginal.
Mozambique: Zimbabwe interconnecting Transmission Line Feasibility Study Input: Approx. NOK 6 mill.	Bankable Feasibility report	Study caused transmission to be constructed.	Positive impact of interconnecting line. (See HCB-ZIB transmission line construction project).

* Hydro Lab may also be considered as an institutional assistance project

Table 4: Result Chains of Assistance to Study and Knowledge Building

Findings on Knowledge Building Projects

For this type of assistance, one commonality is that specific information and knowledge are often necessary, and when available are conducive to sector advancement, project acceleration and quality improvements of projects. The preparation of master plans and river basin or water shed development studies, may be considered to belong to this type of intervention, though no project of that kind was evaluated. Nonetheless, it is clear that the Electrification Master Plan in Mozambique (financed by the African Development Bank) is an important knowledge document related to current and future electrification projects, from which projects financed by Norway have also taken advantage. Looking to the future, Norway's assistance to the preparation of a Generation Master Plan in Mozambique that was agreed on in 2006, is highly relevant as an instrument for coherent further generation capacity development.

4.1.4 Summary Findings and Conclusion on Project Outputs

Infrastructure projects are the easiest to measure. All projects have been successful in achieving the outputs stipulated, though often with time delay and cost overrun.

The results chains in capacity development is more difficult to discern and assess. In both countries, however, a large number of training outputs were produced. In the operational area, this became a productive force in Nepal sooner than in Mozambique due to the conducive and constraining environments respectively. Institution building in the public administration sector proved elusive under difficult political conditions in both countries. Reports from Angola and Uganda contain similar findings.

Knowledge building and information creation through study and research were found to be much needed supplements to other assistance, to provide guidance for decision making in the sector and to attain improved sector development. This may be even more important in future cooperation, in the context of more in-depth and systematic study, such as Master Plans for generation, transmission and overall electrification, river-basin or watershed development studies, as well as empirical research on various cross-cutting themes and other emerging issues.

Conclusion

An important result in both countries is skilled manpower throughout the sector. This skills development process has been somewhat different in the two countries. In Nepal, a long-term and systematic build-up in skills – in number and complexities – mirrored a move from micro-hydropower schemes to ever larger power investments. Mozambique, on the other hand, faced a large-scale and sudden crisis at independence with the almost total disappearance of technical and managerial staff when the Portuguese left. The fact that the country largely succeeded in keeping its physical network functioning during the war and subsequently expanded, largely using own skills, is a testimony to both own efforts and the success of the Norwegian and Swedish training support.

However, it was the *interaction* between the infrastructure and capacity development support that was critical for the power sector to develop. It is not possible to de-compose these two critical dimensions and estimate their separate marginal contributions to the most typical Outcome of the sector, which was more and better quality power and power-related services to society. It is even less possible to estimate the interaction term between the two. What was notable in both countries, however, was how trained manpower was immediately absorbed and used in the sector, and that the quantitative and qualitative developments in the sector depended on the manpower and at the same time led to increased demand for these skills. While Nepal had a fairly organic growth, Mozambique had to produce skills very quickly. In both cases, however, the two dimensions of power sector development seem to have been remarkably harmonious, with no obvious wastage of either infrastructure or skills investments due to lack of the other. As Norway throughout the periods supported both dimensions, it must be concluded that at least in these two countries, Norwegian power sector aid has been unusually successful in providing a well balanced programme.

4.1.5 National Level Impacts

The macro-economic effect of Norwegian support to the power sector may be estimated for infrastructure projects, but not for capacity building and other non-infrastructure interventions.

In Nepal, the additional generating capacity produced at Andhi Khola, Jhimruk and Khimti (the latter being a private sector investment leveraged by Norwegian assistance), is around 470 GWh per year. If an average value of electricity of US cents 6 per kWh is used, this represents USD 28 million, about 0.3 percent of GDP in 2006.

Another approach is to look at all benefits that have been calculated in the benchmarking process, with the net benefit resulting from total benefits minus all costs over the life cycle. Total benefits consist of direct benefits from substituting electricity for other forms of energy, mostly oil derived fuels, and indirect benefits, such as improved public services and accelerated economic growth. The life cycle costs consist of investment costs and operation

and maintenance costs. The net benefits are shown for each project, in million USD-PPP. This gives an indication of the contribution of each project to the national economy (*Table 5*).

Projects NPL	Investment Mill. USD	Net benefit Mill. USD	Multiplier effect
Andhi Khola	9.25	80	8.7
Jhimruk	21.50	49	2.3
Jhankre	6.23	34	5.5

Table 5: Macro-economic Project Net Benefits Nepal

The table also includes investment costs, and relates these to the net benefits, expressed as a “multiplier” and in this manner presents a ranked magnitude of the impact. The multiplier shown is simply the factor by which the initial investment is translated into net country benefit over the economic life of the investment.

There is in addition a saving of an estimated NOK 4 million (USD-PPP 0.4 Mill.) in every dry season. This is due to a reduction in load shedding by about 30 MW, which, considering the applicable dry season peak time hours, amounts to about 2 GWh not supplied without the Norway assisted projects.

In Mozambique, the power sector has been an important factor for economic growth, with a fairly dramatic growth of electricity consumption since 1992. Data show that over the entire period 1980 to 2005, Norwegian aid to the sector contributed some what less than 25% of the aid to the sector, though after 1992 Norway’s contribution declined to just over 20%. Assuming that Norwegian aid was as efficient as aid in general, it clearly contributed to the growth of the energy supply and hence overall economy since 1992, although by how much is difficult to estimate. An additional benefit was the power sector’s effect on the balance of payments through savings on oil imports and exports of power. The information from the manufacturing sector about the importance of electricity supply as a bottleneck for further progress indicates that electrification has had a positive effect on the growth of business. This is confirmed by the data from the Gurué field study.

At the level of evaluated projects, *Table 6* presents the national net benefits in the same manner as previously done for the Nepal cases.

Projects MOZ	Investment Mill. USD	Net benefit Mill. USD	Multiplier effect
Lichinga small hydro	6.17	1	0.16
Cuamba small hydro	22.18	3	0.14
Corumana small hydro	34.19	3	0.09
Gurué transm. (AMG)	20.61	47	2.3
ZIB transmission	117.62	161	1.4

Table 6: Macro-economic Project Net Benefits Mozambique

The results across the case studies are uneven and depend on specific project circumstances. Jhimruk, despite its larger capacity than Andhi Khola, is considered to result in a smaller net benefit over its life because its cost of maintenance and required re-investments are assumed considerably higher. Andhi Khola benefits are comparatively large, because the investment cost per kWh of power produced over the life time are low. Jhankre is between the two other projects because its relative investment costs are higher than in Andhi Khola but maintenance costs are assumed relatively lower than in Jhimruk.

The small hydro projects in Mozambique show a very small benefit caused by high costs of investment and low lifetime productivity. Here, one has to make allowances for the largely political motivation of the projects, and the difficult situation during the war. The transmission line to Zimbabwe shows a positive net benefit, but the multiplier is relatively small since

power export has been decreasing over the years, and this trend is assumed to continue. Finally, it is seen that the Gurué project is overall appreciably beneficial.

Findings

The net benefit from the electrification projects was positive and of considerable magnitude. However, the magnitude varies and depends on the specific aspects of the project as well as the economic and political circumstances. In life cycle calculations, assumptions were made for future project performance. Building such assumptions on historical trends has been done as a conservative approach. However, when power demands grow at a high rate it is likely that future performance will improve compared to historical trends. It is found that growth of benefits is not linear, and sudden steep increases in growth tend to be later rather than sooner.

4.1.6 Electrification Impact on Rural Areas

The rural impact in terms of benefit to the poor has also been calculated in the benchmarking. This is shown in *Table 7* for Nepal cases, and in against investment cost (all in USD-PPP). The percentage of the investment accruing to the poor is then calculated. The share of net benefits of the total, going to the poor do not vary widely in Nepal, because the features of rural supply are similar.

Projects NPL	Investment Mill. USD	Total net benefit Mill. USD	Net benefit to Rural Poor, Mill. USD	Net benefit to poor, % of total benefit	Net benefit to Poor, for each USD invested
Andhi Khola	9.25	80	6.6	8.3	0.71
Jhimruk	21.50	49	3.5	7.1	0.16
Jhankre	6.23	34	3.5	10.3	0.56

Table 7: Net Benefits to the Rural Poor in Nepal

The two small hydro projects Lichinga and Cuamba in Mozambique (see *Table 8*) show a relatively high benefit to the poor, as these projects were conceived for local supply only. The Gurué project purpose is also local supply, but industry and other commercial loads were specifically targeted, so the share of benefit to the poor is smaller. For Corumana and the cross-border Zimbabwe transmission, the benefit to the poor is marginal, from the distributional effect of indirect benefits.

Projects MOZ	Investment Mill. USD	Total net benefit Mill. USD	Net benefit to Rural Poor, Mill. USD	Net benefit to poor, % of total benefit	Net benefit to Poor, for each USD invested
Lichinga small hydro	6.17	1	0.2	20	0.03
Cuamba small hydro	22.18	3	0.7	23	0.03
Corumana hydro	34.19	3	0.12	4	0.04
Gurué (AMG)	20.61	47	4.3	9.1	0.21
ZIB transmission	117.62	161	1.7	1.1	0.01

Table 8: Net Benefits to the Rural Poor in Mozambique

In relation to the investments, the projects show widely variable rural benefits, as a result of the degree of poverty focus. Andhi Khola has been a rural development project with a component of power delivery to the national utility. Hence, the large share of 71% of the investment accruing to the rural poor is plausible. Jhimruk has been conceived as a peak power supplier to the national grid, with local rural electrification as an add on: only 16% of each investment dollar goes to the poor. Jhankre also has a focus on the poor, but compared to Andhi Khola, its relative investment costs are considerably higher, resulting in a 56% share of investment benefits going to the poor.

A low 3 to 4 cents per investment dollar go to the poor in the small hydro projects in Mozambique. This is due to high cost of the investments, and low life time productivity of the schemes. Gurué has been conceived as reliable power supply to the district capital and the tea industry, with some rural and semi-urban electrification. The benefits to the poor are limited due to this, at 21%. The inter-country Mozambique-Zimbabwe transmission finally shows a marginal 1 cent per dollar invested going to the poor. The project has not been conceived to benefit the poor, and the value shown comes from *pro rata* distributed indirect benefit.

Findings

Rural electrification benefit the poor more when the project has a real poverty focus. The *share* varied from only 1% to over 20%, but absolute benefits for each USD invested varied even more.

4.1.7 Changes in Poverty

In Andhi Khola from 1981 to 1993 the number of very poor families increased, assumed due to increasing pressure on the land. But between 1993 and 2007, the percentage of poor and very poor decreased by about one third (*Table 9*), see also Annex 5, para. A5.1.3.2).

Wealth rank	1981	1993	2007
Rich	9.7	14.2	30.0
Medium	36.5	27.6	33.3
Poor	41.8	39.5	31.7
Very Poor	11.9	18.6	5.0

Table 9: Poverty status as % of households in the survey sample Andhi Khola

The reason identified for this, is increased off-farm livelihoods, which developed in part thanks to the availability of electricity. Another factor is remittances from abroad, where the families invest in an improved home or a family business, where the latter generates additional income. Electricity helps in running the business, and an increasing income from this is used for additional electricity consumption. This process is not dramatic but nonetheless discernible. The very poor are most likely to be excluded from this process, but their situation is tending to improve nonetheless, from the trickle-down effects of economic growth and electrification.

In both other studies carried out, Jhimruk in Nepal and Gurué in Mozambique, the change in poverty status was not found to be significant. The apparent reason is that in Gurué the percentage of households connected remains very low, and the poor do not afford a connection. In Jhimruk, connection rates are high, but 58% of all households are without electricity, including almost all of the poor. Another reason is likely to be that both projects are more recent and that impact of electrification on poverty is slow.

The costs of electricity are relevant. In Mozambique, EDM some years ago abolished differentiated categories that benefited the smallest (poorest) users, in favour of a single social tariff for consumption up to 100 kWh per month. This has hurt the poorest consumers.

In Jhimruk, an area that is considered in general poorer than Andhi Khola, fewer of the poor households are connected, but those that are, tend to subscribe to higher consumption categories at a higher price than the base rate. It is unclear why this is so, but about one third of the consumers benefit from a “social tariff” which is about 60% of the normal domestic tariff. Hence, there clearly is a cross-subsidy element. While the need for this is understood by the utility, it constitutes a disincentive to connect more of the presently unconnected households.

Another question that is raised is whether it is the initial cost or the running costs that prevent people from acquiring a connection (see State-of-the-art study, Norad 2006). The evaluation found that about 4% of the connections in Jhimruk were at a later date permanently cut

because the households could not afford regular fee payment. No such cases were identified in Andhi Kholá or Gurué, where in fact, EDM does not levy an initial connection charge on “social category” consumers. The disconnected consumers in Jhimruk had been able to pay the initial connection fee. It appears therefore that the connection fee was less of a problem and rather the recurring expenses, which is an unusual finding that merits looking into, among other things to inform on-going debates on cross-subsidy levels for the poorer households, to increase access rates.

4.1.8 Provincial and Rural Distribution

In Mozambique, Norway has not supported grid power generation. Instead, a useful proxy for the success of assistance provided to EDM is the national access rate - what share of the population has access to electricity, which is shown over time in *Table 10*.

Numbers x 1000	1987	1991	1993	1995	2000	2003	2004	2005	2006
Population	13,190	13,724	14,455	15,224	16,574	18,862	19,302	19,730	20,152
Customers	106	127	136	159	202	246	285	339	416
Households el.	446	534	573	669	848	1,033	1,195	1,424	1,746
%access	3.4%	3.9%	4.0%	4.4%	5.1%	5.5%	6.2%	7.2%	8.6%

Table 10: EDM – Increase of Access Rate 1987 to 2006

The Gurué study shows that a focus on supply to productive centres for industrial and commercial consumption has had a considerable impact in terms of electricity consumption and in the number of connections. While the arrival of grid electricity does not change things over night, it supports and sets in motion a slow and steady growth process.

Before	After					
	1996	2002	2003	2004	2005	2006
GWh	1.93	3.88	4.54	5.31	6.04	7.37
Clients	500	1,021	1,194	1,379	2,082	2,917

Table 11: Development of Power Consumption in Gurué: 1996 – 2006

While the power forecast during the planning of the project had come up with a consumption figure of 17 to 22 GWh by 2006, the actual consumption was lower making the project much less economical than predicted (see). But this has become irrelevant since the line now carries the entire load for the Niassa province in addition. Due to this, the investment is economically fully justified and sustainable. Furthermore, Gurué has now reached an access rate of 4.7%, more than double that of the provincial average, further showing the positive effects.

Impact on industry is found to be massive, and reliable electricity supply has allowed growth in the tea and agro industries. The arrival of grid electricity has triggered substantial rehabilitation and expansion investments. Project areas in Nepal had no such industrial potentials, and the support to small scale enterprise development has brought only modest results, documented by the fact that “industrial” power use is only about 15 kWh per day and enterprise (see Andhi Kholá, Annex 3).

4.1.9 EDM Financial Performance

Another overall result is the revenue and cost structure of EDM. The assistance should over time enable EDM to become more efficient, profitable and sustainable by obtaining internal efficiency gains, enlarging the business so that economies of scale can be exploited, and in

general by improved methods of good housekeeping. An improved relationship between revenue and cost would indicate success of assistance and EDM's own efforts.

Using data from published annual reports, it was seen that the number of clients per employee had increased from 30 in 1987 to 129 in 2006, a four-fold increase in 20 years.

The following calculations were then done:

- The gross surplus from operation was calculated by deducting energy procurement cost from gross revenue from energy sales (the blue line "surplus" in the graph). Energy procurement cost is largely payments to *Hidroeléctrica de Cahora Bassa* (HCB) from where most of EDM's power comes, but it also includes the cost of producing energy with EDM's own generation, and power purchase from South Africa.
- Next, the major cost components were inserted, shown as a stacked column for each year. Note that the stacked column does not represent the totality of cost, but only the major cost positions. Hence the diagram does not show net profit as a difference between the amount of surplus and the amount of cost. One reason is that the cost of losses is not shown, because it is treated as a separate important indicator.

Findings on EDM Financial Performance

The revenue surplus increases dramatically between 1995 and 2005. The reasons for this are that the sales volume is increasing continually, and tariffs increase also. At the same time, power from HCB has become cheaper. EDM could finally benefit from the original Eskom⁴-HCB agreement, when the transmission line to South Africa was fully rehabilitated in 1998.

But the major cost components develop in parallel with the surplus, despite the fact that financial costs were reduced drastically after a financial restructuring in 1995. Despite growing sales volumes and higher staff efficiency, there is in fact no improved revenue to cost relationship.

While the business of EDM is growing, and the earning capacity increases considerably, the development of costs is contrary to what one would expect from increased staff efficiency, higher tariffs, lower energy procurement cost, and growing business volume. If this trend continues, the expectation of achieving profitability and financial sustainability remains elusive. It appears that EDM requires more rigorous cost management and more effective loss management, and target-setting for this should come from the performance contract with the government, which at present appears too lax.

The finding is illustrated in the diagram of *Figure 1*.

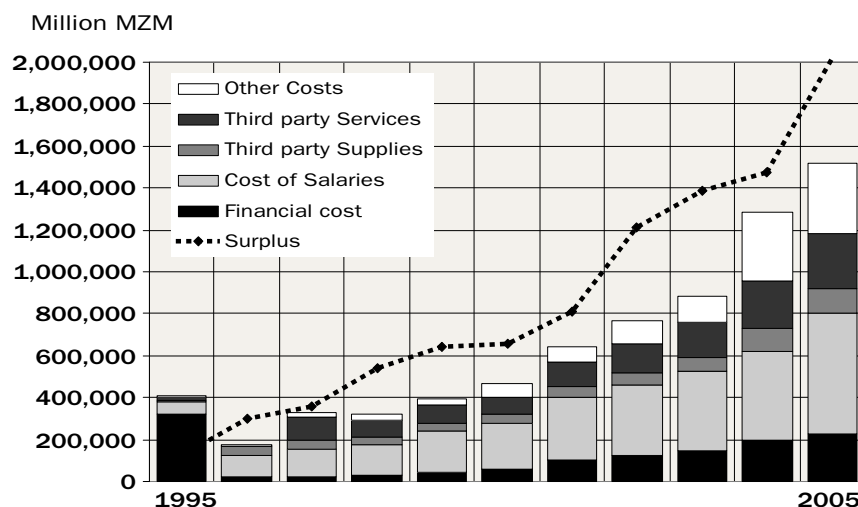


Figure 1: EDM Revenue Surplus and Major Cost Drivers 1995 to 2005

⁴ Eskom = South Africa's National Electric Utility

Conclusion

One of the key issues for development in Mozambique is a sustainable and accelerated increase of the electricity access rate. As shown in table 10, this has begun increasing as of 2003, in large part due to the large-scale financial assistance from Norway, Sweden and the World Bank.

But seen in the light of cost-efficiency and financial performance of EDM, assistance measures and EDM's own efforts have not been effective in attaining financial sustainability. This is also seen in the mixed results of loss reduction programme support, which, if successful, could have a huge impact on the financial situation, but so far has only produced modest results (see Annex 4, support to EDM).

4.1.10 The Effects of Hydropower Development

At the country level, Norwegian assistance has helped Nepal to add considerably to its generating capacity: 5 MW at Andhi Khola, 12 MW at Jhimruk, and indirectly 60 MW at Khimti as Norway financed the feasibility study which leveraged private sector investment. When the project was implemented with private sector finance and loans from multilateral agencies, Norway participated again by funding a large part of the special training to staff of contractors and construction workers.

