ANNEX 7

BENCHMARK SUMMARY REPORT

Contents

Andhi Khola Hydro Electric and Irrigation Project , Nepal 1

Jhimruk Hydro Electric Project, Nepal 5

Jhankre-Khimti Khola Rural Electrification, Nepal 9

Lichinga Small Hydropower Project, Mozambique 13

Cuamba Small Hydropower Project, Mozambique 17

Corumana Hydropower Project, Mozambique 21

Alto-Molocue – Gurué Transmission and Rural Electrification, Mozambique 25

Cahora Bassa – Zimbabwe Transmission Line, Mozambique 29

Assistance to Institutional Development of EDM, Mozambique 33

Assistance to MIREME/ME Institutional Development, Mozambique 37

Assistance to UTIP for Promotion of Hydro Projects, Mozambique 42

Khimti Khola Feasibility Study, Nepal 47

Fellowship Program for Training of Professionals, Nepal 51

Assistance to Hydro Lab, Nepal 55

Assistance to Ministry of Water Resources on Legal Framework, Nepal 59

Khimti Khola Training of Workers, Nepal 63

Benchmark Comparison Charts 67

Sensitivity Analysis of Key Variables 70

Note: Annex 7 contains the results of the benchmarking applied in the evaluation, and a brief results statement. To provide for transparency, tables for scoring and weighting process elements in the course of the project cycle are included. Sum scores are shown with one rounded decimal digit, but are calculated accurately. Scoring has been done for both, against best practice today, and against best practice valid at the time, but only the latter is shown and considered as relevant.

The total score is the average of all weighted category scores for each project, and is a measure for the compound criteria “quality-relevance-effectiveness”, where quality refers to the inputs provided. Relevance relates to the recipients need or priority, and effectiveness relates to the degree by which the project has been “doing the right things”. The total score is considered fairly robust, as an error in judgment of individual elements, from a total of 59 has little influence, and is believed to be balanced out fairly well in the overall rating/scoring.

Efficiency is computed from project cost data compared to the “normalized” value of the produced results or outputs. The efficiency ranking is subjected to sensitivity analysis.

Sustainability is calculated as the relationship between early and continuing future project impacts.

Impact is calculated as the accrued total benefit for various groups of beneficiaries, at the local and national level. (Refer to annex 2, section A2.4.2 for a more detailed method description). Different benefits are subjected to sensitivity analysis.

Benchmarking has been done using Excel. All files are provided in .zip format as DI.zip (~1,9 MB).

Andhi Kohla Hydro power and irrigation project

1987 to 1992

Andhi Kohla includes the building of a hydro power plant in central Nepal, with electrification of the local area and delivery of surplus electricity to the grid. It also includes an irrigation scheme and extensive training of local personnel.

output

The output includes the 5MW hydro power station, distribution grid, connection to the transmission grid and customer connections. Also 300 ha of agricultural land have received irrigation and local personnel were trained both for construction and operation tasks. The grid volume is increasing with new connections and extensions of the distribution grid.

outcome

Local delivery is rapidly increasing as new customers are connected and el. use per customer increases. The future increase is assumed to follow historical trends of later years. Production has been relatively stable in spite of technical problems with the old equipment. Also agricultural production has increased due to irrigation of additional land.

impact

The impact from the selling of excess electricity to the grid and thus replacing diesel power, is gradually replaced by the impact of rural electrification including replacement of kerosene, and indirect benefits from commercial activities, higher level of education, and improved health services. The irrigation impact is also significant. Net benefits are high due to the low investment cost and high O&M competence of local staff and the el. company (BPC).

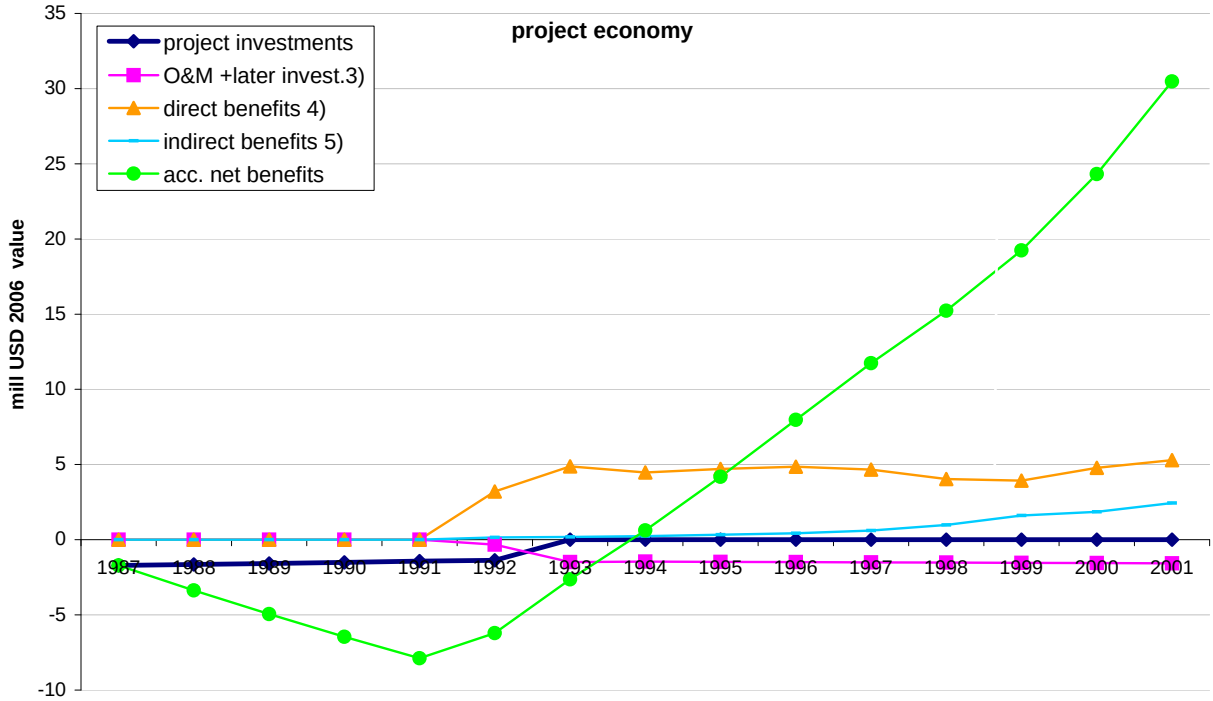
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Andhi	249%	129%	115%	273%	278%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 15 yrs

	mill USD
country	80
the poor	6.6
project	115



* footnotes are listed below

Andhi Kohla Hydro power and irrigation project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	3	UMN has studied rural development in an overall context. HEP development has successively been chosen as a prerequisite.	3	**9**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	there are no realistic alternatives	0	**0**
1.3	the feasibility study gave a realistic estimate for inputs	1	optimistic progress schedule, despite lack of geological data or sample drilling	2	**2**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full	2	full impact estimation was done to a limited degree	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	objectives definition is too broad to provide relevant indicators	1	**2**
1.6	the time budget was realistic	3	time overrun could not have been foreseen	1	**3**
1.7	the resource budget was realistic	1	it was severely underestimated	1	**1**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	3	the project addressed overall development and irrigation for agricultural development	3	**9**
1.9	the plans included provisions for sustainable operation and development afterwards	3	institution building of implementing agencies was a central concern in the overall concept	3	**9**
1.10	the plans were developed in agreement with the local counterpart	3	a local project management committee was established. This agreed to allk major	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	3	this was conceptualised and implemented	3	**9**
1.12	monitoring of environmental impact and safety was part of the plan	1	no evidence, but implicitly done	1	**1**
1.13	gender issues were not in focus at the time	1	implicitly considered	2	**2**
1.14	the input from consultants were of high quality	2	available studies appear sound	1	**2**
1.15	a relevant baseline for impact measurement was done	3	socio-economic studies were done in considerable detail	1	**3**
1.16	risks were properly assesed and mitigation measures included	2	geological uncertainties were studied by an external expert, but no sample drilling	2	**4**
1.17	stakeholder support and roles was clearly defined	2	Committees were set up and met to coordinate throughout project	2	**4**
1.18	the plans were coordinated with complementary interventions	3	UMN ran a parallel community development project	2	**6**
	total score 1			32	**2.4**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant was conflicting with other objectives	0	the concept was to use companies built up for the purpose, and second-hand machinery	0	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	2	not important due to 2.1	0	**0**
2.3	implementation was organised to assure sustainability by local resources	3	Committees were set up and met to coordinate throughout project	1	**3**
2.4	on-the-job training was done to utilise local personnel	3	it was an important part of the concept	2	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	2	by reducing initial investments and building the capacity to maintain and operate	2	**4**
2.6	gender issues were not in focus at the time	3	the focus was on development of the local community in general	1	**3**

2.7	locally produced components were used whenever possible	3	it was an important part of the concept	2	**6**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	unexpected problems in tunneling delayed implementation	1	**2**
2.9	the work of contractors were of high quality	3	contractors were trained and supervised by the project	2	**6**
2.10	environmental impacts were monitored and reduced as much as possible	2	there is no specific evidence, but not in trend at that time	2	**4**
2.11	safety in the work-place was good	1	only basic safety measures were taken	1	**1**
2.12	the components used were of high quality	1	quality was not a selection criteria. Opportunities were exploited	2	**2**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory	1	**2**
2.14	the work of the project management was of high quality	3	It was dedicated, competent and visionary	2	**6**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	2	no specific evidence	1	**2**
2.17	civil works was of high quality	1	low cost was more important than high quality	1	**1**
2.18	engineering was of high quality	1	some flaws in desing: emergency shut-down	1	**1**
2.19	disbursement, accounting and controlling ensured effective use of funds	3	it was done by project management in a conscientious manner	2	**6**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	3	Both formal training in Butwal and on-the-job	2	**6**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	3	Most trainers wer long-term residents	1	**3**
2.23	selection of training/twining institutions/ organizations was based on cost-	0	0	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	2	has not been reported on, but judging by results, yes, some	2	**4**
2.27	Training results were measured and assessed	1	no specific evidence	1	**1**
	total score 2			30	**2.3**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	3	it was an important part of the concept	2	**6**
3.2	coaching efforts were made to assure the quality of operation	3	it was an important part of the concept	2	**6**
3.3	the work of intructors was of high quality'	2	it was an important part of the concept, but there is no specific evidence	1	**2**
3.4	the input from twining personnel was of high quality	0	no twinning	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	basic but, sufficient equipment was available	2	**4**
3.6	Results could not have been achieved more effectively in any other way	2	very unlikely at that time	2	**4**
	total score 3			9	**2.4**

4	**Preparation for further development**				
4.1	a realistic plan for the operation and further development was in place	3	this is reflected in cept papers and income calculations done	3	**9**
4.2	a competent organisation took over responsibilities	3	BPC remained responsible as the only competent organisation existing at that time	3	**9**
4.3	the activities, results and lessons learned for all stakeholders were reported	3	reporting did not follow a standard format, not considered important at the time	1	**3**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes	2	final report contained what was considered important at the time	1	**2**
4.5	all disbursements were documented and audited according to NORAD rules	3	it was properly reported. Audit reports not seen	1	**3**
	total score 4		0	9	**2.9**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	3	Various further studies were done, i.e. Nafziger 1994	1	**3**
5.2.	proper action was taken to assure sustainability of outputs when necessary	3	it was the common BPC operation routine	2	**6**
5.3	the impacts were measured using the baseline study	1	not systematically so far	1	**1**
	total score 5			4	**2.5**
	grand total score				**2.4**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Jhimruk Khola Hydropower and Rural Electrification Project 1989 to 1995

Jhimruk Kohla includes the building of a hydro power plant in central Nepal, with electrification of the local area and delivery of surplus electricity to the grid. It also includes extensive training of local personnel. The project economy was heavily influenced by Maoist activity in the area.

output

The output includes the 12 MW hydro power station, reservoir, distribution grid, connection to the transmission grid and customer connections. 150 hectares lost irrigation due to the diversion of water from the Jhimruk Khola. Local personnel were trained for operation and maintenance, and overall project management

outcome

Local delivery is gradually increasing as new customers are connected and el. use per customer also increases. Production hasbeen stable except for 2003 when the station was out of service due to Maoist sabotage. The reservoir was silted up in a few years, so hourly peaking use is not possible any more. Farm production was reduced due to the loss of irrigation water.

impact

The most important impact comes from the selling of excess electricity to the national grid at very good prices, but there are also benefits from local electrification, including replacement of kerosene, and commercial activities etc. The loss of irrigation water has had an adverse impact on agricultural production on the directly affected land. Full mitigation has not been achieved so far.