Norway also assisted Mozambique in developing small hydro capacity in the early years of assistance. An assistance package entitled "Hydro Power Studies" from 1980 to 1994 studied the feasibility of decentralised small developments. Only three projects, Lichinga, Cuamba and Corumana, were implemented with Norwegian financing and technical assistance. The first two included a local electrification component, while the Corumana project, close to the border with South Africa, was primarily built to reduce South African power imports during peak load periods, since that carried heavy penalties. Without a water charge (which was not anticipated, see Annex 4) the Corumana project would have made sense both politically and economically, by reducing Mozambique's dependence on South Africa at a time of conflict. The two small projects in Lichinga and Cuamba in the north were more political in nature. The two cities were vulnerable to power shortages from worn-out diesel generators and problems with access to fuel because of the war, and the two power stations were to provide secure energy in the wet seasons. There were also expectations that some additional economic activity could be generated, though the war and the limited water flows made this unattainable.

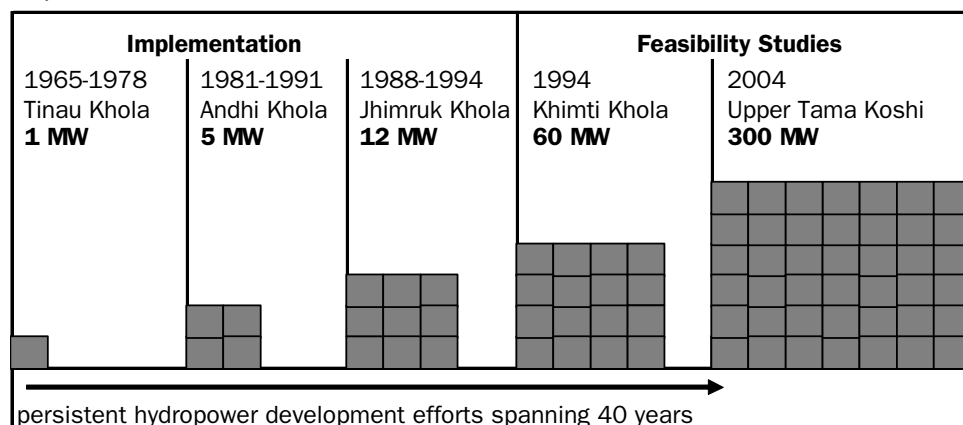
While the support strategies to the two countries may appear to have been similar, since Mozambique to begin with also got assistance with small-scale projects, Mozambique's power strategy was all the time based on exploiting the Cahora Bassa power, and the infrastructure required for this, and not on developing other hydropower sources. The three small hydropower projects were therefore departures from that strategy, caused by the war, an interpretation not agreed to by all stakeholders. Nevertheless, it was definitely not considered part of the least-cost approach to the country's electrification and power sector development. As the conflict subsided, EDM returned to its idea of focusing on the power from Cahora Bassa, with Norwegian assistance supporting infrastructure project implementation. The "quota" of 200 MW from Cahora Bassa was re-negotiated over the years, and today, 300 MW are available to Mozambique.

In Nepal there has been a continuous and consistent support line, beginning with the 1 MW scheme at Tinau Khola around 40 years ago, to the recent 300 MW Upper Tama Koshi feasibility study. This strategy has been closely linked to capacity building in specific implementation entities.

In Mozambique, the conflict led to two strands of support running in parallel: training and capital support for maintaining the transmission network, and the decentralised small-scale schemes. Once the conflict was over, this second concern was dropped, and some of the skills and investments made there were lost. While the formal argument for the small schemes was economic, it was clear that the larger issue was maintaining a government presence in the marginalized north. Norway accepted this, but still relied on formal (but doubtful) economic analyses as justification for the projects. *Figure 2* (following page) illustrates the very different assistance profiles that actually resulted over time in the two countries.

In the field of generation, Norway also provided significant assistance to Uganda. Funding was provided for 3 x 40 MW turbines, supplied by Kvaerner, as part of the 200 MW extension of the Owen Falls power station. However, in contrast to Nepal and Mozambique, assistance in Uganda was under parallel finance with the World Bank. Norway is not directly responsible for the perhaps questionable concept of increasing outflow from Lake Victoria for the purpose of adding to generating capacity. It is clear however, that the hydrological risk of drawing down the water level in the lake was assessed in an inappropriate manner, and related advice of Norway was apparently ignored.

Nepal



Mozambique

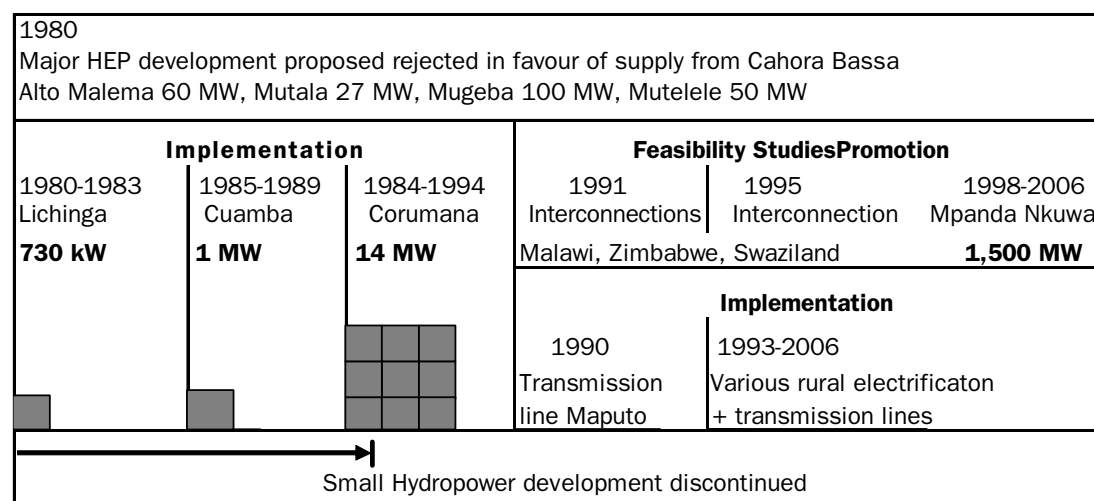


Figure 2: Comparison of Development Strategy Nepal and Mozambique

Conclusion

The strategy of developing hydropower from the bottom up, in concert with institutional development and training has paid off for Nepal. It is seen as coherent and effective, and has resulted in capabilities conducive to further indigenous developments on a larger scale.

Small hydro development in Mozambique was pursued for a limited time due to the war, while the overall vision was based on distributing Cahora Bassa power. As availability of power from Cahora Bassa becomes constrained in the future, capacity to develop other hydropower resources is likely to gain importance again for EDM. This also appears important for the fact that the present situation, with quasi one single power source, has its own problems.

4.1.11 The Regional Context in Terms of Import/Export

In the regional context, interconnecting transmission lines to neighbouring countries have been relevant. The HCB – Zimbabwe transmission line is one such example. The output of the

project is the 250 km 330/400 kV line and the necessary transformer and switching stations. The Mozambican part of the line up to the border was connected to the line built in Zimbabwe, funded by other donors. The line transported between 1,400 and 3,500 GWh annually between 1998 and 2007, but the volume is expected to be reduced to 50 GWh per year by 2009 due to under-balance in Mozambique.

4.2 Success Factors and Constraints Causing Failure

EQ 2: What have been the reasons for success or failures, and the risks involved?

The power sector, more than most others, is dependent on long-term and consistent policies and priorities, because the basic investments – power stations, transmission lines and distribution systems – have such long economic lifetimes. The predictability and stability of such framework conditions are thus the basic pre-condition for successful support to the power sector.

4.2.1 Success Factors

Considering the experiences in providing assistance over many years, an attempt is made to identify generally valid success factors.

A vision and persistence in pursuing it

It is clear that without a vision at the early stage and persistence over decades, neither BPC in Nepal, who today supplies 26,000 electricity customers and owns two hydropower plants, nor EDM in Mozambique, which has become a national utility with thousands of kilometers of transmission lines, tens of thousands of kilometers of distribution network, and 240,000 customers would have become a reality. The vision in Nepal was first owned by UMN, but today it is being further pursued at the national level, for example by the establishment of new institutions such as Hydro Lab. This owes its success to the vision of its founders that were consistent with the larger needs in the sector. In Mozambique, EDM developed and maintained a consistent vision that was actively supported by Norad.

Comprehensive Aid Portfolio

In both Mozambique and Nepal, Norway has supported a portfolio of complementing interventions that has produced important synergies, between infrastructure investment, training, organizational development and support to legal frameworks. These were largely needs-based and included a critical assessment of host country policies and strategy in order to identify those areas most necessary and conducive to further progress. This approach has also been followed in Uganda, while in Angola the support has been more narrow due to the framework conditions there.

Project Focus and Anchoring

At the project level, success factors appear to be inputs adapted to the implementation capacity of recipients; a comprehensive programme addressing the entire value chain; and strong local ownership of the projects.

Taking Risks

As the sector develops, the various projects have become bigger and bolder, and in a still unstable environment, this increases the risks of Norwegian support. At the same time, given the long lead-time for hydropower projects, taking some risks and betting on the future has so far paid off.

Donor Consistency and Predictability

On the Norwegian side, support to the power sector appears to be quite unique regarding consistency and predictability. The key Norwegian organisations involved have been quite stable over time, and have established close links with their national counterparts, training support has been broad and long-term, including higher degree courses provided by the same institutions over time. While there have been glitches on individual projects, the longer-term relations have remained stable, with good institutional memory on both sides of the table, and thus trust and confidence in each other.

As the sector has developed and larger activities and hence bigger national actors have entered the picture, the overall relations between the countries have remained solid and evolved. In many respects, these long-term partnerships in the power sector may constitute some of the best examples of successful cooperation development, including where capacity development has in fact been successful.

Participation

Since the relations have been long-term, many processes have had time to evolve, ensuring stronger ownership by local stakeholders. One example is the new power sector regulations in Mozambique, where the success is attributed to the fact that the elaboration of the regulations was allowed to take the time required in the local context. This provided space for a highly participatory process, which ensured that all key actors were involved and heard.

4.2.2 Causes for Failure

The major causes of failure have been the structural ones noted above. The most important has been the conflicts, which in Mozambique forced considerable resources to be spent on repairing power pylons and re-stretching transmission lines due to sabotage, but also the change in focus to non-economical small-scale hydro plants. In Nepal, Maoist rebel attacks on the Jhimruk power plant and the threat of attack forced delays in institution building and reduced project efficiency in the Jhankre rural electrification project.

The other has been the structural changes in the sector. In Mozambique, this has led to disruptions and waste of resources in capacity development when responsibilities were moved from one institution to another, and much of the skills developed were then not taken advantage of.

One interesting dimension is that the utility EDM has been more consistent and persistent in its human and organisational development efforts, while public sector institutions have been more vulnerable to changes that have led to loss of skills, but without management seemingly trying to address this aggressively. One reason may be that the utility has a more focused, explicit and long-term agenda, so the capacity development investments are high priority. Another is the generally more attractive employment conditions in EDM. The political milieu in Mozambique is less stable in terms of its core activities and priorities, and management is thus more focused on short-term issues.

4.2.3 External and Internal Risks

Risk management is often divided into internal project risk, and external factors. Engineering projects typically include project risk analyses, integrated in project management, and NVE, in its various advisory roles, has pointed out environmental and other risks on occasion (Jhimruk, Khimti, Owen Falls turbines), and has recommended specific action. Hence, internal risk appears taken care of in infrastructure interventions.

External risks in terms of market risk and other external factors do not seem to have been concerns in the planning processes for projects such as the HCB-Zimbabwe transmission line, and Corumana hydro electric project (HEP). In the latter, the awareness of risk of running into a problem with the water department is not discernible. One reason is presumably because these are factors which the donor assumes that the national authorities are best placed to handle, and expect them to address. But if this is the assumption, it should be stated explicitly and the local partner's analysis presented and discussed.

Where donors assist the development of hydro generation capacity, there are two major risks. One is cost overruns, which in principle the donor may shoulder in order to reduce the risk for the recipient country. The other is time delays that may result in insufficient power supplies in the short and medium terms, which may become critical for the recipient. Donors should support strategies and actual implementation that are able to mitigate this risk, for example by diversifying the generation options, implying the implementation of several smaller projects in parallel, rather than gambling on one card of one single large project at a time. However, Norway is emphasising just that in Nepal (Upper Tama Koshi) and in Mozambique (Mphanda Nkuwa), both of which are relatively high risk options. The World Bank, with equipment supply assistance from Norway and Sweden, has opted for a similar risky approach in

Uganda, but here the risk is of hydrological nature (NCG 2006, “Review of Norwegian support to the energy sector”). When it comes to capacity development, there does not seem to be any risk analysis or risk management in place. The finding in all capacity development projects is that potential failure or delays are not being identified as risks (with internal or external causes), and consequences of occurrence are not discussed or documented for later reference. This is a major weakness since these activities tend to face complex problems and are typically the least successful form of development cooperation.

In both Nepal and Mozambique, armed conflict has been the major disruptive factor to the authorities’ ability to ensure long-term stability. The conflicts have been different in nature, however: in Mozambique it was an intensive, open warfare that systematically targeted the power sector, till the peace agreement was reached in 1992. Since then, the sector has faced a stable and fairly predictable environment, so the framework conditions for large-scale investment projects like transmission line extensions and Mphanda Nkuwa are in place. Support for these kinds of projects, which are inherently risky, may therefore be appropriate, but require active risk monitoring and management.

In Nepal, the conflict has been low-intensity, varying in impact across both space and time. Even with the recent agreements, however, uncertainty regarding the future remains, which means a more risk-averse overall strategy for the sector may be appropriate. A focus on small and medium-scale power schemes with strong local anchoring is therefore consistent with this environment.

Finally, the evaluation finds that Norwegian authorities have been acutely aware of political risks in hydropower development, and have commissioned a study of such risks in Nepal (Scanteam/Metier 2005). The report has been widely read in Nepal and has given rise to more awareness of a wide spectrum of issues, including possible risk avoidance, mitigation and management solutions.

Preconditions for Successful Future Assistance

Overall, successful assistance may be defined as processes that lead to good results: outputs that are produced within time frames and budgets, and outcomes and impacts that deliver intended benefits on a sustainable basis. To achieve this, the following factors were identified:

Political stability in a democratic environment, to minimize political risks and ensure equitable distribution of the benefits.

Evolving Good Governance, because without it, the risk of corruption increases, laws and regulations are not followed; and distributional issues are not seriously addressed.

Capable institutions, who are also trustworthy and open are needed as implementation partners, in particular in big and complex undertakings such as sector reform and large scale infrastructure projects. In the absence of strong partners, such projects may not be achievable, and a considerable part of funding must be allocated to anti-corruption measures and control mechanisms. If capability and other qualities of partners are deemed insufficient, it is likely that only less ambitious and small projects may be successful.

4.2.4 Conclusions

The key factors for success appear to be:

- a) A vision of development, and persistence in pursuing it;
- b) The structuring of a complementary portfolio that ensures synergies across key sector issues;
- c) A project focus that considers recipient capacity, the entire value chain where possible, and strong local ownership;
- d) Taking calculated risks over the longer term, coupled with Norway’s consistency and predictability as a donor;
- e) The building of good relationships and trust among partners; and in such an environment
- f) A participatory and inclusive approach to development.

Many causes for failure are specific to the circumstances, though some factors are more general:

- a) Structural problems and structural changes that put constraints on what is possible in the first place, and may be disruptive to implementation when they occur;
- b) The lack of partner capacity and strength that may result in the inability to solve persistent problems;
- c) The lack of risk analyses and risk management actions to help avoid failure; and
- d) Since failure is the opposite of success, the lack of a sufficient number of success factors.

It is not clear to what extent various risks have been addressed in an appropriate manner, as there is limited documentation. At the technical and project level, good engineering practice has addressed risks, while economic risk has less often been a considered factor. Political risk assessment has, in general, not been carried out, or it is not documented. The case of Nepal is an exception, as such a study was carried out in relation to hydropower investments. Environmental risks were addressed in various ways. The impression is that this was done in an appropriate manner on the small and medium scale projects, while for the large Mphanda Nkuwa project it may not yet be at an advanced stage of study. Risks in capacity development projects do not seem to be addressed.

In addition to the success factors listed above, there are some desirable preconditions of a general nature that are highly conducive for goal achievement in future assistance:

- a) Political stability,
- b) Improvements on Good Governance, and
- c) Capable institutions as local implementation partners.

4.3 Challenges and Opportunities

EQ 3: What have been the challenges and opportunities for Norwegian assistance when other donors or commercial interests have been involved directly or indirectly?

4.3.1 Aid Effectiveness, Harmonization and Coordination

The Paris Agenda, with its focus on improved Aid Effectiveness through donor harmonisation and coordination, alignment with national policies and priorities, results focus, and mutual accountability, should in principle be easy to implement in the energy sector because results are relatively easy to agree on and monitor; there tend to be relatively few actors involved; the sector is dominated by big and highly visible infrastructure projects so prioritisation and alignment is less of an issue; and for large-scale investment activities there are international standards such as FIDIC contracts available to guide the partners, and the international finance institutions mandatory guidelines on social and environmental mitigation. In practice, energy tends not to have the kinds of formal sector wide programming (SWAPs) and working groups found in sectors like health and education, probably because energy is not a key dimension in the MDGs.

But because there are so few actors involved, they tend to know of each other and collaborate. In Mozambique, Norway for many years played a leading role, which now has largely been taken over by the World Bank, both due to its large-scale investment resources but even more due to its policy and analytical resources, and lead role in the macro-economic dialogue where energy is an important component. This has led to Norway and other bilateral donors becoming part of a fairly continuous dialogue with the Bank and the authorities. This has clearly ensured that Norwegian support has been discussed and reviewed within the larger sector development context that the Bank has brought to the table. It has also helped the various funding partners agree on priorities and keep each other informed about their assistance, and thus helped coordination.

At the same time, donors like Norway have insisted that the donor community respect the Mozambican authorities, and in that role has helped strengthen local ownership and leadership. The best known example of that occurred when the World Bank under its ERAP (Electricity Rehabilitation and Access Project) intervention, wanted to convince the government that it should privatise the power sector to the extent that EDM distribution might be divided up and concessions for private sector operation should be awarded. Resistance from EDM made the government rethink this strategy. The Scandinavian donors Denmark,

Norway and Sweden assessed the World Bank strategy during their joint review exercise, supporting the EDM position⁵, that ultimately led to the World Bank retreating on this point. It was clear that one concern the Bank had was not to alienate important donors to the Bank system in general, in the power sector in particular, and accepting that the Scandinavians carried particular political weight in the energy sector.

4.3.2 Involvement of other Actors

The involvement of other donors in the sector has been positive for Norway, where it has quite often and successfully jointly (with Sida) funded EDM projects. This has lowered transaction costs to all parties with only one donor getting involved in project administration, for example. In Nepal, Norway similarly co-funds a programme that is run by Danida technical assistance, with good results.

The main challenge has been when commercial interests intervene. This can happen both on infrastructure contracts, and when it comes to provision of technical assistance, such as with capacity development activities. The typical result has been that the donor-supply “push” has prevailed – the other donors do not wish to get involved, and the governments have resigned themselves to this being part of the development assistance reality. The trend, however, is towards un-tying of aid and more competitive procedures, not least of all because this is pushed by the World Bank. Norway has been in the political forefront for this change, but still has found itself in awkward situations. The best example of this was when Norwegian investors negotiated the power purchase price for the Khimti HEP with the Nepal government. The case has been much debated among stakeholders and the question raised whether Norway took advantage of its strong role in the sector to support Norwegian commercial interests (see Annex 3, p. 63, last paragraph).

4.3.3 Private Sector Finance

Looking to the future, hydropower development on a commercial scale appears to move towards models of public-private partnerships, since public resources are not sufficient nor most appropriate for such large-scale investments. The Jhankre rural electrification and development project (see annex 3) is a successful example of this approach. Here Norwegian assistance was critical in laying the groundwork for private investments. Later, when the project was implemented by private sector promoters, there was a further opportunity to enter into a public-private partnership on the subject of impact mitigation and benefit sharing with the local population.

There is the notion that most developing countries need to attract private sector finance, in particular for investments in power generation. This is in fact a challenging topic. First, there is only one large hydro project worldwide at an advanced stage of implementation with private finance. Research indicates that the most likely future scenario for large projects is a public-private partnership, and in this, the participation of multilateral finance institutions is required. Institutions such as the World Bank may be instrumental in enabling country governments to invest a significant share in the undertaking, most likely as a project-finance venture. In addition, sovereign loans will help to finance the debt portion of the project.

Private sector finance, in concert with the host government will have to cover about 30% of project cost as share investment. In practice, based on past experience, the largest share of investment falls on private sector promoters, and this may mean very large sums of money. The Nam Theun 2 hydro scheme in Laos is the only large scale development ongoing worldwide with international private sector finance. The project set-up is briefly outlined: It has the purpose of constructing and operating a hydropower plant of 1,086 MW capacity, with a planned output of 6,000 GWh per year. At that size, it is comparable with Mphanda Nkuwa in Mozambique, but it comes at considerably lower cost, both for generation and for transmission of power ([see www.namtheun2.com](http://www.namtheun2.com)).

Financing of the project is of interest. The total base Project cost is USD 1,250 million, with an additional contingent financing of USD 200 million that brings the total financing sources for the Project to USD 1,450 million. It is financed by a combination of equity by the Shareholders (~30%) and international loans (~70%).

⁵ Joint Scandinavian Review of the Plans for EDM Restructuring, Debriefing Note, October 2003

Half of the international loans are sourced in USD from several international development and commercial financiers including the Agence Française de Développement (AFD), the Nordic Investment Bank, Proparco, and Thai-Exim. Furthermore, the Asian Development Bank (ADB), MIGA, the World Bank's International Development Agency (IDA), and Export-Credit Agencies of which COFACE of France, EKN of Sweden, and GIEK of Norway, provide risk guarantees to a group of nine international commercial banks. A group of seven Thai commercial banks complete the other half of the debt financing in Thai Baht.

The main shareholder in the venture is EDF, the fully state owned French national utility, and its subsidiary EDF International. EDF is at the same time the Head Contractor, responsible for construction, and provider of technical services and personnel management. The Lao Holding State Enterprise (LHSE) is the national shareholder on behalf of the government (GOL), for which it was created. Other shareholders are two public companies from Thailand, Italian-Thai Development Company (ITD), also acting as principal sub-contractor, and EGCO, a Thai independent power producer that operates 2.000 MW of capacity in Thailand. Each shareholder contributes equity pro-rata its respective participation in NTPC, including a contribution of approximately USD 100 million by the Lao partner LHSE, which is financed by means of loans, grants and other financing from institutions including the AFD, ADB, IDA, and the European Investment Bank.

The following notes by the evaluation may point to the main challenges:

- In technical terms, the project is very attractive, with a very high head for generation, and short transmission lines, as well as 5.500 hours of full load generation per year. At a cost of 1,335 million USD/MW capacity, this makes it immensely profitable.
- The time required for the gestation of the project, from feasibility study to operation is going to reach 19 years. In this, study of environmental and social safeguards has been an important component, but the Asia crisis around 1993 has also had a negative impact.
- The institutional arrangements are complex, but also delicate. It is not clear how the pre-determined contractor arrangements, precluding competition, are compatible with international procurement requirements.
- National ownership may be an issue. The Lao government is in a marginalised position, and other host countries may find this difficult to accept.
- To have the World Bank and affiliates on board appears to be essential. A minor part of investment (equity) finance is actually attributable to the private sector, the bulk of investment is indirectly from the French government.

4.3.4 Building Trust as a Prerequisite

Investors will of course look at the risk of failing to recover their investment in the period planned. The perception of such risks is closely connected to the assessed absorption capacity of the market and the perceived trustworthiness of the host government, evidenced by Good Governance: Transparent decision processes and accountability, control of fraud and corruption, fair taxation and dependable and impartial rule of law. The market is often not such a problem, as developing nations or their neighbours are energy hungry (see the example above, or consider the case of South Africa), but there is a perceived need that the agenda on trust be further developed. With all good intentions, this will not happen over night, as a considerable number of spheres is touched on. Meanwhile, private sector investors may still be reluctant to go ahead with a single large investment, but may be willing to pilot smaller projects. Internationally, this is the only one large hydropower project for which implementation is advanced. At the same time, there is no large project involving private finance under any other scenario.

4.3.5 Conclusions

Norway has contributed considerably to aid effectiveness by furthering coordination and joint-funding. It has also taken up the challenge of assisting the Mozambique government when some what rash reforms were intended as a conditionality for a large sector loan. There has been one case (Nepal) when a delicate situation arose with the Norwegian investor in Khimti Kholo, while Norway provided assistance to the legal sector.

Project finance for large projects, involving private sector funding is conceived to be a challenge for the future. The only "case" available to possibly learn from, does not provide a

ready-made solution. It appears that project finance is intricately linked to the institutional arrangements that are developed and put in place. In such arrangements, international and bilateral finance institutions play a large role in raising commercial funding, and in covering some of the risks. Private sector funding on the equity side is minor and tied to contracts, by which a part of the investment flows back. National ownership appears quite marginal, which governments may find difficult to accept.

On a more general level, the perception of investment risk is formed by the track record in Good Governance of the host country. This is an area where host governments need to build and earn trust by moving forward.

4.4 Norwegian Stakeholders

EQ 4: What have been the results for Norwegian Stakeholders?

There are essentially four Norwegian stakeholder groups that have been involved in the power sector: commercial contractors and suppliers; consultants; Norwegian public sector power institutions including the Norwegian University of Science and Technology, Trondheim (NTNU) as an engineering training centre, and Norwegian aid officials. Norwegian civil society was a critical partner in Nepal through the UMN, but in general has otherwise not been an important actor.

Regarding the first three sets of actors, the following table gives an overview of the kinds of inputs they have provided, the importance of the assignment for the supplier, and an assessment of the results. The table includes activities in the two study countries plus Uganda and Angola.

Stakeholder	Countries engaged in	Important assignment, supply	Minor assignment	Apparent value to stakeholder
NVE	Uganda, Nepal, Mozambique, Angola	Twinning mandates in MOZ, UGA and Angola. Advisory role on projects in MOZ and to SAPP	NPL: advisory role to embassy, legal assistance and other TA	Important and highly relevant to international dept. NVE. Longer term contract portfolio approx NOK 300 mill.
Norconsult	Nepal, Mozambique, Angola	MOZ: Several and long term. NPL major studies	Institutional assistance and studies in Angola	Important and highly relevant, e.g. business in MOZ 30% of country total. Door opener for other assignments
NTNU + ICH	Nepal	Assistance to Hydro Lab, and prior research assignments		Important and highly relevant. Synergies with teaching and other research. Unique research opportunities
Norplan	Uganda, Mozambique, Nepal	Uganda: Dominating role as client's engineer and consultant. Angola: long term mandate	In Mozambique and Nepal	Important in UGA, door opener for other assignments. Not known for Angola
Jacobsen Elektro	Uganda, Mozambique	Sub-stations, transmission lines Many contracts in UGA, some in MOZ		Important in UGA. Door opener for other contracts
Eco Partner	Mozambique Angola	Clients' engineer Gurué project	Main contractor in Angola for a period.	Firm ceased to exist
Smaller consulting firms: NCG, Scanteam	Nepal, Mozambique, Uganda	Appraisal, review and evaluation	Various studies	Of importance

Stakeholder	Countries engaged in	Important assignment, supply	Minor assignment	Apparent value to stakeholder
Linjebygg	Mozambique	Gurué and ZIB transmission		Important
ABB	Mozambique, Uganda Nepal	Supply of alternators, transformers, switch gear	Training provider	Assumed of minor relevance due to small volume
Kvaerner	Uganda, Nepal	UGA: Large turbines NPL: Components to NHE		Important at the time. Not relevant today due to merger.
Sorumsand	MOZ, NPL		Equipment supply on small scale	Assumed minor. Not relevant today
Var. small equipment suppliers	Mozambique, Nepal		Small supply contracts	Not much relevance

Table 12: Stakeholders engaged in Norwegian Power Sector Assistance

Based on interviews and document review, the following characteristics of different actor groups were found.

4.4.1 Suppliers and Contractors

For commercial suppliers and contractors (like Jacobsen Elektro, Linjebygg, ABB) Norwegian financing in the sector was much more important in the early phase of the collaboration. This was partly because Norway had funding mechanisms, such as commodity aid and mixed credits, that were linked with Norwegian suppliers. But the policy was also one of ensuring that Norwegian contractors were given access to markets through Norwegian financing. During the 1990s, this approach was more and more abandoned, though Norwegian suppliers were often given preference. Limited bidding for contracts became more common and contractors either had to compete, or found that the aid market was not interesting enough to warrant continued participation. Typically, commodity suppliers have played a smaller and smaller role. Those that are established internationally, such as parts of the ABB family and Kvaerner, compete for large commercial contracts rather than look to Norwegian grants-funded activities.

4.4.2 Engineering Firms and Consultants

For consultancy firms that compete for project implementation contracts, such as Norconsult and Norplan, Norwegian financing was important in establishing a track record and a presence. Today Norwegian-funded activities make up about 30% of Norconsult's work in Mozambique, which at one level means it is not critical. But if one sees this 30% as a fairly low-cost acquisition – there is a heavy bias towards using Norwegian suppliers in a number of cases – it can be seen as the foundation upon which Norconsult is able to compete for the other 70% of its work, which is typically World Bank funded projects. So the spill-over effect of Norwegian funding may still be quite important. For smaller consultancy firms, such as NCG or Scanteam, Norwegian funding appears to be more critical than for larger firms, simply because international marketing bears costs that smaller firms find more difficult to bear.

4.4.3 Public Sector Institutions

For public sector institutions like NVE and Statnett, or NTNU as a teaching and research institution, Norwegian funding is a *sine qua non* for international engagement. One thing is that for purely public institutions, they cannot compete for commercial contracts or respond to invitations from non-national factors. But as institutions they are also not interested in working abroad for the sake of it – it should be linked with some larger public sector endeavour, where the Ministry of Foreign Affairs (MFA) or Norad provide guidance and legitimacy. Some of the institutions that have been used a lot, such as NVE, have as a result built up an international unit and has been engaged in project implementation or as adviser at project level in about a dozen countries.

4.4.4 Aid Officials

For Norwegian aid officials – whether at policy level in Oslo or more direct engagement in the field – the power sector provides exposure to a different perspective on the collaboration with a partner country. While interventions in the social sectors address largely public goods issues, and thus is highly accepted for grants aid, the power sector introduces commercial actors and concerns on both sides of the table, the macro-economic issues of the World Bank and commercial lenders, may involve large-scale commercial contracts and the corruption issues that surrounds these, and a range of other issues that many in the aid community are not familiar with.

Identifying the appropriate space for the grants-funded components within power sector development has often been a challenge, with perhaps too relaxed a view on for example the need for EDM to improve on its commercial performance or challenge the grants component in some of the investments. With the growing acceptance of the need to ensure long-term economic growth, the power sector has become more central to Norwegian development policy concerns, and the experiences from Mozambique and Nepal have been useful for thinking through power sector policies and approaches on a number of occasions. Without such large-scale and “critical mass” engagement, it would have been more difficult for Norway to be taken seriously as an actor in this field, and the experience base back in Oslo for moving the new support to power development would have been much weaker.

4.4.5 Findings

Historically, Norwegian support in the power sector was tied to the use of Norwegian suppliers, which was important for a number of commercial and semi-public entities to gain international experience, and later be able to compete for other contracts. With the untying of aid and commercialization of international markets, Norwegian grants funding is no longer important for suppliers of goods, though remains interesting for consulting firms, in part because technical assistance still plays an important part in Norway’s knowledge network. For public institutions, Norwegian funding is a pre-requisite for international engagement, and for aid officials the power sector provides an entry point to a wide range of commercial and market-related issues that the aid community otherwise often is not engaged with.

4.4.6 Conclusion

Norwegian commercial actors should expect to face ever fiercer competition for contracts, as more tasks are put out to tender, and as more local, regional and international actors enter tendering processes.

At the same time, Norway as a partner in the power sector and with considerable resources invested in longer-term ventures has a need to maintain its own knowledge network, both internally within its own institutions, but also its partners in the public and private sectors. How to balance the need for own-trusted sources of advice and knowledge while accepting the more open competitive markets that are to ensure enhanced efficiency and effectiveness of resources will remain a challenge for political management.

4.5 The Content of Inputs

EQ 5: What has been the content of Norwegian power related assistance (the input)?

Basically, Norway provides grants to implement projects. Following the principle of Recipient Responsibility, it is then up to the host country to determine the contents. Grants were formally or in practice tied to Norwegian inputs over most of the evaluated time period. Frequently, in particular in the early years, the implementing partner and advisor was prescribed by Norway. From about 2002 the practice of free choice became the rule, but recipients often continued to use Norwegian equipment and services. In the case of institutional twinning, such a choice still does not exist, as there is only one potential partner in the sector.

Detailed descriptions of the contents of inputs are included in the country studies, and in terms of services provided. It is considered fairly typical of overall Norwegian assistance to the power sector. For a brief overview, the broad areas covered, and specific inputs are:

- Support to sector investments in terms of design engineering, construction supervision, material and equipment supply and implementation on turnkey basis.

Typically, such inputs have been procured by limited tenders from Norwegian firms, or simply by conducting negotiations and striking a deal. Among the more specialised input items, one may mention the concepts and technologies for tunnelling, an area in which only a few other nations have comparable experience. Further, the supply of large turbines, such as the 40 MW Francis turbines for Uganda. This may be considered a specialised input, because only a handful of other firms outside of Norway could have supplied it.

The physical input for some of the early small hydropower schemes in Nepal were second-hand turbines and generators, which had more or less been discarded in Norwegian power stations. This, at that time, was part of the low-cost approach applied, and it was very successful. Some equipment dated 1912 is still in operation in Andhi Khola.

Other inputs from Norway have been of variable merits. For example, Agresso business software (in EDM) is highly regarded by some recipients, while Norwegian computer network expertise, and simple steel work such as trash racks in water intakes may not seem that appropriate, because it could have been obtained in the region.

- Institutional cooperation and support to institutional development, including administrative systems: Such cooperation through twinning is a Norwegian speciality that few other countries employ. The idea behind it is clear: To engage a public institution with high competence at home to transfer that know-how to a “sister” institution in a developing country. The services of NVE were provided in Mozambique under such arrangements, first to EDM, and later to MIREME. Some services were sub-contracted by NVE to consultants from Norway or the region. In other cases, institutional assistance was provided by consulting firms, for example in UTIP.
- Provision of services to enlarge the knowledge base (studies, master plans, research): Recipients were commonly provided with a Norwegian partner to lead the project, and provide expertise, coaching and training. In the course of implementing projects, in some cases, staff of the host organisation were offered formal training.
- Legal sector assistance through NVE: High level advice on short-term assignments was provided for conducting seminars, commenting drafts of Acts, and in general to advice and discuss options for proceeding, but in general, NVE is also engaged in long term development of regulatory tools in a number of countries.
- Assistance in education and training, including on-the-job coaching and course teaching. Inputs consisted of providing instructors and trainers. In Mozambique, training at EDM was delegated to the Portuguese the power utility, while most other training was provided by Norwegian personnel. In addition, training was offered to personnel, often abroad.

4.6 Input Quality

EQ 6: How has the quality of the Norwegian input been, when assessed according to DAC's evaluation criteria (relevance, effectiveness, efficiency, sustainability and impacts)?

Project results are summarised with regard to input quality (for details, reference is made to annexes 3 and 4). What was actually delivered, is frequently not clear, and no systematic records appear to be kept neither in Norad files nor in the recipients administration.

The quality of inputs was assessed by the evaluation using quality rating of process elements in a systematic manner, using the evaluation's own benchmarking tool.

The matrix used in the following presentation is based on the scoring and weighting of a relatively large number of input quality criteria, used in the benchmarking process (summary in Annex 7), where each criteria is given a rating and a weight. The score results from multiplying rating and weight. The aggregate presented is calculated as the arithmetic mean of the score in each category, of: a) planning and design, b) implementation, and c) completion and follow-up.

In the scoring, 100% represents the state-of-the-art, or best (quality) practice, as it was defined at the time of project implementation. Hence, the scores obtained express how close or distant the specific project came in quality achievement. The rating was done on a rough rather than a fine scale: 0 = no quality, 1 = some, 2 = quite good, 3 = very good quality. Expressed in percentage points, 1 is equal to 33%, and 2 is equal to 67%. The weight was also given on a scale from 0 to 4 in steps of integer numbers.

The evaluation has also considered a comparison of project practice to today's state of the art practice. This is contained in the benchmark data, but has not been pursued further, as there are, in general, no significant deviations.

Scoring has not been relevant for all interventions. For example, BPC privatisation and Training under the Fellowship programme do not properly fit the benchmarking scheme, and feasibility studies that were followed by project implementation were not separately benchmarked. The projects where input quality assessment of the process was possible, are shown in the following. Some ranking results are described to illustrate the process. The full picture has been given in the case studies annexes 3 and 4, and in the benchmarking annex 7.

4.6.1 Input Quality in Infrastructure Projects

Table 13 shows that planning and design of interventions is rarely "quite good", i.e. above 75% of a maximum of 100%, but this indicates a well-developed concept, as in the Andhi Khola and Cuamba hydro schemes. In most cases, the steps of the planning process are assessed as average, meaning good professional work without major mistakes, and there are no real failures. However, the two weakest planning processes may be instructive to mention. The Corumana scheme ranks lowest because at least two important factors have not been properly addressed in planning: the uncertainty of installation of flood gates, and the later obligation to pay a water fee. The Jhimruk scheme also ranks quite low, because it is a poor choice of a site, causing many problems later (loss of irrigation water, silting up of reservoir), and mitigation measures, as well as rural development have been planned late and superficially.

Infrastructure Projects	Planning Design	Implement	Completion Follow-up
Nepal: Andhi Khola Hydro Electric + Rural Electrification	79	79	80
Nepal: Jhimruk Khola Hydro Electric + Rural Electrification	51	72	70
Nepal: Jhankre Rural Electrification + Development Project	56	71	60
Mozambique: Lichinga small Hydropower Project	66	60	30
Mozambique: Cuamba small Hydropower Project	78	71	40
Mozambique: Corumana small Hydropower Project	44	64	40
Mozambique: Alto-Molocue - Gurué Transmission	57	59	50
Mozambique: Cahora Bassa - Zimbabwe Transmission	52	70	50

Table 13: Quality of Process Elements in Infrastructure Projects

Findings

Implementation in general obtained good scores, of close to or above 70%. This can be expected for projects that have been well planned, but it is also seen that projects with a design and planning process that is not as good can still be implemented with a high quality level, if the necessary efforts are made.

Project completion and follow up have been found to be of variable quality. The two hydropower projects in Nepal score high. Both, proper completion and handing over, as well as follow up were done in the context of further development of the electric utility BPC. The projects with a score of 50% or less appear to have some, but different, deficiencies, ranging from neglect (Lichinga) to adverse external factors (Corumana).

Overall, it appears that in the context of infrastructure projects, overall input quality achieved is satisfactory. Planning and design is of variable quality. It depends to a large degree on the relevance of information available or obtained, and on the effort and resources put in to the planning process.

Implementation is by and large of even, and good quality across interventions. This indicates that the routines of implementation management are in place, but these could, when compared to best practice, be improved somewhat.

Project completion and follow up show the largest variance in quality across projects. This maybe due to the fact that not all recipients have the discipline to put sufficient effort into the preparation of completion reports in time. The Norwegian system of assistance administration has no instrument (neither whip nor carrot) in place that enables it to obtain final reports and accounts. The culture to assess achievements, tidy up what was done and derive lessons learned is also not well developed, and it is these elements that this category measures.

4.6.2 Input Quality in Capacity Development

The same method was followed to assess the quality of inputs in the project cycle of capacity development projects, and the result is shown in *Table 14*.