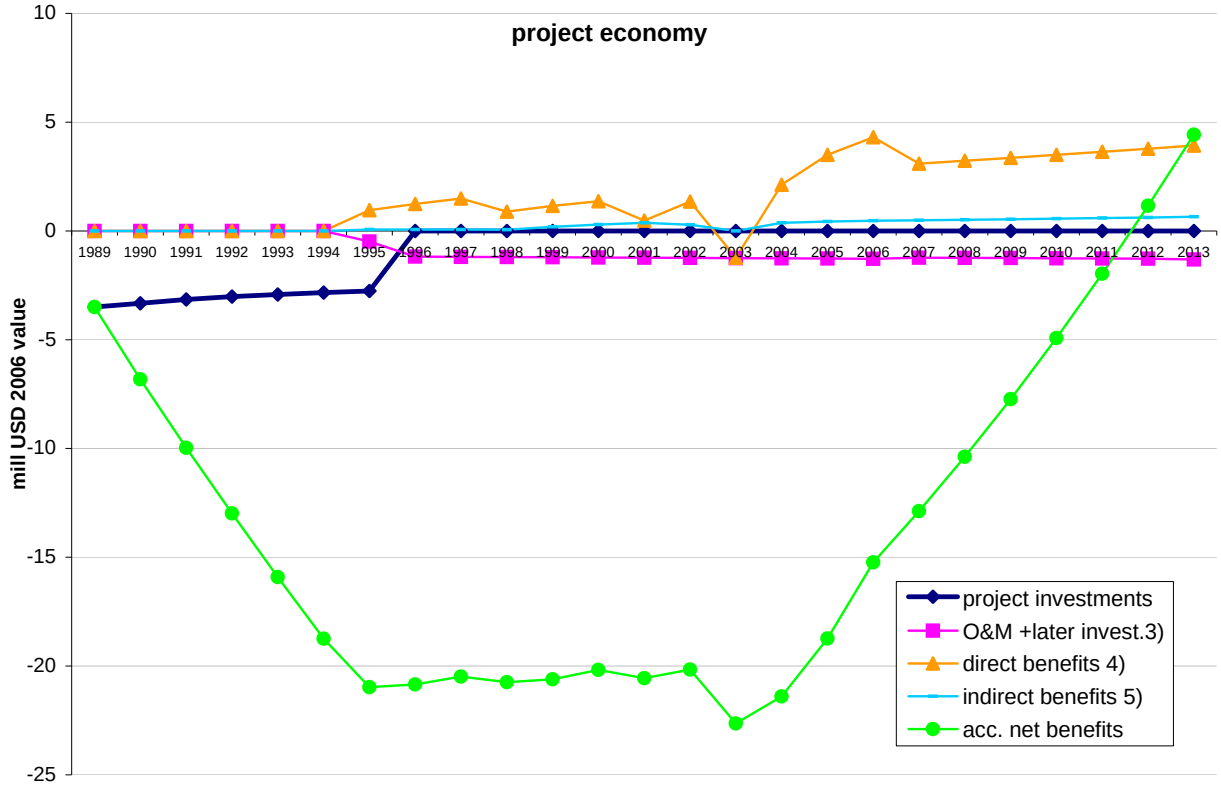
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Jhimruk	175%	101%	79%	99%	87%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	49
the poor	3.5
project	481



* footnotes are listed below

Jhimruk Khola Hydropower and Rural Electrification Project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	2	The intention was to provide addtional capacity to the national grid. Local development was not initially part of plans	2	**4**
1.2	the feasibility study assessed also alternative ways to get the wanted results	1	There was no other documented attempt to identify a better site	2	**2**
1.3	the feasibility study gave a realistic estimate for inputs	1	optimistic progress schedule and late inclusion of local development	2	**2**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	2	full impact estimation was done to a limited degree	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	objectives definition is too broad to provide relevant indicators	1	**2**
1.6	the time budget was realistic	3	It was realistic in terms of construction time required	1	**3**
1.7	the resource budget was realistic	2	it was adequate	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	2	the project addressed overall development and mitigation at a late stage	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	2	institution building of implementing agencies was a central concern in the overall concept	3	**6**
1.10	the plans were developed in agreement with the local counterpart	3	It was a government project in the first place	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	1	studied to some extent, but late	3	**3**
1.12	monitoring of environmental impact and safety was part of the plan	1	marginally	1	**1**
1.13	gender measures were part of the plan	0	no evidence, but implicitly done	2	**0**
1.14	the input from consultants were of high quality	1	available studies appear sound but some important aspects were overlooked	1	**1**
1.15	a relevant and complete baseline for impact measurement was done	0	no proper studies done	1	**0**
1.16	risks were properly assesed and mitigation measures included	1	negative impacts studied to an extent but effective measures not conceived	1	**1**
1.17	stakeholder support and roles was clearly defined	3	clear institutional arrangement was in place	2	**6**
1.18	the plans were coordinated with complementary interventions	0	poorly and at a late stage	2	**0**
0	total score 1	0	0	32	**1.5**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	0	the concept was to use companies built up for the purpose, and second-hand machinery	0	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.3	implementation was organised to assure sustainability by local resources	3	use of local companies built up for the purpose	2	**6**
2.4	on-the-job training was done to utilise local personnel	3	it was an important part of the concept	3	**9**