Capacity Building Projects	PlanningDesign	Implement	Completion Follow-up
Nepal: Legal Assistance to the Ministry of Water Resources	61	46	40
Nepal: Hydro Lab, Knowledge & institution building	70	68	50
Nepal: Training of Khimti Contractor Personnel	82	70	50
Mozambique: Institutional Development of MIREME	42	54	60
Mozambique: Institutional Development of UTIP	54	73	90
Mozambique: Inst. Development +Training in EDM	55	58	50

Table 14: Quality of Process in Capacity Building

Findings

Planning and project design quality has been quite good or better for half of the projects. The planning process of one project was assessed as much weaker than the average, i.e. Institutional assistance to MIREME. This is for the fact that the best practice, “prior needs assessment” was not done. The model of assistance chosen was twinning with NVE, and in this situations the cooperation agreement was signed without a firm plan in place. This fact has further reduced the score.

Project implementation, by and large, is “quite good” or slightly better, indicating that actors generally have high performance standards. The lowest ranking project (Legal assistance Nepal) has attained this score due to the fact that no correction has been made regarding the terms of cooperation. What was initially offered was high level advice on call, while it became evident that what was needed was hands-on (resident) advice.

Completion and follow up shows wide variance. The reason for a low score is again poor reporting and final settlement of accounts, while a high score is for the opposite reason. Hydro Lab, in its new phase, appears to have a conceptual weakness of a lack of effective marketing.

Legal assistance follow up to MOWR could not be done due to the non-conducive political situation, and training of Khimti personnel fares poorly in the assessment, because in terms of follow-up there is no evidence that any sort of assessment of achievements, and further needs, has been undertaken.

4.6.3 Quality Across Criteria

The DAC criteria efficiency, effectiveness, relevance, sustainability and impact have been assessed using the benchmark process. As far as possible, values for all criteria have been calculated. The comparison is then done by first calculating the arithmetic mean of all results as 100%, and then to express the value for each project in relation to the average. Thus a number above 100 indicates higher-than-average performance, while a number below 100 is less than average. The full method is explained in Annex 2, while the full range of comparative graphs is included in Annex 7.

The method provides values for the following criteria:

- *Efficiency* – for all projects
- *Effectiveness* and *Relevance* as a combined value – for all projects
- *Sustainability* – for infrastructure projects only
- *Impact*, for different beneficiaries – for infrastructure projects only

All projects are included in the benchmarking regardless of type or location. The resulting sample size is still quite small, resulting in an average value to measure against, that is not very representative. However, it is noted that this is what benchmarking is about: All available “cases” are included, and this establishes best, worst and average, and everything in between. The larger the sample, the higher is the validity of measuring against. A smaller sample gives somewhat less reliable results, because the empirical basis for comparison is smaller. Still it is considered useful. If benchmarking is going to be used in future, as is indeed done in many sectors of the economy, one would continue adding projects to the data base, there by improving relevance and accuracy of measurements and comparison over time.

Efficiency

Relative efficiency is presented in, in ranking order. A descriptive assessment follows for some of the more outstanding projects for illustration. All inclusive descriptions are found in the case study annexes 3 for Nepal and 4 for Mozambique.

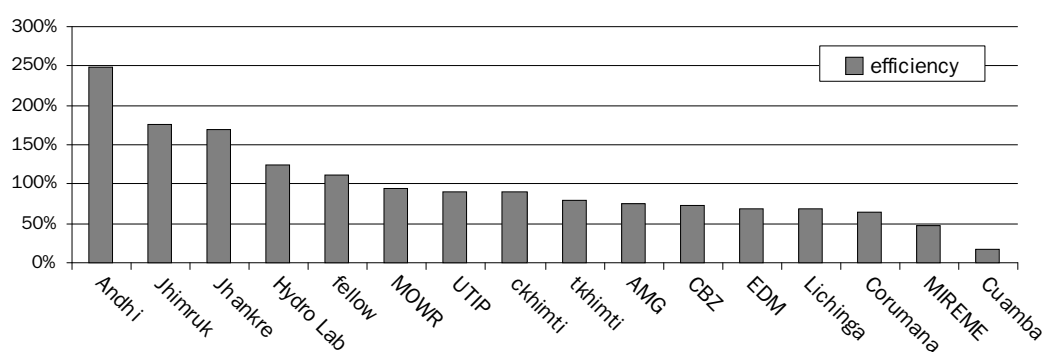


Figure 3: Graph Efficiency Benchmark

Andhi Khola HEP, Rural Electrification and Irrigation

Despite massive cost overrun, the project is assessed to have used resources in an efficient manner. Overall, costs are well below comparable projects from that time, even though the evaluation is in no position to compare with other projects at that time with comparable conditions. Also, with numerous voluntary and donated inputs, it is not possible to know reliable total cost for the power plant. A conservative NOK 8 million per Mega Watt of capacity is taken, and this is compared to the outputs.

Jhankre Rural Electrification

The project was implemented in the first phase by BPC, who at that time had already gone far on the “learning curve”. In the second phase, a dedicated project implementation unit was set up. As a result, efficiency well above average was achieved.

Hydro Lab

The close cooperation with the International Centre for Hydropower (ICH) and NTNU has resulted in high cost-efficiency both with regard to the use of Norad grants, as well as for paying customers. In the process, the infrastructure of the lab was built up, training was provided, on-the-job, as well as more formally, and, most importantly, actual problem solutions in water resource development were elaborated in a timely manner. This earns the project an efficiency well above average.

Legal Assistance to MOWR

The first phase process was considered very efficient, but the second phase was inefficient in resource use, with a very uncertain and poorly documented output. As a mean, just below average efficiency was achieved.

UTIP Assistance

The cost of providing a panel of experts and outputs obtained are assessed of low efficiency. On the other hand, training showed reasonable, and the coreconsultant good efficiency. As a mean, efficiency is somewhat below average.

Alto-Molocue – Gurué Transmission and Rural Electrification Project

There have been several delaying factors in project implementation that have increased cost. This appears to have been caused by inefficient work of the contractor, at least in part, and customs administration inefficiencies. The score is no more than two thirds of average.

Assistance to MIREME and Ministry of Energy

The project has achieved less than half of average efficiency. The evaluation finds that this is caused by several factors: a) High costs of resident advisers during some periods, along with a lack of specific outputs, b) a lack of MIREME absorption capacity due to lack of qualified staff, and c) a training programme that lacked focus and specific purpose. Also, the transition from the previous to the new Ministry has affected efficiency.

Effectiveness, Relevance, Process Quality

The graph in *Figure 4* represents the comparison of a number of combined criteria, including quality aspects. It is the normalised equivalent of the input quality tables 2 and 3, which has previously been discussed. The only new aspect is the presentation in ranking order.

For the evaluation, the assessment based on the numerical ranking compares by and large well with the intuitive qualitative perception of the projects.

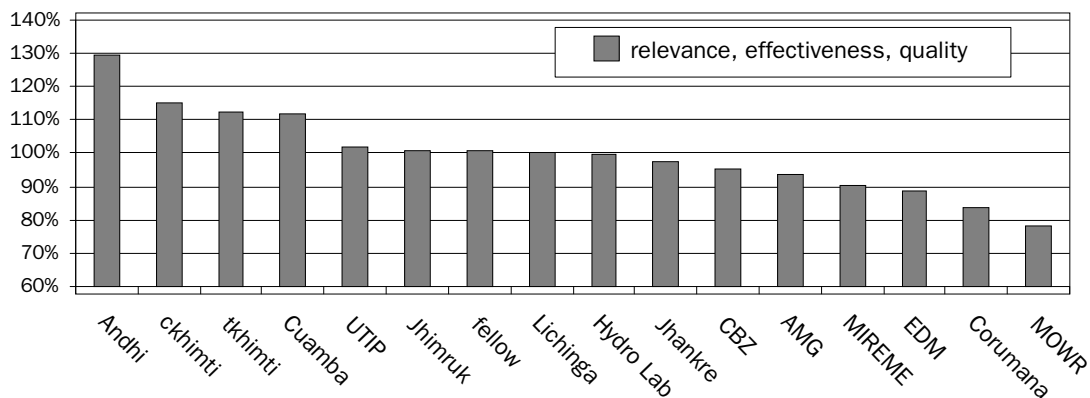


Figure 4: Graph Relevance and Effectiveness Benchmark

For the purpose of illustration, some criteria assessment descriptions, taken from the country studies, are given here.

Effectiveness and Relevance of the Cuamba Small Hydro Project in Mozambique

The project was effective in achieving the planned objective, despite the adverse security situation. It had high political relevance, and limited economic relevance due to its modest size.

Effectiveness and Relevance of Assistance to MOWR in Nepal

The lowest ranking of all projects was achieved, because the intervention had limited effectiveness in the second phase, and was therefore of little relevance. Two distinct reasons have been identified for this: a) political instability in Nepal during that period, and b) the wrong assumption that sporadic advice would be the optimal form of assistance, when in fact hands-on substantial assistance was called for.

A Comparison of Institutional Assistance and other Non-infrastructure Projects sums up the findings. The criteria assessment of all evaluated non-infrastructure projects is presented in *Figure 5*.

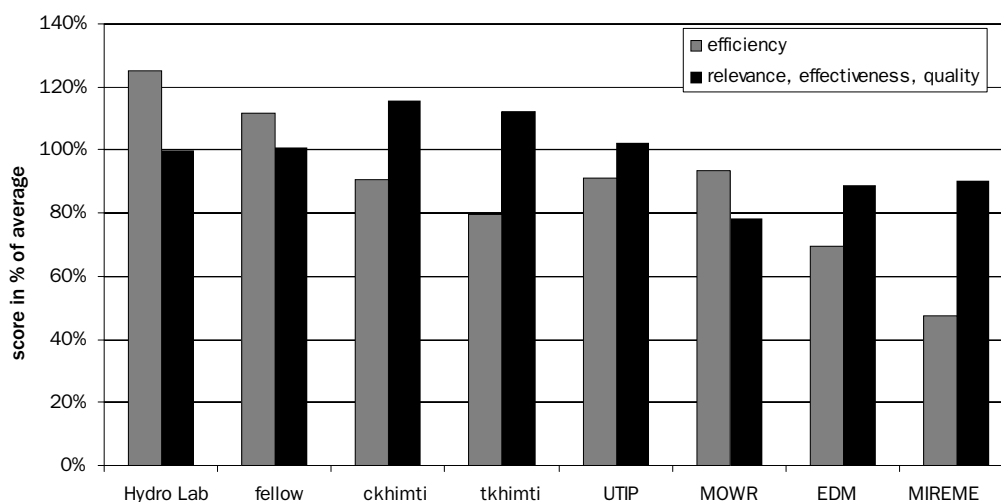


Figure 5: Graph Non-infrastructure Projects benchmark

How relevant or appropriate has the modality of aid delivery been? The spread in relevance for institutional or other non-infrastructure projects is not very pronounced, but three projects rank lower than average. Two of these, i.e. MIREME and EDM have been assisted under twinning arrangements with NVE. In the case of EDM, this was only partly the case. On the basis of the relevance assessment done for these projects (annex 4, paragraph A4.7.5), it is indeed the case that reduced relevance was found. In the case of MIREME, the reason identified is a mismatch between the partners, with NVE having a much narrower task portfolio than its partner, the National Directorate of Energy (DNE). Moreover, the production of outputs has been constrained by the lack of staff in DNE, over several years.

In the case of EDM, relevance was perceived reduced over time. EDM did not wish to renew the agreement with NVE when it was up for renewal in 1991. In all other projects, there was not ever an issue regarding the relevance or appropriateness of the cooperation partner.

Sustainability of Infrastructure Projects

Sustainability has been calculated considering the level of economic project activity that would be able to sustain the project, either actual, or else in terms of what can reasonably be expected. This result is a relatively rigorous and uncompromising ranking (see *Figure 6*). Projects with a weak or dwindling economic base come out with low sustainability ranking. There are institutional factors that also determine sustainability. However, there is no basis for numerical calculation of institutional sustainability for infrastructure projects. It is of interest to see that an assessment of sustainability may well help in exposing weakness in project justification in the preparatory phase. To take one example, it has been argued that the Cahora Bassa – Zimbabwe transmission line would show extraordinary economic returns. As it turns out, this is not the case today due to the dismal situation in Zimbabwe, and on that basis, sustainability of the project has earned a lower than average rating. It could be argued that it is

likely that the situation in the neighbour country will improve before the end of the life of the transmission line, and that therefore expected sustainability is better than assessed. This may be so, but the point is here that the benchmarking method should be kept clean from speculation, and be based on available facts.

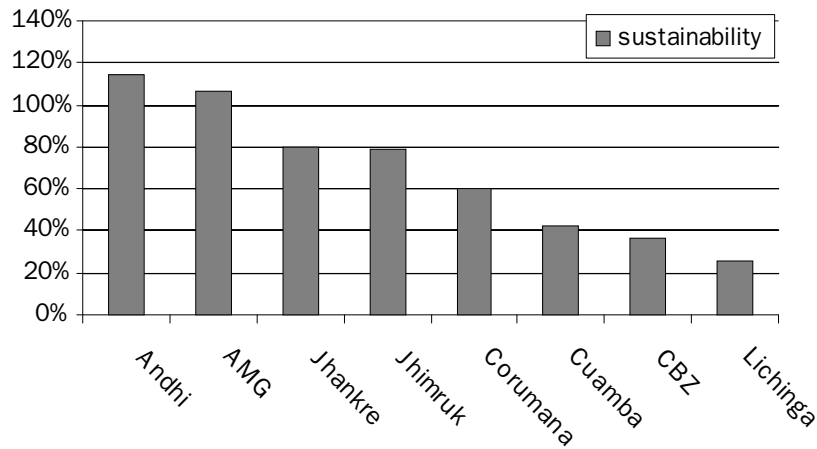


Figure 6: Graph Sustainability Benchmark

Impacts

The calculation of impact is again limited to projects where a measurable economic productive activity takes place. Other projects will have to be assessed in a qualitative and descriptive manner. Figure 7 shows the relative impacts, in a ranked order. The impact on the country is shown in economic rather than in financial terms. This means that indirect benefits have been given a monetary value, and were included.

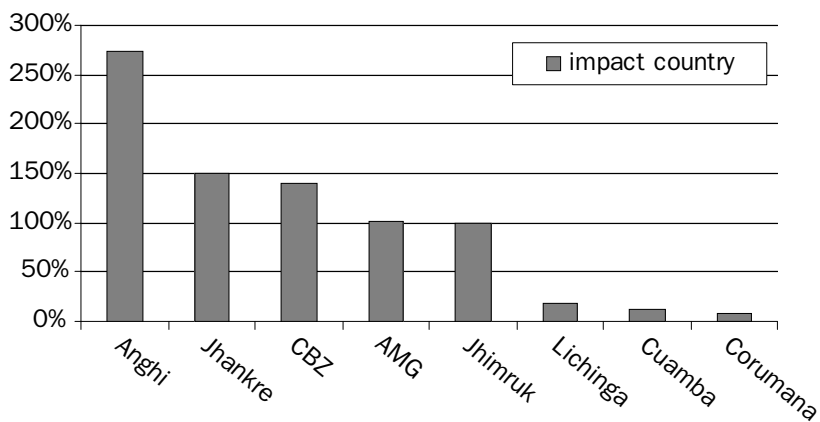


Figure 7: Graph Country Impact Benchmark of Infrastructure Projects

The spread is wide, and ranges from impact exceeding the average by a factor of 2.5 to a value of just about 10 percent of the average. This low value applies to the hydropower schemes in Mozambique which have been politically rather than economically motivated. Hence, the lack of impact should not come as a big surprise. The transmission line project AMG in Mozambique shows an impact that is average. The good news is that national impact is actually higher than shown. This stems from the fact that the transmission line now transports the entire supply for Niassa province, but this is not attributed to the presently evaluated projects.

Impact on poverty is discussed next. The poor have been defined broadly as the lowest tariff category subscribers. This seems to work well in Nepal where the social tariff is really for very small consumers of less than 20 kWh per month, which tend to be the poor. They subscribe to not more than the lowest tariff category because they cannot afford more. In Mozambique, capturing the poor as a group is more difficult. The lowest EDM consumption tariff applies for consumption up to 100 kWh per month, and this serves many more than just

the poor. Also, the connection rate in rural areas in Mozambique is low, and most of the poor are among the many without a connection.

The graph in *Figure 8* shows a wide spread between projects. Two projects in Nepal show an impact a factor of 2.5 higher than average. This is not only from electricity which reaches 98 % of the people, but includes impact from irrigation, water supply and other development interventions provided. Also, remittances from out-migrated family members contribute significantly to reduced poverty. The third project in Nepal, Jhimruk HEP and rural electrification, scores considerably below average in impact. This is because electrification coverage is less than 60% of all households, other interventions provided have not been that effective, and due to water diversion a negative impact included in the ranking is loss of irrigation water for one harvest per year.

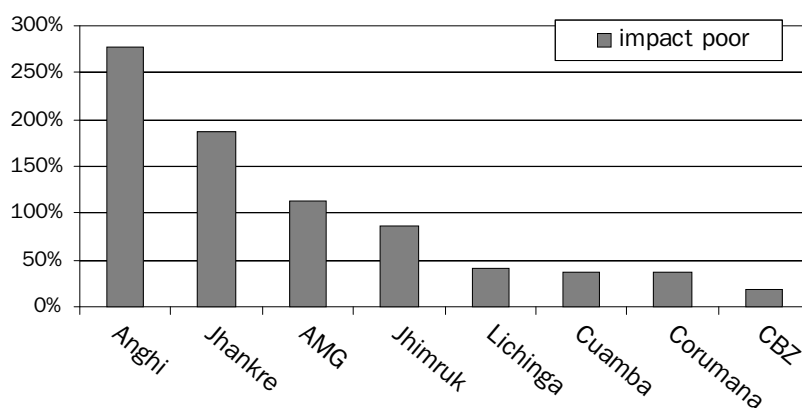


Figure 8: Graph Poverty Impact Benchmark of Infrastructure Projects

The AMG transmission line project (Mozambique) achieves a similar impact ranking as the project discussed above. The reason is that electrification is largely to an urban and semi-urban area, where more of the poor than in rural areas are connected. Also, there is an impact on the poor from employment in the tea industry that employs thousands. The impact on the poor in the small hydroschemes Lichinga and Cuamba is marginal because it is small projects with low productivity, and the coverage of these is limited to a few percent of the population. The Corumana hydropower project and the Zimbabwe transmission finally, benefit the poor only indirectly through the economic impact on the country. Any distributional impact of these projects is doubtful, and certainly not discernible.

Conclusion

It is found that the benchmarking tool employed is useful to illustrate the comparative analysis of evaluation criteria. To assure quality and reliability of the results, sensitivity analysis was performed. This is included in full in Annex 7. The overall result is that “best estimates” used may be considered valid. There is a margin for error with resulting small effect, and results are robust. If benchmarking is used in combination with qualitative descriptions, errors will be exposed when the numerical result deviates more than reasonably from the qualitative perception.

4.7 Value Added and Comparative Advantages

What has been the value added or comparative advantages of Norwegian power related assistance?

Because Norway itself has a vibrant power sector and a long history of developing its own hydro resources, Norwegian assistance in this sector provides additional value-added to its cooperation partners along several dimensions.

4.7.1 Norway as Predictable Partner

When Norway has engaged in the power sector within its bilateral development cooperation, it tends to remain a long-term and thus a predictable partner⁶. In Mozambique, Norway has been engaged for 30 years, in Nepal for around 40, and in other partner countries where it has entered, it has continued providing support in the energy field: Palestinian territories, SADC, Tanzania, Uganda, to some extent Vietnam.

Such permanence is highly appreciated by the local partners. If assistance is not long term, the costs to local partners of having to change external partners, which entails learning new procedures, priorities and – not least of all – new individuals and corporate cultures. Working with new donors every few years entails high teaching costs to the local actors, as they in fact have to constantly “train” new foreign partners in how local institutions and systems work. When a donor like Norway is willing to stay the course, this reduces a number of uncertainties and transaction costs for the local partners.

This stability has its benefits on the Norwegian side as well, as the Norwegian actors that are involved assimilate and accumulate a lot of implicit knowledge about the local operating environment. This does not mean that Norway necessarily always is better at supporting activities in countries like Mozambique and Nepal, but it certainly reduces start-up costs for new activities, it provides easier access to decision makers when problems arise, there is a predictability in expectations that can be of great value in ensuring smooth operations and efficient resolution of problems that may emerge – in short, it builds trust, which is recognised as a key condition for example for successful capacity development.

The benefits of this predictability are that funding levels, time horizons and other inputs are largely known and can be rationally programmed by the local partners. This is critical in the power sector, where investment decisions and the related capacity development needs have long lifecycles. But this also spills over into the technical sphere, where Norway can be counted on to assist identifying spare parts and technical expertise for maintenance and repairs on infrastructure where Norway has been involved or supplied the inputs. This is hence another form of uncertainty and risk that Norway is able to reduce and help the partner manage.

The interesting question is why there seems to be greater stability and continuity in Norway’s power support than perhaps in any other sector. Part of the answer is undoubtedly the political support that the power sector has been able to generate in Norway. But while there has almost always been some such support, it has clearly fluctuated over the years. What is perhaps unique about the sector, is the role and interest of Norwegian commercial actors, who have continued to keep the sector visible, mobilize support on the side of partner governments and agencies, and whose continued presence on the ground provides real value-added to the Norwegian assistance. The fact that Norwegian actors like Norconsult and Norplan win international tenders funded by actors like the World Bank lends credence to their claim of providing “value for money” through their services. But the power sector is also one where Norway is fairly confident about the merits of its policy advice, and this is hence one area where a rather minor donor can play a highly visible and meaningful role. This has happened in discussions on the restructuring of the power sector in Nepal by providing crucial advice on legal issues, and in Mozambique, when Norway, in collaboration with the other Scandinavian donors countered the World Bank push for reforms, there by assisting the government to

⁶ This study has not done comparative analyses of the support to other sectors, or looked at Norway’s cooperation carefully in other countries. But the general experience Scanteam has of Norwegian aid is that it has changed considerably over time. In Mozambique, for example, other sectors where Norway has considerable own skills, like shipping and fisheries, have experienced considerable changes in support levels and support forms. In sectors where Norway does not consider itself to have particular skills, such as health, industrial development, etc, Norwegian support seems to be even less predictable both in terms of content and funding levels.

defend its position, as previously discussed in section 4.3. In short, the power sector may be one where Norway excels in its overall assistance due to the breadth, depth, quality and persistence of support, at least where it is willing to invest a critical mass of resources, as it has done in Mozambique and Nepal. The power sector may therefore also be – perhaps contrary to how the sector is generally perceived – a “best performer” as far as Norwegian development cooperation is concerned.

4.7.2 Norway as Supplier of Expertise

Norway has a full range of power sector expertise: public sector experience regarding sector policy formulation, implementation and monitoring; regulatory frameworks and institutions; private firms in the generation, transmission and distribution sectors; engineering skills in planning, supervision, and other aspects of oversight and quality assurance; and a range of public, private, state-owned entities, along with a long history of development and transformation that is valuable to many partners.

What makes Norway interesting to a number of its power sector partners, is the interlinked system of organisations devoted to the power sector: NVE, Statnett, Statkraft and other private power companies, NTNU, ICH, Norad, the private sector engineering/ industrial and consulting community. The comparative advantage lies in the interlinked network, and Norway is small enough for the key actors to know each other.

Norway can therefore in principle provide support along virtually all the various aspects of a country’s power development. In countries like Mozambique, Nepal and Uganda, Norway has supported activities as diverse as re-structuring the power sector, assisting with upgrading laws, regulatory frameworks, and operating procedures, helping negotiate complicated international power deals (such as the Cahora Bassa power with South Africa). It becomes easier to request this kind of assistance in rather sensitive areas like policy development if Norway as an actor is seen as a dependable partner, unbiased and professional, and with the actual range of skills and experience that ensures that the support is relevant and of high quality.

Given the kinds of requests that Norway has received and responded to, it is clear that the power sector is a field where partner countries trust and by and large appreciate the advice and technical skills that Norway provides. This is of course again a function of the long-term, stable and predictable partnerships that the local actors feel they can call upon and will get what they have asked for.

4.7.3 Institutional Collaboration, Twinning and Technical Assistance

Norad has established an unusual collaborative arrangement with private sector firms and state owned entities through signed “framework agreements”, including in the power sector. This allows Norad to call upon these agencies’ expertise both with recipients on policy and even implementation roles in the field. This has proven valuable in a number of settings.

The framework partners sometimes also enter into formal twinning arrangements with local partners. Twinning emerged as a capacity development support modality, largely in the public sector, for a number of reasons. One was that the development of public institutions like ministries and regulatory agencies was difficult to do using individual experts or commercial enterprises since the expertise provided often was not the right one – staff would have the technical skills but not the public sector management and political experience.

Norway, seemingly more than other donors, has used twinning as a cooperation modality, and perhaps more in the power sector than in other sectors. It reflects the role that the state has played in the development of the power sector in Norway, and which is now part of the “model” of power sector development that Norway is implicitly exporting.

In Mozambique, the first twinning agreement between NVE and EDM was set up in 1980 to strengthen the organizational setup and administrative capacities. This agreement was signed for an initial four years and then renewed twice until 1990, based around a permanent NVE liaison engineer position at EDM plus short-term visits by NVE personnel to Mozambique, and EDM staff visits to Norway. In 1990 it became clear that the system of a liaison engineer from NVE no longer worked satisfactorily. By then some NOK 32 million had been spent

under the agreement and several achievements have been listed in the review of this cooperation agreement, carried out by the University of Trondheim in 1990. However, EDM, feeling that it was definitely moving towards a commercial orientation and that its twinning partner became more distant in its line of thinking, wished to discontinue the institutional cooperation, but NVE retained an advisory role regarding some EDM projects.

Since 1996 Norad's assistance has gradually been directed towards strengthening the institutional capacity of the National Directorate of Energy (DNE) that was established in 1996, to gradually take over some of the policy and planning tasks from EDM. This has been carried out under twinning arrangements with NVE.

The first such agreement with DNE was signed in March 1998 and later extended three times, the latest in mid-2002 with expected completion originally in 2005, but extended to 2006, and a NOK 20 million budget. The objective is that DNE performs as a credible power sector authority.

Norway has similarly provided assistance to the Namibian Energy Sector since 1991 in the form of bilateral three-year agreements with focus on institutional strengthening. This cooperation was reviewed in 1998 with emphasis on the institutional cooperation between NVE and the Norwegian Petroleum Directorate (NPD), on the one hand, and their respective counterparts in the Ministry of Mines and Energy (MME).

While the review (Scanteam 1998) concludes that institutional strengthening undoubtedly took place through the activities that were implemented, such strengthening could have been approached in a more structured and comprehensive way. The review found that the reporting and monitoring of the Bilateral Agreements' institutional strengthening objective has not been properly observed by any of the two agreement partners, nor that it had been properly reported on (NCG 2006, "State-of-the-Art-Study).

A very similar observation is made in the present evaluation regarding the twinning of NVE with MIREME: reporting does not provide the data needed to properly assess results of the assistance.

An observation from Angola⁷ is that it was felt by local partners that short and brief visits by NVE personnel or its consultants were not of much benefit, because what was expected and needed was local presence long enough to establish working relationships.

- A review of the NVE-MIREME twinning commented that goals and objectives were not formulated in verifiable terms and therefore project management would not know if it was on track. The overall project design logic was thus deficient and did not offer a good management tool. As a result, reporting was sub-optimal, and management became ad hoc and intuitive rather than systematic (see Annex 4 for more detailed observations and conclusions).

Recipients interviewed did not express any preference for how assistance should be delivered, as long as this would meet their needs. In Nepal, no twinning agreements have actually been implemented. NVE has been engaged in a double role, advising the embassy, and recipients. Unlike in other sectors, where this has been questioned as delicate, no such concerns arose in Nepal.

In some instances recipients felt that the benefits from twinning were thinning out over time, and the cooperation eventually became redundant (EDM in Mozambique and ERA in Uganda). The evaluation can see no problem in this, if the step to terminate is taken, but this has not always happened. Hence the problem seems to be institutional or administrative inertia rather than the aid modality as such.

4.7.4 Norwegian Aid Administration

The administrative process through the project cycle appears to have changed little over time. The following key documents and events are found essentially throughout the evaluated period.

⁷ Angola Review, Final report, Norad/SAD-ELEC 2007

Preparation

- Request of recipient with proposal, later project document;
- Platform for dialogue, with the purpose of providing clarifications;
- Appraisal (not mandatory);
- Appropriation document (internal to Norwegian administration), on basis of final project document;
- Bilateral agreement with recipient country;
- Contracts between collaborating partners where applicable.

Implementation

- Annual plans and budgets, or inception report;
- At least annual reporting by recipient, with annual third party audit and work plan next phase;
- Annual meeting to approve reports and work plans/budgets next phase;
- Final report on conclusion of project;
- Mid-term or end review (not mandatory).

Completion

- Completion report and final Audit formally improved;
- Evaluation (not mandatory).

The Development Cooperation Manual of 1994 (“Bistandshåndboka”) formalizes and documents the procedures, and was valid for most of the projects evaluated. A new Development Cooperation Manual was produced in 2003. It maintains the basic procedures of earlier years, but came into being after the projects evaluated here were established.

It is not clear what analytical tools for project preparation and monitoring have been foreseen pre-1994. None of the projects evaluated pre- or post 1994 appear to have used any analytical tools such as Logical Framework Approach, Needs Assessment, Stakeholder Analyses, or Institutional Analysis.

Project documents do not exist for projects in the early 1980s, and in these situations, a proposal had been provided in another form. Project proposals did not generally contain clear targets other than simple Outputs. Indicators were frequently lacking, and where they exist such as for example in generation projects that state expected annual generation in MWh, such targets were not monitored or reported on. Project progress reports were limited to activity reporting.

A deficiency of current reporting is the lack of reporting against plans and targets (“deviation analyses”). Objectives and targets are agreed between donor, recipient, and possibly service provider but if reporting is not done against such mutual agreements, then there is actually no performance reporting taking place, much less an understanding of why targets are not being reached, and what management can or should do to take corrective action.

The embassies have not often made use of the possibility of external appraisal. Where this did take place, there were often proposals for improvements to the project documents. Such appraisals also quite often introduced the use of analytical tools such as Logical Framework Analysis (LFA) and associated instruments. However such use, or that of equivalent planning tools appears still not universal.

The Annual Meeting is regarded as the chief control instrument and platform for dialogue in the cooperation with partners. It is regarded as an appropriate instrument, and also used as an opportunity to coordinate and harmonize with other donors. In Mozambique, an efficiency gain was achieved with the acceptance of combined reporting to Denmark, Norway and Sweden.

There is a reference in most review or evaluation reports to the flexibility practiced in Norwegian assistance. This is highly appreciated by recipients, particularly in emergency situations. Some of this flexibility, however, seems to derive from the lack of more rigorous planning and follow-up that seems to be characteristic of Norwegian power projects. The flexibility may thus be a function of the lack of clear results focus, rather than a good and

pro-active policy of adjusting and taking into consideration changed framework conditions, which is how “flexibility” would normally be understood. None of the review or evaluation reports have looked more carefully into this issue, however...

4.7.5 Findings

Norway has been a predictable and long-term partner in the power sector in both Nepal and Mozambique, and in general seems to maintain a longer-term commitment in the power sector also in other countries where it engages;

There are indications that power may be the sector where Norway as a donor has been most consistent and predictable over time. A key reason for this seems to be the broad range of actors that are involved on the Norwegian side, including commercial actors that are also competitive internationally, and institutions from the public and higher education sectors.

This stability in the partnership is much appreciated by the local partners, as revealed in their preference for Norway to continue providing support to the sector over time. It has helped build trust and thus improved efficiency and effectiveness in the collaboration, not least in fields of capacity development where long-term relations are critical;

A major reason Norway is interesting as a partner in the power sector in Norway’s own history and experience of developing its hydro-power resources, the changes to its organization, and thus Norway’s broad range of skills and experience, not least of all terms of public sector management and role in power sector development;

A particular form of collaboration used by Norway, is twinning. This is usually between a public sector entity in Norway and its counterpart institution in the partner country. The thinking behind this approach is to make the broad range of experiences and also the “corporate culture” available to the local partner, where the implicit knowledge that this approach can produce can be substantial. The downside is that for this to work, the two institutions really have to have similar mandates, interests and commitments, and this has been seen not always to be the case;

Norwegian aid administration has largely been following the same procedures since the 1994 Development Cooperation Manual (DCM) was produced, though the new version of 2003 has simplified certain elements with the transfer of more responsibility to the country representation and the partner. Before 1994, it is unclear which structure and demands on project preparation were in place. But overall project reporting is seen to be lacking, with a focus on activity reporting rather than looking at results, or deviation from planned and agreed-upon results.

Norwegian aid management is considered flexible by local partners, but this seems to be more a function of a lack of rigorous planning and adherence to established goal posts. The flexibility may therefore be more a continuation of lack of results focus rather than pro-active adjustment to changing circumstances and deliberate changes to explicit targets.

4.7.6 Conclusions

Despite being a small donor, in the power field Norway can provide a broad range of relevant expertise, and has thus provided support whose importance may be greater than in most other areas where Norway is engaged;

The consistency in power sector partnerships is important in reducing uncertainty and risks for the local partners, which is particularly important in this sector because of the long lifecycles of power investments. Any changes in partnerships thus tend to create high transaction costs of various kinds to the local partner, which explains partner requests for continued Norwegian presence in this field. The downside is that it tends to reduce competition and hence lessen the pressures on the Norwegian partners to ensure efficiency and effectiveness in their support;

Norwegian expertise has been provided in many forms, where twinning has at times been seen as very interesting for long-term sustainable capacity development, but where results seem to be less positive than hoped for, and less important also over time.

To get the optimum from a twinning arrangement, in addition to ensure that there is real commonality of purpose, interests and commitments between the parties, it has become evident that proper design and planning of objectives, purpose, outputs and resources is equally important and essential as it is for other aid modalities.

4.8 Cross Cutting Issues

How and to what degree has the assistance covered cross-cutting issues?

In particular, environment, gender and good governance are assessed.

In general, cross-cutting issues have had a low status, and have been neglected in project designs and concepts, and consequently in implementation, monitoring and reporting. Some project documentation do use the term, and associated words, but projects have not set concrete targets, or have sketched out strategies with which to address the issues, with rare exceptions.

Environment has got better treatment than the other topics. To be fair, it should be mentioned that cross-cutting issues is a relatively new concept. It was not a concern in the eighties and nineties. It is today, and hence the key words such as gender or good governance can be found. Yet target-setting and reporting still does not generally exist, and the evaluation has not found a specific and relevant good example of making it operational in a way that improvements could have been possible.

4.8.1 Addressing Environmental Management

Environmental management has not, in general, played a prominent role in Norwegian assistance. According to information received, Norad had and has the following guidelines for environmental management:

- Environmental Impact Assessment (EIA) of Development Projects, 1989
- Check lists for initial (environmental) screening of projects,...
- Initial Environmental Assessment of Hydropower Projects, 1993
- Development Cooperation Manual (2003) requires that environmental concerns be specifically checked through checking: a) no info required, b) partial study, and c) full study required.

With regard to EIA, it needs to be noted that this is about the assessment of environmental impacts in the planning stage. It is only useful, if it is followed by implementation plans, and actual implementation that is verified and documented, i.e. compliance reporting. No such report is referred to in progress or final reports. The guidelines available are also exclusively for infrastructure projects – Norway lacks guidelines for environmental management systems in institutions, such as the ISO14001 standards.

Current guidelines constitute basic and modest requirements, reflecting an ambition of “doing no harm”. Contemporary environmental concerns, however, go further and attempt to “do good”.

At a formal level, bilateral agreements included a paragraph on environmental adherence to which the recipient was bound. It is not clear when this paragraph was introduced in agreements. Agreements in 1987 did not have it, while it was found in an agreement from 1998. Environmental management has not, in general, played a prominent role in Norwegian power sector assistance. Particularly when it comes to power generation, there are now international standards and rules for addressing environmental concerns. The evaluation has not found a good example of making this operational in a way that improvements could have been possible.

For many of the projects evaluated the guiding documents were therefore not relevant, because the documents came after the projects, but EIA guidelines were applicable to projects like Gurué transmission, Zimbabwe transmission line, and Corumana and Jhimruk hydropower projects. For some projects, environmental concerns are not applicable, or are explicitly excluded because it is taken care of in (parallel) other projects. Examples include the Support to Water Resource legislation in Nepal, where Norway has addressed it later in a

separate project with the national environmental authority as partner. In Mozambique, in the institutional assistance to MIREME, environment was not addressed, because there was a separate project of ERAP/NDF.

The evaluation was assured that the UTIP project in Mozambique has paid attention to environmental and social impacts of the mega project Mphanda Nkuwa. This has been done throughout the feasibility study, presentation materials and formulation of regulations. However, in an attempt to verify this information, the evaluation found only a single reference to environmental management: the engagement of a short-term expert for a total of 3.7 months, with the task to develop the EIA procedures, and conduct on-the-job training for staff. A second minor reference is that during a promotion conference held in Maputo in 2000, a presentation was made to cover the environmental issues, among others. This is a rather marginal attention for such a large project, and it does not appear that UTIP's promotion of the 1,300 MW Mphanda Nkuwa addresses environment in an optimal "doing good" and pro-active manner.

In terms of environmental management in the Cuamba small hydro scheme, the risks and problems were identified and corrective measures suggested. This may or may not have been adequate action at that time, but today responsibility would go beyond what was actually done: the project should be responsible for making sure that mitigation action is being taken, and not limit itself to make recommendations.

Norway has assisted the Ministry of Population and Environment in Nepal in the process of environmental regulation of hydropower development. The visible output from this activity are a number of guides and handbooks on EIA, Environmental Auditing, Environmental Management and Environmental Monitoring. Although the evaluation has not included this project, judging by the titles of the publications, this goes beyond EIA, and is certainly a move in the right direction.

At least one further incident has been found where an environmental concern was raised and addressed, despite a formal lapse in the contract. The clients' engineer in the Gurué transmission line project was concerned about environmental damage in the construction of the line. To minimize the risk, manual bush clearing was adopted. On a formal level, the bilateral agreement on the project stipulates that EDM, as the responsible recipient shall strictly adhere to Mozambique's Environment Law. The assigned consultant, acting as the client's engineer, carried out the work specified in the terms of reference for the assignment, and control of adherence to environmental concerns was not included in these tasks. EDM itself did not report on environmental matters.

At an informal level, the awareness of the importance of environmental concerns did exist, and this, it appears, caused specific action at times, in particular by NVE, but also by others, within their various mandates

- In Nepal, in the Jhimruk project, it was NVE that pointed out that Norad had violated its own rules by not insisting on environmental protection and mitigation clauses, including a minimum flow requirement in the contract for funding with the government. NVE then suggested that a study be carried out, and it later commented and approved the environmental mitigation study done by a local consultant. BPC later on however, did not manage to fully mitigate the adverse impacts. The issue is pending to an extent, and Norway has recently agreed to fund a new mitigation project.
- In Uganda, regarding the Norwegian assistance on finance for turbines, Norad/NVE raised the issue of hydrology in the lake Victoria area, and suggested that this should be appropriately addressed, before going ahead. However, it seems not to have been done, or not properly, Norway went ahead and approved finance, the project was implemented with another 2 x 40 MW added under direct World Bank funding. Last year, Uganda was faced with a serious issue of a retreating water level in lake Victoria. Numerous studies were done to investigate. In summary, 55% of the phenomenon is attributed to excessive water use at Owen Falls, 45% due to a regional drought.

Conclusions

Norway's environmental guidelines are focused on infrastructure projects, do not cover environmental management systems of the ISO 14001-standard, and are based on "don no harm" rather than the current pro-active "do good" principles.

Formally, an obligation of the recipient to adhere by environmental laws was included in bilateral agreements from the late 1990s. However, Norway does not seem to have followed-up systematically in the course of project implementation. Overall, the attention to environmental standards and concerns has been poor and unsystematic both by the Norwegian aid administration and project management, as documented in available reporting.