2.5	technology was selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.6	genders issues were adressed in a successful way	0	there is no evidence of specifically addressing the issue, and in the local context, it does not happen	2	**0**
2.7	locally produced components were used whenever possible	3	it was an important part of the concept	1	**3**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	implementation of non-power interventions lagged behind	1	**1**
2.9	the work of contractors were of high quality	3	contractors were trained and supervised by the project	2	**6**
2.10	environmental impacts were monitored and reduced as much as possible	1	marginally	2	**2**
2.11	safety in the work-place was good	1	only basic safety measures were taken	1	**1**
2.12	the components used were of high quality	1	quality was not a selection criteria. Opportunities were exploited	2	**2**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory	1	**2**
2.14	the work of the project management was of high quality	3	It was dedicated, competent and visionary	2	**6**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	2	no specific evidence but objectives achieved in time	1	**2**
2.17	civil works was of high quality	1	low cost was more important than high quality	1	**1**
2.18	engineering was of high quality	1	some flaws in design of scheme	2	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	3	it was done by project management in a conscientious manner	2	**6**
2.20	effective coordination with other donors/	0	0	0	**0**
2.21	an optimal mix of training instruments was used	3	Both formal training in Butwal and on-the-job	2	**6**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	3	Most trainers were long term residents	1	**3**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	1	no specific criteria were applied	1	**1**
2.24	the input from twining personnel was relevant and of high quality	1	superficial oversight only	2	**2**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel was relevant and of high quality	2	has not been reported on but judging by results, yes, some	2	**4**
2.27	Training results were measured and assessed	1	no specfic evidence	1	**1**
0	total score 2		0	34	**1.9**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	3	it was an important part of the concept	2	**6**
3.2	coaching efforts were made to assure the quality of operation	3	it was an important part of the concept	2	**6**
3.3	the work of intructors was of high quality'	2	it was an important part of the concept, but there is no specific evidence	1	**2**
3.4	the input from twining personnel was of high quality	1	some crucial design short-comings were not addressed and put on record	2	**2**

3.5	necessary equipment, tools and systems for efficient operation and maintenance	2	basic but, sufficient equipment was available	2	**4**
3.6	Results could not have been achieved more effectively in any other way	1	better design and mitigation would have been necessary and possible	2	**2**
	total score 3		0	11	**2**
4	**Preparation for further development**				
4.1	a realistic plan for the operation and further development was in place	3	this is reflected in cept papers and income calculations done	3	**9**
4.2	a competent organisation took over responsibilities	3	BPC remained responsible as the only competent organisation existing at that time	3	**9**
4.3	the activities, results and lessons learned for all stakeholders were reported	3	reporting did not follow a standard format, not considered important at the time	1	**3**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes	2	final report not that comprhensive	1	**2**
4.5	all disbursements were documented and audited according to NORAD rules	3	it was properly reported. Audit reports not seen	1	**3**
	total score 4		0	9	**2.9**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	2	Various further studies werde done. Some were implemented.	1	**2**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	it was the common BPC operation routine, but rural development measures were poorly monitored	2	**4**
5.3	the impacts were measured	1	not systematically so far	1	**1**
	total score 5			4	**1.8**
	grand total score				**1.9**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Jhankre-Khimti Khola rural electrification

1998 to 2006

Jhankre Rural Electrification and Development project was conceived as a mitigation and benefit sharing measure in the Khimti HEP through an overall rural development benefiting a population of 25.000.

output

More than 4.000 households were provided with electricity, and several rural development measures were implemented. The project includes the provision of a dedicated mini hydro scheme, in addition to local transmission and distribution.

outcome

Rural electric cooperative was established and is functioning satisfactorily. Electricity delivery data was not available so unit consumption figures from Andhi Khola including growth rates were used.

impact

Impacts include increased energy efficiency, economic and social activity, increased production and trade.

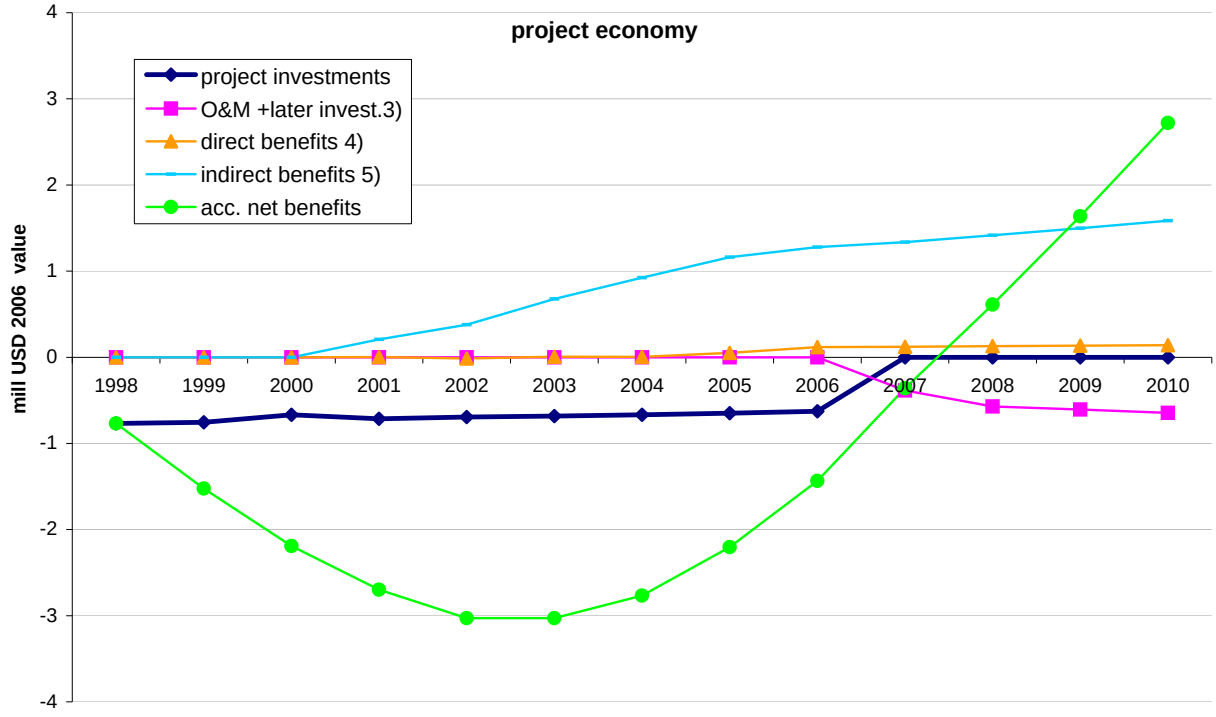
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability too early	impact country	impact poor
Jhankre	170%	98%	80%	149%	187%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	34
the poor	3.5
project	108