The most prominent actor in environmental matters (in projects evaluated, and documented in other interventions) has been NVE, who has raised environmental concerns that recipients or other stakeholders have overlooked or neglected.

4.8.2 Gender

While environmental dimensions have become included in power concerns, other crosscutting dimensions like gender and good governance are weaker. One thing is that infrastructure sectors seem to have been dominated by "male engineering"-thinking much longer than in the social sectors, so gender was for a long time considered of less relevance. The exceptions to this (over-) simplified view of gender are found in the rural electrification projects, in particular in Nepal, where some of the project action was specifically addressing women: Adult literacy classes for women, the organisation of mothers groups, training in some income generating activities, and the provision of drinking water, which lessens work for women. The evaluation notes that improving the status of women has been moderately successful in view of high-caste male dominance in the society.

In the institutional assistance to MIREME in Mozambique, the project did not address gender or other cross-cutting issues, because these were addressed in parallel projects assisted by other donors. In fact there is today a Gender Unit in the Ministry of Energy with one part-time female staff, which has developed an action plan and is trying to implement it.

At EDM, there is a general policy of addressing gender, which is visible in staff recruitment where women are given preference if sufficiently qualified. There is also a policy on addressing HIV/AIDS, but it is not clear what the operational consequences of this are. The impression of both is that introducing such policies is more donor driven than owned by EDM.

While gender has historically been weak, it is now becoming more visible, but it is clear that it has to be explicitly planned for, such as in the Nepal projects, for any results to become visible.

4.8.3 Good Governance

In Good Governance in the power sector, corruption is perhaps the most important concern, because it can be potentially most damaging. Another aspect is the legal framework that is required to establish better governance. According to Transparency International (TI), the power sectors are internationally perceived to be the third most corrupt industrial sectors worldwide. According to TI's Corruption Perception Index, all the four countries looked at in this study – Angola, Mozambique, Nepal and Uganda – are considered to have serious corruption problems, with the most severe being Angola.

Norway made the struggle against corruption a central theme in 2000:

The overall goal for Norwegian development co-operation is to contribute to sustainable social and economic development that favours the poor. If we are to succeed, we have to make the fight against corruption a central element in all our assistance. It is part of the efforts to promote good governance in our partner countries. "Good Governance and Anti-Corruption Action Plan", February 2000

Assessment of the action plan implemented at that time has not been part of the present evaluation, and activities looked into have mostly covered the period before 2000.

At an overall level, Norway (Norad) is a partner of the Anti-Corruption Resource Centre (U4), which assists donors to more effectively address corruption challenges through their development support. U4 is operated by the Chr. Michelsen Institute in Bergen.

Norway has contributed to Good Governance in the power sector in other ways, by assisting various governments in clarifying the legal basis for private sector participation in the sector. In Mozambique and Nepal this was assistance to the preparation of relevant laws and electricity regulations. In Uganda, Norway has assisted the government in the establishment of the Electricity Regulatory Authority, as an independent body.

Formally there was no direct and explicit reference to corruption in bilateral agreements prior to 1999. Earlier arrangements typically were that Norway would pay suppliers and contractors directly, and there was an obligation of the recipient to provide annual audited accounts. Both measures allowed a degree of control. In agreements of 1999, such as on UTIP and Hydro Lab, the partner country or recipient has been made responsible for all procurement, but Norway obliged the partner to provide related information on request, and earlier requirements for audits were maintained. This indicates that control was weakened against earlier practices. Since at least 2001 agreements appear to have included a paragraph explicitly on fraudulent practices and corruption, as seen in the agreement on Jhankre rural electrification in 2001.

It is clear that earlier arrangements included some mechanisms and partner obligations with the purpose of exerting a degree of control on corruption, but this was implicit, rather than explicit. But as of 2001, based on the above strategy paper, corruption was mainstreamed in a formal sense: Partner agreements included a paragraph on corruption, to the effect that it was agreed to cooperate specifically in preventing corruption, cancellation of agreements in the event of detection, and eventually the right of Norway to demand repayment of the grant in full.

In project implementation and related documentation, no reference was found to fraudulent practices. There was one irregularity in EDM that was followed-up at one time, but this has not been related to a project assessed, and the result of the follow-up is not known to the evaluation.

Responses of stakeholders to direct questions regarding the occurrence of corruption and the mechanisms used that the evaluation has asked have in general not given useful input.

One case was identified in Uganda, according to the review 2006, where a tendering process was not considered “clean”, indicating possible malpractice. As competitive processes increase in numbers in the future, due to untied aid mechanisms, so may the risk of corruption in this context.

Increasing corruption due to privatisation of power sector infrastructure may well be a growing risk, according to a literature study, (Boehm et al 2003, and www.u4.no). This may occur in two stages of a privatisation process: during the privatisation process itself, in the decision-making process and conclusion of contracts, and in the process of implementation and regulation that follows, during operation of the privatised infrastructure component.

In the legal frameworks both in Mozambique and Nepal, it appears that the laws and regulations now existing need revision and further elaboration. Norway has provided assistance in this further process, but without success so far: Revised and more explicit versions of those laws and regulations have not (yet) become effective. While legal assistance to Nepal has been discontinued, it is intended to continue in Mozambique under the new phase of assistance to the Ministry of Energy.

The status is that existing laws and regulations are at a relatively cursory level. This implies that concession contracts require a good deal of negotiation of conditions between the parties, and this process is not public, and therefore non-transparent. Further, award decisions seem to

be taken at the political rather than the administrative level. More specific and comprehensive regulations could make the rules and conditions clearer, would permit open competition, and would reduce the need for case-by-case negotiations, resulting in a more transparent process, eventually leading to broader interest of the private sector. To improve this situation, more specific, elaborate and comprehensive regulations are required, and administrative proceedings including arbitration need to be improved.

Another aspect, introduced to the evaluation by a Norwegian stakeholder, is the business ethics environment prevailing. It is felt that principles of good governance are not highly respected and not practiced in the power sector business environment. Those entities who wish to practise ethical principles, not in the least because they are contractually bound if supported by Norway or likeminded donors, find it difficult to compete in the market place where bribes are common to obtain contracts. This is a serious dilemma that can be resolved only when ethics codes on transparency and “clean” business are widely accepted, and Norway may be able to assist in such efforts.

Conclusions

Regarding corruption, there is clearly a need to improve the implementation of existing anti-corruption measures through opening up and strengthening the monitoring of all processes in the project cycle, but with particular focus on procurement and auditing, as well as privatisation processes. In this context, better business ethics need to be fostered, with a view to “clean business” in the sector.

Legal frameworks in Mozambique and Nepal are at a relatively cursory level. While these need strengthening, the more important challenge is strengthening implementation and adherence to what are considered “international good practice” standards. Norway does so far not seem to have been pro-active in contributing to this in the power sector.

4.9 Benefits from Assistance to SADC/SAPP

The Southern African Power Pool (SAPP) is a power SADC countries in 1995. It was the first formal international pool to be set up outside North America and Western Europe. Although small in terms of overall trade at the present time, the pool has considerable potential covering about 9 million square kilometers and 240 million people. The number of customers of the inter connected national systems is well over 65 million.

Members of SAPP are national utilities and independent power suppliers (IPSs) from SADC countries. The SADC protocol on energy makes reference to SAPP. Inter governmental affairs are governed by a SADC Ministerial Committee. The organization is linked to the SADC Directorate of Infrastructure and Services. The Coordination Centre located in Harare has a small staff of eight led by a Coordination Center Manager. (See para A4.10, Annex 4 for an account of and planned activities).

Mozambique officials argue that the country has had considerable advantages from SAPP and have been supporting the SAPP initiative. Mozambique’s interest in the organization is based on the country’s position as the third biggest power exporter, and having the second largest generating capacity in the region. Mozambique appears to be the most active member of SAPP, and the head of EDM is the rotating Chairperson of the SAPP Executive board.

It was found that Norwegian aid to the region had an influence on the establishment and development of the SAPP in two ways. Norway is a main donor to the Technical Administrative Unit (TAU) that SADCC set up in 1982 in Angola to lead the organisation’s energy sector work. Norway also funds a project on Cooperation Regarding the Development of Competitive Electricity Markets 2003-2007.

The general idea of a pool is clearly linked to the start of SADCC in 1980 and the establishment of the TAU. At an early stage, TAU took initiatives to meetings with leaders of the power utilities in the region. In 1984 during a seminar, Nordel⁸ was presented as a model of cooperation, and SADC utilities adopted the idea.

⁸ Nordel is a body for co-operation between the transmission system operators in Denmark, Finland, Iceland, Norway and Sweden, whose objective is to create preconditions for a further development of an effective and harmonised Nordic electricity market. (see <http://www.nordel.org/content/Default.asp?PageID=199>)

The Competitive Electricity Markets project has not been brought to a conclusion but all information points to a successful intervention. The project represents a move from the former cooperative pool to a competitive pool using a bid-based pricing mechanism. The end result for SAPP is thought to be the creation of a spot market for the SADC region.

The example of SAPP has contributed to the establishment of the Regional Energy Regulatory Association (RERA) which is an association of power regulators in the SADC region. The objective of RERA is to develop the electricity supply industry in the region through enhanced regional integration and trade, and to harmonize and develop a regulatory framework. A RERA/NVE contract was signed February 2004, and includes assistance in establishing a RERA secretariat, coordinating and harmonizing the regulatory framework in the region and coordinating the legal framework.

Norway and the Nordic countries' role in international power pooling made the Nordic system a "rolemodel" for a SADCC power pool. Norwegian leadership in cooperation with the TAU over time built knowledge and trust in Norwegian expertise. Cooperation in the regional power sector would have taken place without Norway's influence but perhaps using different forms, making mistakes that now could be avoided on the basis of the Nordic experience and thus speeding up the development of the pool.

This has permitted a certain "leapfrogging" and with the installation of the new trading platform the present professional and technical state of the Southern African pool is approaching that of the Nordic/European markets. This bodes well for a style of cooperation in the future which has much greater emphasis on mutuality and takes place increasingly on a commercial basis. On the basis of the past gains in business opportunities it is likely that the Norwegian companies and organizations involved will be interested in such cooperation.

The Norwegian support to TAU and SAPP created a flow of benefits to the regional power cooperation in Southern Africa, but there were also benefits flowing to Norway. Norwegian companies landed contracts for consultancies in the region. SADC cooperation in the power sector led to higher investment volumes in the region and therefore benefited Norway as a major supplier of material and technical inputs and capital goods to the sector. Nordpool later used its experience and track record to develop business in Asia.

With reference to Norway's engagement in regional cooperation such as TAU and support to SAPP, and regional projects at the country level, such as the transmission line from Cahora Bassa to Zimbabwe, the context of the regional power situation is of constant interest. It is evident from press releases⁹, that within SADAC, the implementation of various donor-assisted cross-border transmission lines is highly appreciated at the highest level. The Norwegian contribution to this has been significant.

Norway's support to regional power cooperation has supported rapid technology transfer, accelerated the establishment of a regional power pool that benefits both power exporting and importing countries, and in general has been much appreciated by Mozambique, which has become one of the strong supporters of the SAPP.

⁹ For example: South African Press release 2/28/2006: New energy pact to boost SADC supply

5 Contribution to Future Baselines

A baseline is the initial information collected prior to the implementation of an intervention, against which outcomes can be compared at strategic points during and at completion of an intervention. The terms of reference stipulate that the present evaluation should contribute to the definition of a number of baselines for future interventions, differentiated according to type. The intrinsic reason for this is to contribute to improved results reporting in future cooperation. The following have been considered:

- Total power related assistance evaluation at the country level
- Institutional twinning in support of institutional development and capacity building
- Financial assistance to infrastructure investment
- Distribution and electrification of rural and urban areas.

The evaluation draws on the experiences in project assessment in both, Mozambique and Nepal. The subject is approached by formulating criteria and data sets from fresh experience, that would have made it possible to come up with better evaluation results, involving less inference, and ultimately less effort.

5.1 The Value of Baselines

Development assistance is about change, and contemporary aid management practice requires that such change is made measurable, as a means to monitor progress and assess results. Monitoring change implies that measuring is done against a “before” situation, i.e. a baseline. Therefore, establishing baselines is not only a valuable practice, but it is a mandatory activity, if results reporting is taken seriously. Relevant baselines require carefully chosen indicators. A recent review report strongly urges that the practice of designing and carrying out socio-economic baseline studies consistently and in an appropriate manner become mandatory for all infrastructure projects, and that institutional cooperation projects should be planned and implemented likewise (Scanteam 2005).

5.2 Prerequisites

The evaluation effort for most projects has indicated that reporting, other than on project activities, has been generally weak in Norwegian development cooperation. Indicators have not been defined in most projects, and worse, it appears that the process of results reporting has not taken root to any significant extent.

The first requirement for integrating reporting into development projects is a better understanding of the requirements of a sound project cycle, including essential steps in the design, identification of indicators, means of verification, data collection, and use in reporting by the whole group of individuals and institutions dealing with the planning and implementation of a project. Without understanding or incentive for doing baselines it cannot be expected that sound procedures will take root. Therefore the work and cost of baseline as well as end line (and any intermediates stages) of data collection and analysis will have to be integrated in project plans and budgets

5.2.1 Selecting Indicators

Baseline data may not have only the purpose indicated in the simple definition above. One possible important purpose is to prepare for a better understanding of key social, economic cultural and political conditions in areas potentially affected by the project. Also, it may help to predict, explain and substantiate possible impacts and to understand expectations and concerns of stakeholders and inform the design of mitigation plans.

Analysis of measuring outcomes and outputs includes the identification of indicators. These must be verifiable, and if this is not economically possible, it is best to discard a specific indicator and look for a substitute or a proxy.

5.2.2 Need for Improved Data Management

The State-of-the-art-study referred to earlier noted that: “A large share of the uncertainty surrounding the impacts of power- and other infrastructure projects and programs can be traced to the inadequacy of the available information about even the most basic social and environmental impacts. The data and indicators required to monitor them should be addressed at the pre-feasibility stage, when the various alternatives to be compared are identified”.

This requirement can be fulfilled by collecting baseline data, and it is clear that recipient organizations must improve on tracking and managing the monitoring data. This is necessary for improved internal and external reporting, and it will make rigorous review and evaluation much easier.

Based on experience, the evaluation can make some suggestions that may contribute to the baseline development process.

First it is recommended that no less than 2 but no more than 5 indicators for each level in the result chain are defined. Second, it is important that the data collected in a baseline have a purpose, else collection of such data is a waste of resources. The purpose of the data is derived from the objectives to be achieved in the future intervention, i.e. the specific indicators that are identified during project design. This needs to be considered when deciding how useful in any specific future project the following baseline contributions can be.

5.3 Baseline Contributions

5.3.1 Total Power Related Assistance Evaluation at the Country Level

With a focus on assistance at the national level, the following indicators appear useful.

- Annual energy balance, including generation, import, export, consumption and resulting losses.
- Contribution of the power sector as share of overall GDP and as a ”driver” for overall growth
- National power peak demand and available generating capacity, or secured import capacity.
- Supply reliability
- Share of donor investment in total power sector investment volume
- Break down of donor shares in total sector assistance, compared to one’s own share
- Weighted average tariff
- Utility KPIs (keyperformance indicators) such as: cost-efficiency and financial performance, totallosses, client/staff ratio.

The case of a baseline at the utility level may be the most relevant in the case of a quasi national monopoly on distribution, as is the case in Mozambique. Assuming more than one donor to the utility, the use of a baseline must take account of other donor inputs in the time period monitored, because of attribution issues. The current EDM end line, as prepared by the evaluation is shown in Table 15.

MOZAMBIQUE POWER SYSTEM: EDM		HISTORICAL DATA				BASELINE
Data/KPI	1995	2000	2003	2004	2005	2006
Energy available (GWh)	965	1,395	1,829	1,923	2,098	2,208
Energy sold (GWh)	697	1,013	1,340	1,413	1,629	1,688
Total Losses	27.8%	27.4%	26.7%	26.5%	22.4%	23.6%
Total no of Customers	159,169	202,001	245,859	284,562	338,951	415,667
National access rate	4.4%	5.1%	5.5%	6.2%	7.2%	8.6%
Total revenue 1000MZN	379,774	1,023,332	1,848,025	2,246,268	2,620,133	2,800,000*
Number of staff	2,895	3,271	3,219	3,183	3,194	3,233
Customers per staff 55	55	62	76	89	106	129
MWh sold per staff	241	310	416	444	510	522
Revenue (MZN) per staff	131,183	312,850	574,099	705,708	820,330	866,069

* estimate

Table 15: EDM National utility KPIs for use as baseline

5.3.2 Rural and Urban Electrification Project

Collecting specific baseline data may be a high cost undertaking if a separate study has to be undertaken. The baseline study should therefore carefully consider the use of data from other organisations collecting data in the same area, in particular the country's statistical bureau. Care should be taken in ensuring that all variables are according to definitions and standards set by the national authoritative bodies for household income or expenditure data, ministry of health for health indicators, etc. One important aspect of baseline studies, is to ensure that they are made public. One thing is that this allows other actors to verify and comment on the quality and coverage of the survey results. But it also ensures that other actors can use the data for parallel purposes, which makes it more likely that the data will in fact be available later on when comparator studies are carried out.

If the intention is to carry out impact studies later on, baseline values for a control group in areas adjacent to the project area or with similar social and economic indicators as those prevailing in the project area, also need to be produced.

Since the baseline is meant to track power sector interventions, energy use patterns are particularly important. The exact variables to include depend on what kinds of sources of energy are available, and what energy is used for. For poverty impact studies, there are a number of variables that are now considered standard. The use of alternative energy sources is also linked to household income, where "ability and willingness to pay" studies have become quite common.

The Andhi Khola field survey included the following indicators *Table 16*.

Indicator	2007
Wealth rank (% of population)	
Rich	30
Medium	33
Poor	32
Very Poor	5
Water and Sanitation (%of HH)	
Reliable water supply	70
Toilet	87
Livelihood (%HH members)	
Employment	27
Food sufficiency	25
own business	38
Agriculture + livestock	66
Remittances	33
Energy Use	
Connected to Electricity (% households)	98
Number of light bulbs per household	5
Consumption >30 kWh/m (% households)	30
Electricity for cooking (% of total energy)	4
Kerosene consumption (liters/H, month)	0.5
Energy cost (% of income)	10a
Electricity social Tariff (NPR/kWh)	3.00

Table 16: Example of Socio-economic baseline data

5.3.3 Capacity Development

The purpose of capacity development support must be formulated in concrete terms, and valid indicators are required. If, for example, the capacity of a regulatory agency is to be strengthened and that the purpose is improvement in regulatory action and delivery of related public services, useful indicators may be:

- Number of laws/regulations prepared
- Number of conflicting legal stipulations resolved (harmonised)
- Number of concessions awarded
- Processing time achieved
- Number of offences/infringements processed
- Time of Technical Assistance (TA) used in operational activities as opposed to capacity building activities
- Number of staff trained and competence level achieved

It should be noted that capacity development projects are notoriously difficult to monitor exactly because it is complicated to define the complete results chain (outputs – outcome – impact) with well specified target values and indicators for monitoring purposes. This, however, is all the more reason for a careful planning process where these issues are carefully considered, since otherwise project management will not have clear targets to steer towards. No example can be provided here due to a lack of concrete and complete data from evaluated institutional assistance projects.

5.3.4 Infrastructure

Depending on the use to which a baseline is to be put in future projects, useful indicators may include:

- Number of units of specific equipment
- Grid volume (km of lines at different voltage levels)
- Generating capacity
- Reservoir capacity (for hydro schemes)
- Irrigation area (if provided)
- Km of roads (if access roads were built)
- Energy production
- Production costs
- Rate of return on capital employed

An example containing elements of the above is shown in table *Table 17* below for an actual BPC extension project.¹⁰

Particulars	Unit	Andhi Khola Khodistribution	Jhimruk distribution	Total
Distribution Area		2 districts Syangja & Palpa	2 districts Pyuthan & A'khanchi	4
No. of VDC's Electrified	Nos.	33	22	55
No. of Municipalities	Nos.	2	0	2
Total No. of Consumers	Nos.	20,479	6,112	26,591
Industrial		274	65	339
Metered		9,726	4,359	14,085
Un-metered		10,479	1,688	12,167
No. of Residential consumers	Nos.	20,205	6,047	26,252
No. of consumers in Users	Nos.	14,289		14,289
Organization				
No. of Users Organization	Nos.	63		63
Annual energy consumption	GWh	10.59	1.56	12.15
Revenue	Mil. NPR	32.8	7.14	39.94
Line length				
33 kV	Km	57	164	221
1 and 0.4/0.23kV	Km	1,437	1,056	2,493
Distribution Transformers				
No. of 33/1 and 33/0.4 kV	Nos.	26	19	45
Installed Capacity	kVA	3,750	1,950	5,700
No. of 1/0.4/0.23 kV	Nos.	333	35	368
Installed Capacity	kVA	2,473	368	2,841
Peak Demand per consumer	Watt			160

Table 17: Typical baseline for electrification infrastructure projects

¹⁰ Source: Inception Report of Rural Electrification Project REEP, Nepal, BPC/Scanteam 2007

Further baseline elements, may, depending on the purpose of future projects, be shown in graphical form, with included historical data. This may be useful in assessing progress and results in the future.

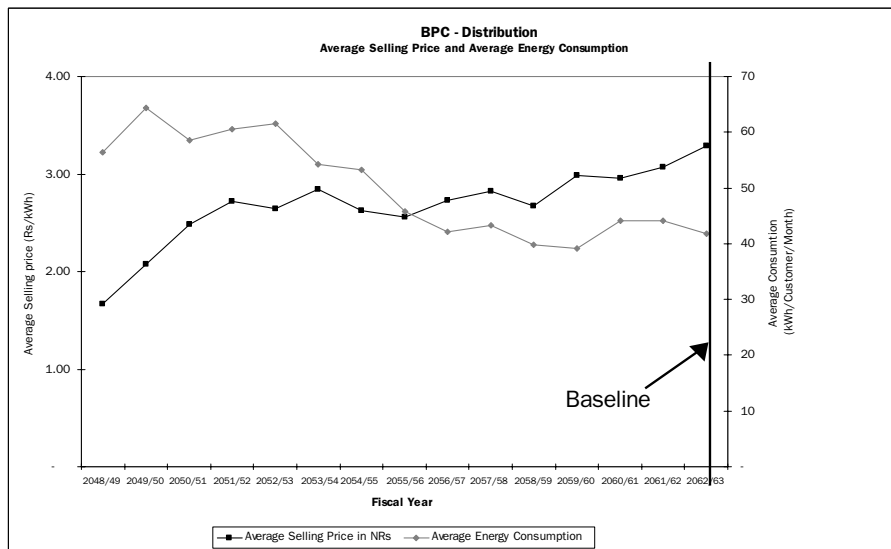


Figure 9: Example baseline graph for electricity tariff and consumption

The above baseline refers to the starting year of a electricity extension project. In monitoring and future evaluation, it would be continued into the future comparison with the starting point and the past is possible.

Conclusions

Baseline studies can be quite time and financially demanding, and thus require careful planning. The first step is to verify the data are already available from a reliable source. If the project itself has to generate the data, the variables must be according to national standards. If impact assessments are to be done later, data from a control group also needs to be produced. Baseline study results should in general be made publicly available. Most important, baseline data must reflect project indicators used.

There are a number of variables/indicators that are now typically used for monitoring the results of power sector interventions, and these should be used as far as possible, to make results comparable. As in other sectors it is capacity development results that are most intractable

6 Looking Ahead

Norwegian support to the power sector has been a long-term commitment in both Mozambique and Nepal, comprehensive in its coverage of the issues, and substantial in terms of the financial contributions.

There have been a wide range of actors involved on the Norwegian side, ranging from equipment suppliers, engineering consulting firms, private and semi-public utilities, national authorities as well as the aid administration. On the partner country side, the power sectors have evolved and moved towards the kinds of separation of roles and responsibilities found in industrialized countries. This has meant that the number and range of partners has also grown, leading to more complex relations and sophistication in the issues being addressed.

The results achieved through the power sector support are substantial, in the fields of power generation, transmission, and distribution, though the profiles of the programmes have been quite different in the two countries. Nepal has focused on developing its hydro-resources through a gradual increase in the size, complexity and thus financing needs of its power generation sub-sector, and has maintained a largely local developmental focus as central to the utilization – and thus benefits – of the electrification. In Mozambique, the focus has instead been on taking advantage of the large-volume and cheap hydropower available from Cahora Bassa, leading to a focus on national transmission and then localized distribution networks, where the small-scale hydropower schemes supported during the 1980s and early 1990s were largely for political reasons during the conflict period.

The linked sector development needs deriving from these two different sector strategies still had similar characteristics. There was a need for continuous and fairly large-scale training and development of human resources, increasing in degree of technical skill levels. New institutions had to be established, new tasks and roles taken on-board, more modern management principles and organizations developed, and new and updated legislation and regulatory frameworks put in place.

The commercial dimension of the power sector has become increasingly apparent. There are increasing pressures to make the sector more self-financing, the individual investments sustainable, and overall increase the contributions of the sector to national development both in terms of financial contributions and as a positive and critical factor for investment decisions and thus economic growth. The cross-border dimension of the Mozambican power sector has been strengthened through the continued sale of power to South Africa, new connections to Zimbabwe and further link-ups with the regional transmission networks and power pooling. The power export issue remains an issue also in Nepal related to making large scale hydro schemes viable. In Mozambique, this has been a key factor behind the continued focus on mega-projects, where the Mphanda Nkuwa project may in fact be rooted in unrealistic expectations regarding the interest of the private sector in committing large-scale funding to such long-term investments in what is still a poor and relatively unstable part of the world. Projects on this scale take enormous time and effort, but while time passes, the development partners should not lose sight of shorter term concerns: much needed additional generating capacity for the domestic market.

The benefits from electrification can be seen at national, regional, and social group level. The net benefits from additional power generation projects have varied, but are largely positive, depending on the investment and expected maintenance costs over the lifetime of the infrastructure.

The distributional impact has varied considerably. While Norway recognizes that the first-round effect of electrification, even in rural areas, will usually have little direct impact on

poverty, it is important to note that those projects that have deliberately targeting the poor have succeeded better in ensuring that the poor have also seen positive effects.

In general, projects have been fairly well planned and implemented, so first-round expected Outputs have largely been produced, though sometimes with delays and over budget. The second-round Outcome effects have been slower in materialising than hoped for, and often of a smaller magnitude than planned for. At the same time, both this evaluation and other studies of the power sector note that the net benefits streams tend to increase over time at an increasing rate – that is, there seems to be nonlinear growth. This has to do with many of the investments being large-scale lump-sum while economies of scale on the costs-savings and income side increase as the number of consumers increase, and the average amount of energy consumed per connection also goes up. This process is a slow and incremental one, particularly to begin with, however, so estimates of the net benefits from electrification investments tend to be on the conservative side during the early phases of a given project.

The local partners are very positive about Norwegian sector support and the results achieved. Norwegian assistance has clearly played a critical role in enhancing sector performance, and helped these countries, which are among the poorest in the world with weak human and physical capital levels, to move quite rapidly towards a more modern power sector. While it is difficult to make cross-sectoral comparisons, there is every reason to believe that this rather sophisticated sector has moved faster, more consistently and across a broader range of issues than just about any other, while at the same time strengthening its financial and technical sustainability.

Because of the consistency in the partnerships, the trust and dense set of links that have been established, the results in what is often the most difficult area for development cooperation – capacity development – must be said to be quite successful.

Both countries are largely self-sufficient in basic and intermediate technical and managerial skills, and also in their capacities to reproduce these skills through in-country training capacities. Overall, though, Nepal is clearly well ahead of Mozambique with a number of technological institutions that are both able to produce new knowledge and adapt external knowledge to local conditions.

Despite this positive assessment, it is noteworthy that neither Norway nor the local partners have been good at performance monitoring. Only two projects had a baseline. Almost all the results reporting has been at inputs utilisation and activity levels. The Outputs reporting has consisted largely of listing what was produced, but without a critical assessment of productivity, deviations compared with the original plans, etc. There have been almost no indicators defined at Outputs or higher results chain levels, and thus little continuous monitoring that could have permitted earlier reactions when projects began lagging.

Of greater concern is that dimensions that are important to Norway politically – poverty reduction/ distribution of benefits, environmental analyses and management, gender equity, and improvement to good governance and the combat of corruption – are largely addressed in an ad hoc manner if at all. The situation is improving, but is still far from being in line with “good practice” levels, either in terms of standards set or actual results achieved and reported on.

6.1 Lessons Learned

The “lessons learned” are largely in line with what has been accepted as “good practice” principles for development cooperation, though there are some specific ones to the power sector:

- All activities need to be well planned and based on clear local ownership principles. This means that Norway at the overarching country sector portfolio level has had to adjust to quite different national power strategies;
- The broad-based support to the power sector has made it easier to ensure synergies between the different forms of support: infrastructure investments, capacity development, and knowledge generation and studies;
- Collaboration with other donors has been beneficial in several ways. Support has been rationalised – Norway and Sweden jointly supporting training in Mozambique with Sweden

in the lead, and Norway and Denmark collaborating in Nepal. The three Scandinavian countries have begun having joint annual meetings in Mozambique, which both streamlines information and organisational costs for all, but also provides stronger “voice” when this is seen as required, such as in the policy disagreements with the World Bank;

- The long-term and large-scale support to the power sector has given Norway unique partnerships in the sector which have had positive spill-over effects for both parties in difficult fields like policy changes, assistance to new power sector frameworks and institutions, and capacity development in general;
- The large number of actors engaged in the power sector both in Norway and the partner countries has probably contributed to the stability and longevity of the power sector engagement. While this represents a mix of commercial and developmental actors and concerns, it has also ensured that Norway has remained strongly committed in a sector where it has expertise that is relevant and value-adding to the local partner countries;
- The commercial aspects of the sector are becoming ever more important, which means that the purely grants-based financing provided by a donor like Norway needs to be more carefully justified. Now that it is agreed that electrification as such is not an efficient means of addressing poverty, the grants funding needs to have better targeting criteria to ensure that the benefit flows from the grants reach intended beneficiary groups;
- Unless there is a clear results focus at the planning stage with specified and operational indicators in place, it will be difficult and costly to track performance over time, thus also reducing the ability of management to make adjustments that can further enhance benefits to intended beneficiary groups;
- Overall, Norwegian development priorities, such as poverty reduction, gender equality, equity, good governance and the environment, tend to be overlooked during the planning and implementation of power sector interventions. This reveals a need to renew and strengthen the way such issues are put on the agenda, included in project design, followed-up on and assessed before, during and after projects. When poverty reduction and gender equality are specified objectives with clear operational means, positive results can in fact increase and be notable.

6.2 Remaining Challenges

There are perhaps two overarching challenges for the continued Norwegian support to power sector development.

The first one has to do with the use of its grants funds to a sector that is supposed to be commercial and self-financing. This does not mean that all activities in fact are commercially viable, but Norway needs to define which aspects of power development it believes deserves grants aid, and how to target and monitor the resource flows accordingly.

The other has to do with the Norwegian knowledge network. The long-term engagement of Norwegian commercial actors has been an important value-adding components to the overall power cooperation. This will become more difficult to maintain as more of the aid is untied and Norway as a donor probably begins to de-link from the more commercial components of the sector. At the same time, Norway as a donor but also a political actor with interests and concerns in the sector will still want to have its own reliable knowledge network, and how to maintain this needs to be reviewed.

Regarding the funding to the sector, there are certain areas that clearly are not commercially viable. One has to do with some of the studies that address the kinds of policy concerns Norway has: distributional consequences of alternative investment options; better targeting of the poor or less favoured regarding the benefits flows and access to electrification; possible pricing policies and cross-subsidy or direct subsidies that Norway might be willing to support for particular beneficiary groups; how to better address gender, good governance issues and in particular anti-corruption steps and quality and integrity assurance systems. Baseline studies, particular kinds of monitoring or impact studies, and other knowledge processes or products that are not of core interest for the commercial running of the power sector organisations. Capacity development in oversight and public sector institutions and public goods issues related to power development.

Another area where Norway can play an important role is with various forms of risk mitigation – assuming particular learning costs, continue promotion of viable projects to potential investors. But Norway may also look at how other instruments can be used such as mobilizing different kinds of risk capital, see if different kinds of risk insurance schemes are possible, and other means that can reduce uncertainty and risk to investors, with the aim of generating more private sector investment.

Regarding the more commercial activities, such as continued rural electrification in Mozambique or new power plants in Nepal that have a local and poverty reduction focus, the parties need to review what role grants funding should play. There may be risk mitigation and distributional value-added components that merit grants funding, or there may be good arguments for continuing the kinds of support provided today but the distributional benefits need to be better monitored and documented.

Non-achievement of large and ambitious investment projects has not been properly reported in various cases, in large part because monitoring of defined project outcomes and impacts has in general not been done after project completion. However, such reporting is important because impacts are mid- or long-term in nature, so they materialise long after project completion. To make corrective action regarding strategy and goal setting for future projects possible, long-term impact monitoring is a must.

With regards to rural electrification, as the total number reached in Nepal is moving towards the millions, decentralised and local models of ownership and operation of rural and urban distribution systems deserve attention.

At the same time, Norway should also be tracking the commercial performance of actors like EDM much more carefully. It is very troubling that an actor that has been given quasi-monopoly income possibilities along with large-scale external financing is not aggressively moving towards financial viability. The facts presented (see section 4.1.9, p. 26) clearly show that the management performance contract that the government has with EDM is not working, with targets that are too “soft”, and with no known consequences in the event of non-performance.

6.3 Recommendations

1. Norwegian engagement in the power sector is yielding good results, in large part due to long-term commitments and broad-based engagement. These should be principles for future support as well;
2. Norway should review the criteria for providing financial support to a sector that is evolving into a more commercial one. Norway should focus on activities that have public goods or quasi-public goods aspects; that strengthen access and benefits to the poor and disfavored regions; that addresses gender disparities and environmental concerns better; and that improve overall governance in the sector, especially in areas that are known to be vulnerable to corruption.
3. Norway should review possibilities for helping partners manage uncertainty and risk better, including with new instruments or innovative approaches where Norway can assume the financial costs of the risk-management instruments;
4. In order to ensure possibilities for performance monitoring in line with a results-orientation, planning must include establishment of a comprehensive baseline. The baseline needs to be specific to the project and include those dimensions that are relevant in the context, but also those that are important to Norway: distributional consequences; environmental impact and sustainability; gender equity and good governance;
5. Linked with a baseline, the parties need to establish a realistic but aggressive monitoring system and process. This must in particular include those areas that tend to be neglected or may be controversial: gender, anti-corruption measures, and poverty reduction. The monitoring system should contain verifiable indicators with realistic targets/benchmark values, against which performance monitoring is reported (deviation analysis);
6. Concerning support to power generation and transmission lines, the long time that is often required for these kinds of investments to generate significant returns in poor countries need to be recognized and taken into consideration when assessing project proposals. The finding that smaller and local-based systems tend to provide greater benefits to the poorer segments also needs to be included when deciding on the focus for Norwegian financing.

7. With the intention of increasing Norwegian funding to the power sector in poor countries, the challenge of maintaining and strengthening relevant parts of a Norwegian knowledge network needs to be addressed. This includes assessing instruments such as institutional twinning whose utility is clearly dependent on defined pre-conditions being in place. The Energy Task Force may be a good forum for starting a forward-looking and critical review of options that are in line with the new aid modalities: ensure local ownership and independent quality assurance of results dimensions important to Norway as a donor and political actor at the same time.

ToR for an Evaluation of the Norwegian Power-related Assistance

1 The Purpose of the Evaluation

Norad's evaluation department (EVAL) will conduct a comprehensive evaluation of earlier development cooperation within the power sector. The evaluation will cover both hydro power generation and distribution of electricity, institutional building and development of capacity and competence.

Development cooperation in the energy sector has been substantial and there is a political decision that this should further increase during the next five years. There is therefore a double purpose of this evaluation; to document and assess past results and performance, and to contribute to quality assurance of future assistance in this sector.

The focus of the evaluation will be on the quality and the more long term results of Norwegian assistance so far and reasons for successes and failures, but it will also reflect two key issues of importance for the future: the potential for improving Norwegian assistance in the future and preconditions for successful assistance in former and new partner countries.

The main users of the evaluation results will be the Norwegian policy makers and the institutions¹¹ that have been and are involved in developing and implementing Norwegian policy and guidelines for the power assistance. The results will also be useful to partner countries and for other stakeholders in Norway. An important goal is to have the first results ready by early summer 2007 and the final report delivered in August 2007.

¹¹ Such as Ministry of Foreign Affairs (MFA), Ministry of Energy (MoE), Ministry of Environment (MoE), the Norwegian embassies and the Norwegian Agency for Development Cooperation (Norad), the Norwegian Water Resources and Energy Directorate (NVE), the Norwegian Investment Fund for Developing Countries (Norfund), the Norwegian University of Science and Technology (NTNU)

2 The Background and Rationale for the Evaluation

In October 2005 a working group appointed by Ministry of Foreign Affairs (MFA) proposed¹² that power related assistance should become a priority sector and that Norway should at least double its power related assistance during the coming years. This vision has been approved both by Minister of International Development and an "action plan" is being developed. This planning process and the fact that power related assistance have not been subject to independent evaluations so far, make it timely to undertake an overall assessment of results and what can be learned from past performance.

The working group proposed that the supply of energy, and especially distribution, should be given priority in Norwegian aid interventions, as these are seen as important and necessary ingredients for poverty reduction. Their proposal was to develop both a broader, deeper and substantially larger Norwegian assistance in the power sector. The outline of such a broader assistance will include an information service for all developing countries that are interested in learning about the Norwegian experiences in the power sector. These information services should be adjusted to the challenges of each country, but be short term and within limited costs.

In addition Norway should give deeper, longer term and comprehensive assistance to a limited number of countries and regions with focus on training of personnel, institutional capacity and competence, legal/technical advice and also financial support to power investments. The working group proposed that power sector programmes should be prioritized interventions in at least three partner countries, in addition to support to regional energy cooperation. Key challenges will be the limited Norwegian capacity for such assistance and the need to secure high quality assistance for partner countries.

However, the evaluation will not be an appraisal of the new "action plan" or its components. It is a fact finding mission with the purpose to learn from earlier projects and programmes by documenting and assessing results and performance, and in that way contributes to quality assurance of Norwegian assistance in the future.

¹² Forslag til strategi og tiltak for å fremme norsk innsats i kraftsektoren i utviklingsland. Innstilling av arbeidsgruppa nedsatt av Utenriksdepartementet. Oktober 2005.

3 The Evaluation Object and Knowledge Base

The planning of the evaluation is based on two studies; a statistical study of all Norwegian power related disbursements to developing countries which clarify the evaluation object in general, and a “State-of-the-Art-Study”¹³ of the long-term results of power assistance more in general and of Scandinavian assistance in special. Appendix 2 includes the executive summary of the State-of-the-Art-Study and appendix 3 some key statistical information.

Norad’s database shows that the Norway has been involved in power related assistance for a long period and that the interventions have been very complex with large variation in forms, contents and contexts. Total grants have been more than NOK 10 billion or 1,5 billion US\$ during the last 25 years, including projects and programmes in more than 70 countries and to five regional organisations. During the new millennium, annual disbursements were around NOK 400 million or 60 million US\$. Only a few of these interventions have been subject to review, and no survey covers this type of Norwegian assistance more in general.

The statistical data base gives information on the volume and content of the Norwegian assistance, but the reliability of the data may vary. Therefore, a task for the evaluation team is to check data quality, especially on what have been delivered and cross-cutting issues as good governance, environment and gender.