* footnotes are listed below

Jhankre-Khimti Khola rural electrification quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	1	Initial concept of "corridor" electrification fell short of local expectations	3	**3**
1.2	the feasibility study assessed also alternative ways to get the wanted results	1	supply from Khimti would have been more economical	1	**1**
1.3	the feasibility study gave a realistic estimate for inputs	1	under estimated	1	**1**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	2	full impact estimation was done to a limited degree	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	objectives definition is too broad to provide relevant indicators	2	**4**
1.6	the time budget was realistic	1	under estimated	1	**1**
1.7	the resource budget was realistic	1	it was severely underestimated	1	**1**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	3	the project addressed overall rural development issues	1	**3**
1.9	the plans included provisions for sustainable operation and development afterwards	1	not initially, but later the cooperative ownership concept was developed	3	**3**
1.10	the plans were developed in agreement with the local counterpart	3	a local project management committee was established. This agreed to all major decisions	3	**9**
1.11	all negative impacts were dealt with by the mitigation measures	2	this was conceptualised and implemented to a large extent	2	**4**
1.12	monitoring of environmental impact and safety was part of the plan	1	no evidence, but implicitly done	3	**3**
1.13	gender measures were part of the plan	1	no evidence, but implicitly done	1	**1**
1.14	the input from consultants were of high quality	2	available studies appear sound	2	**4**
1.15	a relevant and complete baseline for impact measurement was done	1	socio-economic studies were done with limited value	1	**1**
1.16	risks were properly assesed and mitigation measures included	1	to a degree only	2	**2**
1.17	stakeholder support and roles was clearly defined	2	Committees, and ultimately cooperative were set up	2	**4**
1.18	the plans were coordinated with complementary interventions	3	a large number of activities in additon to electrification	2	**6**
	total score 1			33	**1.7**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	1	local supplier, invited supplier for second unit	1	**1**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	2	no evidence to the contrary	2	**4**
2.3	implementation was organised to assure sustainability by local resources	2	not clear from the outset, political troubles, but late establishment of cooperative	1	**2**
2.4	on-the-job training was done to utilise local personnel	3	it was an important part of the concept	1	**3**
2.5	technology was selected with a view to total discounted cost as well as sustainability	2	yes	2	**4**

2.6	genders issues were adressed in a successful way	3	quite important component of the rural development activities	2	**6**
2.7	locally produced components were used whenever possible	2	it was an important part of the concept	1	**2**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	appropriate	2	**4**
2.9	the work of contractors were of high quality	2	equipment suppliers satisfactory	1	**2**
2.10	environmental impacts were monitored and reduced as much as possible	2	no evidence to contrary	2	**4**
2.11	safety in the work-place was good	2	no evidence to contrary	1	**2**
2.12	the components used were of high quality	2	appropriate	2	**4**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory	1	**2**
2.14	the work of the project management was of high quality	3	It was dedicated and competent	2	**6**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	3	very much so	1	**3**
2.17	civil works was of high quality	2	it was not a specific challenge	1	**2**
2.18	engineering was of high quality	2	appropriate	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	it was done by project management in a conscientious manner	2	**4**
2.20	effective coordination with other donors/ org.	1	to a degree	1	**1**
2.21	an optimal mix of training instruments was used	3	Both formal and informal training, as well as on-the-job	2	**6**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	0	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	0	not used	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	2	has not been reported on, but judging by results, yes, some	2	**4**
2.27	Training results were measured and assessed	0	not done	1	**0**
	total score 2			32	**2.1**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	3	it was an important part of the concept	2	**6**
3.2	coaching of cooperative leadership and management carried out	2	postponed too long	2	**4**
3.3	the input from twinning personnel was of high quality	1	it was an important part of the concept, but there is no specific evidence	1	**1**
3.4	the input from twining personnel was of high quality	0	no twinning	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	basic but, sufficient equipment was available	1	**2**
3.6	Results could not have been achieved more effectively in any other way	2	very unlikely at that time	1	**2**
	total score 3		0	7	**2.1**

4	**Preparation for further development**				
4.1	a realistice cooperative operation plan was developed	1	several shortcomings identified	3	**3**
4.2	cooperative to take over responsibilities	1	delayed, and postponed to next phase	3	**3**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	2	reporting did not follow a standard format	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	1	final report not documenting any results	1	**1**
4.5	all disbursements were documented and audited according to NORAD rules	2	it was properly reported. Audit reports not seen	1	**2**
	total score 4			9	**1.2**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	2	Various further studies werde done, but somewhat superficially	1	**2**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	Much needed work deferred to next phase	2	**4**
5.3	the impacts were measured using the baseline study	0	not systematically so far	1	**0**
	total score 5			4	**1.5**
	grand total score				**1.8**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Lichinga small hydropower project

1981 to 1983

Lichinga includes the building of a small hydro power plant in the Niassa province of Mozambique. The purpose of the project was to secure supply to the local area and to save diesel cost. It also includes training of unskilled workers local personnel.

output

The project resulted in the 0,73 MW power station with a 66000 m3 reservoir and a transformer station connecting to the local grid which was already in place. Unskilled labourers were given on-the-job training to take positions as assistant foremen and local personnel were trained to maintain and operate the plant

outcome

The production in the Lichinga station varies with water availability. After the transmission line reached the local grid, the station's importance has diminished and it is currently out of operation due to lack of maintenance.

impact

The benefits from Lichinga was high in terms of boosting the morale during the war and bringing activity to this remote area, but is low compared to the cost of investment. Included in quantitative terms is the savings in diesel expenditures over the years. Longer term imp'act is further reduced by the fact that at present the plant is out of operation.

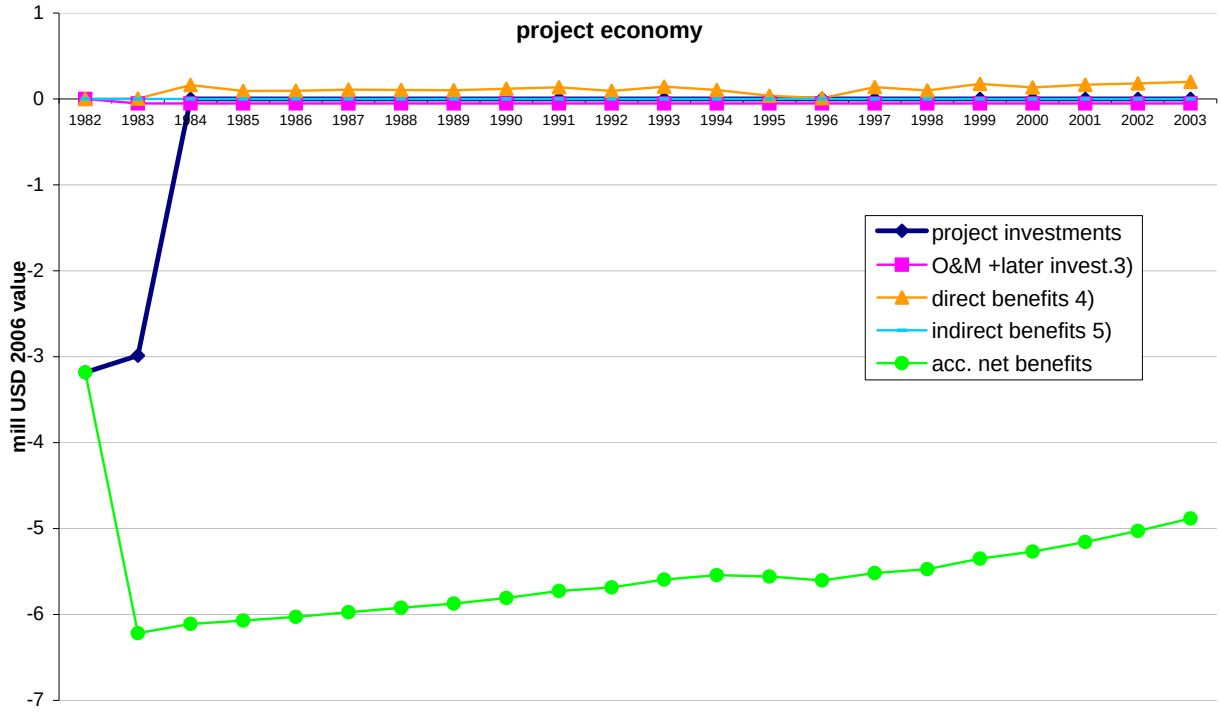
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Lichinga	68%	100%	25%	18%	41%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	1
the poor	0.2
project	-6



* footnotes are listed below

Lichinga small hydropower project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	1	the perceived need was to improve power supply and substitute diesel fuel to an extent	3	**3**
1.2	the feasibility study assessed also alternative ways to get the wanted results	3	alternative sites studied and initial design improved	2	**6**
1.3	the feasibility study gave a realistic estimate for inputs	3	as far as possible	2	**6**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	feasibility study was mostly technical, but weak on hydrology	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	to some extent	1	**2**
1.6	the time budget was realistic	3	mostly	1	**3**
1.7	the resource budget was realistic	2	mostly	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	2	the intake was moved upstream to provide outlet water for existing irrigation scheme	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	2	on-the-job training was provided	3	**6**
1.10	the plans were developed in agreement with the local counterpart	3	full agreement with EDM	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	2	no specific provisions in the way of EIA	3	**6**
1.12	monitoring of environmental impact and safety was part of the plan	1	no evidence, but implicitly done	1	**1**
1.13	gender issues were not in focus at the time	0	0	0	**0**
1.14	the input from consultants were of high quality	2	available studies appear sound but hydrology study may possibly have been at a very basic level	1	**2**
1.15	a relevant and complete baseline for impact measurement was done	0	no evidence	1	**0**
1.16	risks were properly assesed and mitigation measures included	2	yes, in terms of construction technology and material quality testing	2	**4**
1.17	stakeholder support and roles was clearly defined	3	defined in consultant's contract	2	**6**
1.18	the plans were coordinated with complementary interventions	1	limited to considering irrigation needs	2	**2**
	total score 1			32	**2.0**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	2	limited bidding by invitation	2	**4**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	1	**3**
2.3	implementation was organised to assure sustainability by local resources	2	EDM personnel was trained for taking over and operation	1	**2**
2.4	on-the-job training was done to utilise local personnel	3	yes, to the largest possible extent	2	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	2	**6**
2.6	gender issues were not in focus at the time	1	there is no evidence of specifically addressing the issue	1	**1**