The database gives no indications of results or impacts and has not been designed for that purpose. Neither is there information available on how important the Norwegian disbursements are compared to such assistance from other donors. In an international context, the Norwegian assistance has in some countries been significant or major supplement to assistance from the World Bank¹⁴ and/or other multi- or bilateral actors. The evaluation should, therefore, clarify the total assistance to the selected partner countries and role Norwegian assistance has played compared to other donors.

An important purpose of cooperation in the power sector has been to support regional and national economic development in general and the development of industry and trade in special. The assumption has been that increased production and supply of energy would support economic growth and that the economic outcomes later on would “trickle down” and reduces poverty and has other impacts on the standard of living of the inhabitants. The State-of-the-Art-Study shows, however, that reliable information on the results of power related assistance is weak, including the effects for national, regional and local economic development, on trade and industries, and for the population in general.

The State-of-the-Art-Study indicates that there are important synergies and complementarities between different types of infrastructure. The effects on community level by electrification increase significantly if other critical and interlinked infrastructure is developed as roads and telecommunications. Reports indicate also that energy is a basic necessity on household and enterprise level, while electricity is not. The actual demand, affordability and willingness to pay for electricity by industry and private business (including farming) is poorly mapped and understood. The lack of stable electricity is one of the main barriers to new investments.

The State-of-the-Art-Study states that a major challenge for the coming evaluation is the lack of reliable baseline data and the fact that indicators and monitoring of socio-economic impacts largely are absent. The methods for such data collection and analyses do, however, exist. An important objective for the evaluation should, therefore, be to contribute to a selected sample of baselines for future evaluations and for the introduction of such methods in Norwegian power assistance management.

¹³ Stein Hansen. State-of-the-Art-Study. The long-term effects of assistance to the power sector. Final Report September 2006. Norad and Nordic Consulting Group. Copies available on Norad’s [www.....](http://www.norad.no)

¹⁴ The annual energy investments of the World Bank are for example nearly 10 times higher

4 Organisation and Involvement of Relevant Interests

The evaluation will be conducted in three phases:

- the preparation phase, including the state-of-the-art study, dialog on Terms of Reference (ToR), the tender process and contracting of a team of independent consultants,
- the implementation phase when the evaluation team conducts the evaluation according to ToR, with the production of an inception report clarifying the work plan, a draft final report and the final report
- the follow-up phase, disseminating and discussing the findings with the stakeholders and giving advice to the Ministry for Foreign Affairs on policy change and how management should respond.

The planning and organising is undertaken by Norad's evaluation department (EVAL). A reference group¹⁵ consisting of major stakeholders in Norway is established. Consultations with the reference group, partner country representatives and other relevant actors in Norway and partner countries will ensure relevance of the Terms of Reference (ToR), the tender process and criteria for selecting the evaluation team. The reference group will be invited to give their comments before the inception report is approved by EVAL.

The draft final report will be sent by EVAL to partner countries representatives, the involved Norwegian embassies, the reference group and other involved stakeholders, giving them the opportunity to comment on the findings, conclusions, recommendations and lessons learned which are presented in the draft report. The final evaluation report will reflect and assess these comments, and acknowledge any substantive disagreements. The reference group will, together with other stakeholders, also be invited to participate during the follow-up phase in discussions about the conclusions and recommendations in the final report.

An evaluation team, independent of the stakeholders and EVAL, will be selected after an international tender process and is responsible for the findings, assessments, conclusions and recommendations in their reports.

EVAL has professional responsibility for the evaluation process and choice of consultants. EVAL is also responsible for its independent advice to the Norwegian Minister for international development on policy change and management response.

¹⁵ A list of the members is included in appendix I.

5 The Objectives and Key Evaluation Questions

The evaluation will be conducted according to MFAs instruction for Norad's evaluation department. It will follow the norms and quality standards laid down in OECD/DACs evaluation guidelines¹⁶ and cover all of DACs criteria for evaluating development assistance; relevance, impact, effectiveness, efficiency and sustainability.

The evaluation has three broad objectives;

- document and assess the results of the Norwegian power related assistance
- assess the content and quality of the Norwegian assistance and how it may be improved
- collect information from a selected sample of projects and programmes which can constitute a baseline for measuring results of key elements in the new "action plan".

It will not be possible to cover all aspects of the three objectives mentioned above. It has, therefore, been necessary to limit the scope to the following less broad evaluation questions. The evaluation team should investigate and assess these key questions, and present the findings, conclusions, recommendations and lessons learned in the draft and final report.

The evaluation team is, however, free to propose additional or reformulated evaluation questions or changes in design/methods in its tender documents and the inception report.

5.1 The Results of Norwegian Assistance

Norwegian power related assistance covers interventions where Norway alone or in cooperation with other donors plan and/or implement interventions. The main and broad objective is to document and assess to what extent Norwegian power related assistance:

- produced the anticipated results
- identify successes and challenges,
- clarify reasons for why interventions have been successful or not, and
- lessons learned by Norway and partner countries/institutions.

The State-of-the-Art-Study shows that there is surprisingly little documentation of effects for industry/trade, for local communities and for households, but also for economic development more in general on national and on regional level. The evaluation should give priority to such assessment, but results are a broader concept which covers observed changes in relation to key indicators, anticipating as well unexpected changes, short- and long-term effects of the assistance and cause-effect relationships. An important instrument for assessing change and results is in many cases attempts to "reconstruct the situation" before or during an intervention.

The key results related evaluation questions are:

- i. What have been the results of Norwegian assistance to the partner country/ region, its power sector, institutions and participating staff and when applicable to local communities, industries and households?

The result assessments should in particular include the effects of technical and financial assistance in production and transmission/distribution of power on the development of industry and trade on local, national or regional level in special, including effects related to import/export of energy.

In addition to the effects on economic development and poverty reduction the result analysis should at minimum cover capacity/competence building effects for institutions and individuals and effects on resource and environmental management, including the cost-

¹⁶ Including the guidelines in DAC Evaluation Quality Standards, March 2006

effectiveness. Assessments of institutional development and capacity should preferably be in accordance with EU's or equivalent guidelines¹⁷.

Since the solution of the power crisis in southern Africa partly can be a more extensive regional cooperation, a limited part of the evaluation should be the results of the Norwegian assistance in the developing and implementing regional frameworks like the power cooperation through Southern African Development Community (SADC) and Southern African Power Pool (SAPP).

ii. What have been the reasons for success or failures, and the risks involved?

Power developments are most often long-term interventions with long lag time between inputs and results. The assessments should therefore cover the full period from the planning of an intervention and up to the end of 2006, giving priority to reasons or result chains for long term effects, assessments of sustainability and lessons learned.

Changes that take place over time can be related to other factors than the intervention which are studied. The evaluation team should check if other factors or processes than the Norwegian assistance may have influenced the results, including changes in partner countries policies, institutional arrangements, economic situation and ability to absorb assistance.

Assessments should cover the importance of external risks that were not easy to control or not under the control of the partners involved. The team should identify internal risks which have influenced the results and performance of Norwegian power assistance so far and how threats/risks were analysed, monitored, reported and reacted to by the responsible units. The response of Norwegian authorities and of partners to weaknesses and potential improvements that are reported in reviews, progress reports or other documents are of special interest.

iii. What have been the challenges and opportunities for Norwegian assistance when other donors or commercial interests have been involved directly or indirectly

The Norwegian power related assistance has most often been implemented in countries where other donors and the private sector have been involved at the same time and/or in the same area. In some cases private Norwegian stakeholders been involved together with Norwegian public interests or different public institutions have been partners. The results of such interactions processes should be covered by the evaluation with focus on how the results have been influenced by processes as harmonization and privatization.

iv. What have been the results for Norwegian Stakeholders?

The evaluation should also analyse the results for the Norwegian stakeholders and cover not only the Norwegian institutions directly involved in the partnerships, but clarify the economic linkages to institutions, companies or individual consultants in other steps in the results-chain.

5.2 The Quality Assessments

With future assistance in mind, the evaluation should assess how the cooperation and results can be improved, with focus on measures under the control of Norway and partner countries/institutions.

The second broad objective is, therefore, to identify strong and weak elements in the design of Norway's assistance and the planning/implementation instruments provided by the Norwegian and partner institutions.

The key quality related evaluation questions are:

i. What has been the content of Norwegian power related assistance (the input)?

The evaluation should give a clear description of the Norwegian intervention, including the time pattern, influence area, objectives, volume of input, content, actors and context, including

¹⁷ European Commission. Europe Aid. September 2005. Institutional Assessment and capacity Development. Why, what and how? See also guidelines from Danida or DIFD

cooperation with other donors and relationships to other relevant interventions taking place in the same geographical area (the total power related assistance and other relevant infrastructure projects/programmes).

- ii. How has the quality of the Norwegian input been, when assessed according to DAC's evaluation criteria (relevance, effectiveness, efficiency, sustainability and impacts)?

Assessments of contents and quality should be based on the guidelines which were relevant at the time of the Norwegian assistance; including framework/sector agreements, contract obligations and ToR, in addition to quality or normative standards for the power industry/trade, and policy documents by Norwegian and partner country authorities.

Key guidelines for the Norwegian power related assistance has been the Norwegian 1994-policy for power development and international norms for tender processes as the guidelines from the International Federation of Consulting Engineers (FIFIC).

The quality assessments of Norwegian partner institutions should focus on the effectiveness, efficiency and capacity of the institutions, but also include the competence of their staff and partners in development assistance, transfer of knowledge, language and cultural skills. This will apply to capacity/competence/quality of assistance of the different Norwegian partners and subcontractors or non-governmental organizations (NGOs) as well as Norad, MFA and the involved embassy. In other words: How cost-effective has their assistance been and to what degree have they reached the expected goal stated in agreements and annual plans/budgets? How has the quality of programme design and planning affected implementation and result? How do the institutions in the south assess the results and costs of twinning arrangements compared to other types of assistance?

The assessment of relevance should cover the appropriateness and relevance of Norwegian role/management models and instruments/measures to the situation in partner countries. These models include Norwegian ways of organising the responsibility for policy development and implementation (law, regulations, licensing and reforms) and the way of organising technical assistance either as twinning arrangements between institutions or hiring consultants for more focused "task-assistance". The instrument concepts include such tools as:

- programme assistance planning
- development of master plans,
- assessments of partner needs (including training needs),
- competence building and training, including higher education and research both in Norway and partner countries
- environmental/social impact assessments (when relevant), and quality/performance control.

Quality/performance control refers to tools used before a programme is entered into by Norad or agreement partners, appraisals by resource persons, and tools such as monitoring, reviews and evaluations. The effects of appraisals, monitoring and reviews on implementation should also be clarified to see if recommendations have been included in projects afterwards.

- iii. What has been the value added or comparative advantage of Norwegian power related assistance?

It is important to clarify the possible comparative advantages of Norwegian assistance has had, by getting the partner countries assessment of the strong and weak aspects of the assistance compared to their experience with other donors or partners.

- iv. How and to what degree has the assistance covered cross-cutting issues?

The evaluation should also clarify to what degree cross-cutting issues such as health and HIV/Aids, safety, environmental protection, good governance, gender and capacity building/training issues have been covered in the cooperation. The cross-cutting realities should be checked by comparing information from resource persons with existing data sources including

Norad's statistical database, reviews and reports from the involved embassies. The purpose is to assess the quality of existing information tools.

5.3 Selected Baseline for Future Evaluations

The third objective of the evaluation is to contribute to a baseline for future assessments of the performance and effects of the new "action plan" and other current programmes or projects. The aim is to get a baseline from the beginning of the new "action plan" which covers key results before the implementation of the new "action plan", the existing quality of the Norwegian input, the performance of involved partners, and the context of the assistance.

This baseline information should be limited to key elements in proposed new "action plan" and include data collected by at least one case-study of:

- the total power related assistance to one partner country where Norway have power sector programme with comprehensive and long term assistance
- an intervention which focus on distribution and electrification of rural and urban area
- an example of twinning arrangement for building institutional competence and capacity
- an example of financial support to power investments

6 Strategy, Methodology and Data Sources

The evaluation in general is based on a case-study design which covers two of Norway's partner countries and a limited study of the results on SADC and SAPPs framework for regional cooperation by the Norwegian assistance. It will build on information produced by earlier reviews, appraisals or study reports, but use such second-hand accounts as a starting point for analysis of first-hand empirical material which gives a deeper or broader understanding.

The two partner countries chosen for in-depth case studies are Mozambique and Nepal which did receive NOK 2 billion and 356 million respectively in power related assistance 1980-2004. The comprehensive and long lasting Norwegian programmes in these two countries, and the fact that both countries have energy sector programmes, are important reasons why they have been chosen for studies of the results of the assistance.

The cooperation with Mozambique includes nearly all elements of power assistance from institutional capacity/competence building to, energy production/ transmission/-distribution and a variety of planning and implementation instruments. Additional arguments for choosing Mozambique are:

- that country is partner in the regional power cooperation in SADC and SAPP,
- the possibility for synergy effects with the ongoing evaluation of the Norwegian petroleum assistance and
- the possibility for using existing socio-economic data collected by the national statistical office (INE) for evaluating the results of case-projects on provincial level.

An in-depth case study in Mozambique should include the quality of Norwegian assistance, the relationships with partners, challenges related to harmonization, the effectiveness of different instruments, and the intended and real results for the stakeholders on country and local level and in Norway.

This in-depth study should cover Norwegian assistance from its start and up to 2007, but with emphasis on the period after 1992. The focus should be on long-term effects (more than 5 years), but also cover recent short term effects of strategic importance. Of special interest on national level will be the results of the long lasting institutional cooperation, lessons learned from the introduction of sector plans and harmonization with other donors, and from extensive planning of new production and transmission capacity. Results for industry/trade and households on provincial/local level from old and more recent production, transmission and distributions facilities, including poverty reduction by rural electrification and small/old production units, will also be key issues. Documentation of the power needs of enterprises and households¹⁸, and the factors influencing such demand on provincial/local level will be important. An in-depth case study of the results of the old power project in Cuamba and new electrification projects in Gurue in the northern provinces are relevant, but the evaluation team is free to propose alternatives in its tender documents and inception report.

Results from the case study in Mozambique will be compared to and supplemented by the in-depth case study in Nepal, looking for general patterns or dissimilarities in the results and the quality of Norwegian assistance¹⁹. The choice of Nepal as the second case-study country is based on the need to cover experiences from a country where the volume and scope of Norwegian assistance has been different, and where the context is different.

¹⁸ Ref. the new World Bank Methods for collecting data on the energy use and needs among households

¹⁹ The evaluation design is in other words a "multiple case study design with embedded multiple units of analysis" as described for example in Yin, R. K. 1984. *Case Study Research. Design and Methods*. Sage publications. London. The Norwegian power assistance programmes in a few selected countries will be "the multiple cases" and the units of analysis are the results, quality of inputs and relationships (the key evaluation questions). The main method is to compare – when possible - how the analytical unit(s) varies between chosen cases (countries and interventions) and contexts, looking for similarities and diversity.

The data collection in Nepal should cover all major types of assistance on national level and the whole period Norway has been involved, with emphasis on the short and long term results by actions of NGOs, commercial actors and the Norwegian public institutions which have been involved. Two special case studies should cover the development effects for local communities and poverty reduction among households, and by developing small scale production units and other types of non-renewable energy facilities and institutional arrangements. Data on the local needs for energy should also be collected as in the case studies in Mozambique. The data collection should include comparison with communities without power supply. The main case study covering local level should be the interventions related to a Norwegian NGO (United Mission to Nepal or UMN) and Butwal Power Company (BPC). The effects on the local community and other stakeholders by privatization of BPC should be identified. The evaluation team should feel free to propose an additional intervention for a case-study on local level in Nepal.

In addition to the comparisons between field-data and existing documents from Mozambique and Nepal, the team should use information published in the state-of-the-art report, a new review of the power assistance to Uganda, the results of a coming review from Angola and other documents to look for generalization possibilities²⁰. The generalization possibilities will be enhanced by impact studies of rural electrification which World Bank will do in the near future.

It should be possible to collect information on the content and quality of Norwegian assistance by interviewing resource personnel in the Norwegian institutions and agencies who have been involved in the chosen case-study countries and by analysing existing documents and accounting data. These data sources should also give reliable information on results for the involved Norwegian stakeholders, either directly involved or indirectly through other steps in the result-chain. It will be important to compare the Norwegian actor's self-assessment with quality assessments by partner institutions, their staff and other relevant actors inside the power sector or in related institutions.

Information about the results in partner countries/ institutions and other donors should be available from the same type of resources; by interviewing people on all staff levels and units in the partner institutions, and through data produced by them, including accounting data. The limited study of the framework for regional cooperation through SADC and SAPP should be based on similar types of data sources.

Assessments of results on institutional level should, however, first clarify the products and services that the partner institutions have delivered by collecting information from the users of such products and services, both inside and outside of the power sector (for example from other ministries and the private sector). Data on long and short term effects of competence building and training should be collected by interviewing the participants who have had training in Norway and on courses/job-training in partner countries. The training data should include previous staff members who have changed jobs. Data collection in partner countries is a demanding task and requires competent local consultants.

It is necessary for the evaluation team to use triangulation strategies and check the reliability of information by comparing data from different sources. The comprehensive studies in Mozambique and Nepal should include comparable personal interviews of the staff that cover all levels and units in partner institutions. These field studies should present an overview of all actors involved directly in the partnerships, but also other actors who have been participating/hired in additional steps of the result-chain including institutions, companies and individual consultants in Norway and partner countries.

The consultants should, in their tender document and inception report, clarify the analytical tools and data collection methods they intend to use for the assessment of results and performances. The quality of design, analytical framework and data collection methodology proposed by the consultants in their tender will be one of the criteria for selecting the evaluation team.

²⁰ Supplementary information on some results from Norwegian power assistance will also be found in an evaluation of Norad Fellowship Programme from Tanzania and Bangladesh, see Norad 2005. Evaluation of the Norad Fellowship Programme. Evaluation Report 1/2005. Oslo.

8 Reporting

The consultants will according to the preliminary time schedule present an inception report within 6 weeks after the contract is signed giving a more detailed plan for the work tasks. This report should clarify the analytical framework, the main hypothesis and the fact finding tasks which the evaluation will investigate, data sources and indicators. The indicators should be as specific, measurable, attainable, relevant and time bound (SMART) as possible. The inception report will be based on desk review of documents; interviews with key resource people and include a preliminary discussion of the intervention logic and the assumptions which the interventions were based on.

The field studies will end with a debriefing of the authorities in partner countries, the Norwegian Embassy and other involved partners before leaving the case-study country and with a debriefing of Norad and relevant stakeholders at a meeting in Norway.

A draft final report will be delivered in electronic form in June 2007 for feedback from EVAL, the reference group and other stakeholders. The feedback includes comments on facts, conclusions, recommendations and lessons learned. The consultants should reflect comments and acknowledge any substantive disagreements in the final report.

The final evaluation report is to be submitted to EVAL by August 25th 07 by the Team Leader. It shall be an analytical report written in English not exceeding 60 pages (excluding annexes), detailing the findings, conclusions and recommendations on planning and implementation for Norwegian power assistance in the coming years. The structure of the report should facilitate assessments of the key evaluation questions. Annexes should give more detailed information on Norwegian assistance to each case-study country; the assistance, context, results, quality, relationships and methods used in the evaluation. The final report shall be delivered both in electronic and paper form in accordance with EVAL's guidelines, and the language checked.

The final report will be followed-up by meetings/workshops where the consultants will participate in discussions with the parties involved, other stakeholders and with EVAL. The follow-up phase for the consultants will be limited to 15 man days during the 6 weeks after the final report has been delivered.

9 The Tender Process and Choice of Evaluation Team

The tender process will be international and in accordance with EU rules. The main competition criteria will be the quality of team, the design and methods proposed, the availability of team members and price. The team needs a high level of competence in the main issues in power assistance, including legal and technical assistance, environment/health/security and income management, but also education and training. The team leader should have extensive experience of major evaluations. The selection criteria will be defined in the invitation for tender. The invitation for tender will also include the expected time scale for the evaluation.

Norad

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