2.7	locally produced components were used whenever possible	2	heavy concrete construction was used. Unclear if more local rock for stone masonry could have been used.	2	**4**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	unexpected problems delayed implementation	1	**2**
2.9	the work of contractors were of high quality	3	yes, including errection and commissioning	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	1	no evidence, but negative impact may be considered marginal	2	**2**
2.11	safety in the work-place was good	3	no major accidents of fatalities	1	**3**
2.12	the components used were of high quality	3	quality was preferred over price	2	**6**
2.13	the work of consultants was relevant and of high quality	3	in general it was satisfactory	1	**3**
2.14	the work of the project management was of high quality	3	It was dedicated, competent	2	**6**
2.15	logistics and storage was of high quality	2	0	1	**2**
2.16	work management was of high quality	2	assured by heavy expatriate presence throughout	1	**2**
2.17	civil works was of high quality	2	0	1	**2**
2.18	engineering was of high quality	2	possibly a degree of overdesign	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	3	it was done by project management in a conscientious manner	2	**6**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	2	unskilled, skilled worker training provided. Some management training. All on-the-job. In addition sponsorship for a master	2	**4**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	2	mostly, including Portuguese formen	1	**2**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	1	difficulties were encountered to obtain qualified supervisory personnel in time	1	**1**
2.26	the input from training personnel/ educators was relevant and of high quality	0	no specific training personnel	0	**0**
2.27	Training results were measured and assessed	0	no evidence, and not reported on	1	**0**
	total score 2			32	**2.3**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	1	higher level personnel than skilled workers not available	2	**2**
3.2	coaching efforts were made to assure the quality of operation	1	limited to commissioning period and trial operation	2	**2**
3.3	the work of intructors was of high quality'	2	no contrary evidence	1	**2**
3.4	the input from twining personnel was of high quality	0	not used	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	basic but, sufficient equipment was available	2	**4**

3.6	Results could not have been achieved more effectively in any other way	1	perhaps better cost-optimised design possible. For example, locally welded steel pipe vs. Imported cast-iron penstock	2	**2**
	total score 3		0	9	**1.3**
4	**Preparation for further development**				
4.1	a realistic plan for the operation and further development was in place	0	no evidence of this	3	**0**
4.2	a competent organisation took over responsibilities	2	EDM took over, and was reasonably prepard	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported	2	reporting did not follow a standard format, but a detailed (technical) final report is available	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes	2	final report does not contain info on planned budget vs. Effective cost.	1	**2**
4.5	all disbursements were documented and audited according to NORAD rules	2	it was properly reported. Audit reports not seen, and no comparison with initial budget shown	1	**2**
	total score 4			9	**1.3**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	no donor-specific after-project monitoring carried out.	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	1	plant neglected somewhat in recent years. Operation discontinued when transmission line reached area	2	**2**
5.3	the impacts were measured using the baseline study	0	no	1	**0**
	total score 5			4	**0.5**
	grand total score				**1.9**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Cuamba hydroelectric project

1983 to 1988

Cuamba includes the building of a mini hydro power plant (approx. 1 MW) in central Mozambique to replace diesel and secure supply in a nearby area. It also includes training of local personnel to operate the plant. Due to war the project period was extended from 38 to 70 months, and costs increased by 37%.

output

Outputs included the 1 MW power station, a 2600 m3 reservoir and some high voltage distribution grid. In addition 35 km of roads were upgraded and ca 10 km built to allow the necessary transports and EDM personnel were trained to operate the station.

outcome

The production in the station varies with water availability, but have generally been much lower than the estimated average production capacity of 5,6 GWh. After the transmission line reached the area, the station's importance has diminished and it is now out of operation due to lack of maintenance. It is assumed that production will resume and continue for the remainder of the technical lifetime.

impact

The benefits from Cuamba was high in terms of boosting the morale during the war, but the financial benefits are low due to the high cost of investment. Included here is only the savings in diesel over the years, since the area already had diesel power, albeit of low regularity. There are only very few connections for households replacing kerosene for lighting.

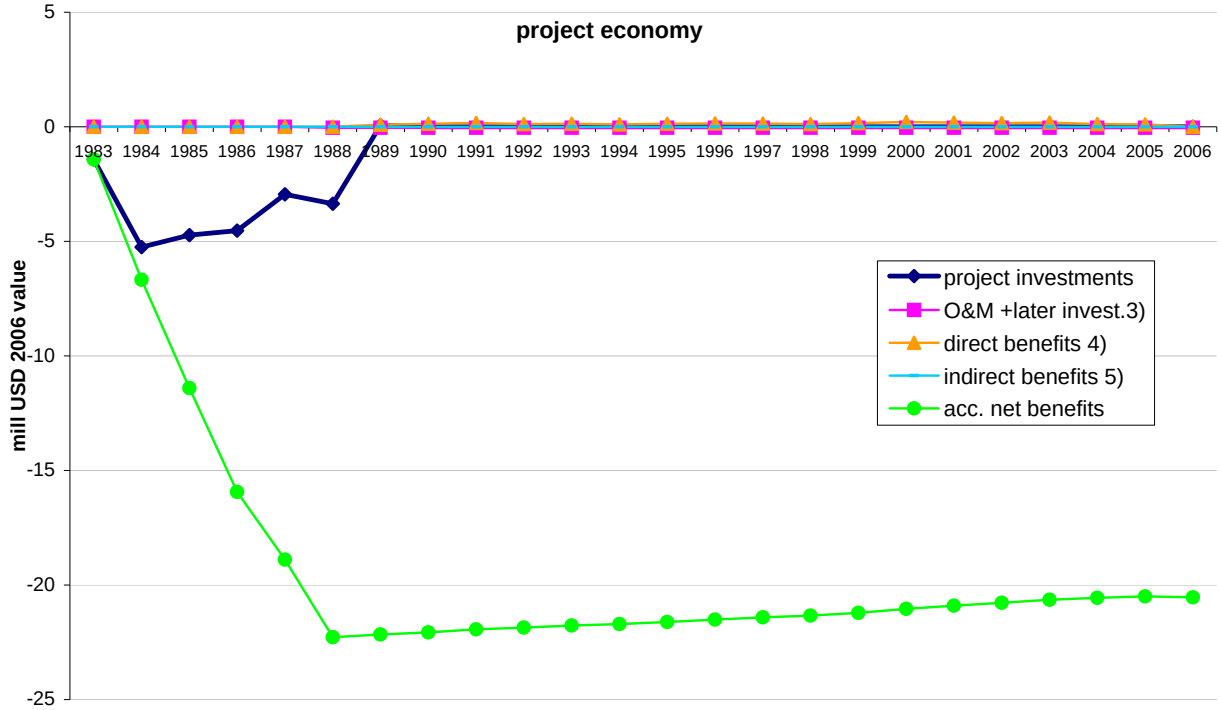
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Cuamba	16%	112%	42%	13%	37%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	3
the poor	0.7
project	-16



* footnotes are listed below

Cuamba hydroelectric project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	3	the perceived need was to improve power supply and substitute diesel fuel to a large extent, in a war situation	3	**9**
1.2	the feasibility study assessed also alternative ways to get the wanted results	3	alternative sites studied and initial design changed to better cover power peak requirements with increased water storage	2	**6**
1.3	the feasibility study gave a realistic estimate for inputs	2	severely underestimated. However cost increase not foreseeable	2	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	feasibility study was mostly technical	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	to some extent	1	**2**
1.6	the time budget was realistic	2	severely underestimated, but delays could not have been anticipated	1	**2**
1.7	the resource budget was realistic	1	severely underestimated	1	**1**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	3	provision of drinking water was studied, and monitoring of water quality suggested	3	**9**
1.9	the plans included provisions for sustainable operation and development afterwards	2	on-the-job training was provided	3	**6**
1.10	the plans were developed in agreement with the local counterpart	3	full agreement with EDM	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	3	drinking water pollution specifically addressed	3	**9**
1.12	monitoring of environmental impact and safety was part of the plan	1	no evidence, but implicitly done	1	**1**
1.13	gender measures were part of the plan	2	weaving business was included in plans	1	**2**
1.14	the input from consultants were of high quality	3	available studies appear sound and considerably study was done in preparation	1	**3**
1.15	a relevant and complete baseline for impact measurement was done	1	study carried out, however, quality is doubtful	1	**1**
1.16	risks were properly assesed and mitigation measures included	2	yes, in terms of construction technology and material quality testing, as well as drinking water quality and impact on mountain community	2	**4**
1.17	stakeholder support and roles was clearly defined	3	defined in consultant's contract, and role of EDM	2	**6**
1.18	the plans were coordinated with complementary interventions	2	local small industry was rehabilitated and supported	2	**4**
	total score 1	1		33	**2.3**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	1	some equipment not tendered, but offer of single supply assessed	2	**2**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	1	**3**
2.3	implementation was organised to assure sustainability by local resources	2	EDM personnel was trained for taking over and operation	1	**2**
2.4	on-the-job training was done to utilise local personnel	3	yes, to the largest possible extent	2	**6**

2.5	technology was selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	2	**6**
2.6	gender issues were not in focus at the time	2	Weaving supported, mostly employing staff wives	1	**2**
2.7	locally produced components were used whenever possible	3	rock-fill dam with local materials, locally produced bricks for buildings	2	**6**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	unexpected transportation problems delayed implementation	1	**2**
2.9	the work of contractors were of high quality	3	yes, including errection and commissioning	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	1	no evidence, but negative impact may be considered marginal	2	**2**
2.11	safety in the work-place was good	1	war fatalities occurred	1	**1**
2.12	the components used were of high quality	3	quality was preferred over price	2	**6**
2.13	the work of consultants was relevant and of high quality	3	in general it was satisfactory	1	**3**
2.14	the work of the project management was of high quality	3	It was dedicated, competent	2	**6**
2.15	logistics and storage was of high quality	2	0	1	**2**
2.16	work management was of high quality	2	assured by heavy expatriate presence throughout	1	**2**
2.17	civil works was of high quality	2	0	1	**2**
2.18	engineering was of high quality	2	possibly a degree of overdesign	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	3	it was done by project management in a conscientious manner	2	**6**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	2	unskilled, skilled worker training provided. Some management training. All on-the-job.	2	**4**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	2	mostly, including Portuguese formen	1	**2**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	2	no specific problems	1	**2**
2.26	the input from training personnel/ educators was relevant and of high quality	0	no specific training personnel	0	**0**
2.27	Training results were measured and assessed	0	no evidence, and not reported on	1	**0**
	total score 2			32	**2.3**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	higher level personnel than skilled workers not available, except for a competent EDM project manager	2	**4**
3.2	coaching efforts were made to assure the quality of operation	2	during commissioning period and trial operation, including later follow-up	2	**4**
3.3	the work of intructors was of high quality'	2	no contrary evidence	1	**2**
3.4	the input from twining personnel was of high quality	0	not used	0	**0**

3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	sufficient equipment was made available	2	**4**
3.6	Results could not have been achieved more effectively in any other way	2	good site selection providing for cost-efficiency. However, this was counter-acted by transportation and war-related costs	2	**4**
	total score 3			9	**2**
4	**Preparation for further development**				
4.1	a realistic plan for the operation and further development was in place	0	this is reflected in cept papers and income calculations done	3	**0**
4.2	a competent organisation took over responsibilities	2	EDM took over, and was reasonably prepard	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported	2	reporting did not follow a standard format, but a detailed (technical) final report is available	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes	2	final report does not contain info on impact projections, except outlook for mountain community, not considered	1	**2**
4.5	all disbursements were documented and audited according to NORAD rules	3	it was properly reported. Completion report available	1	**3**
	total score 4			9	**1.4**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	no donor-specific after-project monitoring carried out.	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	1	plant neglected somewhat in recent years. Currently out of operation	2	**2**
5.3	the impacts were measured	0	no	1	**0**
	total score 5			4	**0.5**
	grand total score				**2.1**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Corumana hydroelectric project 1988 to 1991

Corumana includes the building of a hydro power plant in southern Mozambique to exploit a water reservoir which was already in place. The purpose of the project was to secure the power supply to Maputo and thereby reduce the dependence upon the apartheid

output

Outputs include the power station of 14,5 MW installed capacity and the step-up station to the transmission grid

outcome

The production has varied and generally been considerably lower that planned. In 1993 the Ministry of Water resources wanted to impose a fee on the water used. The dispute led to minimal production in 1994. From 2003 EDM pays for the water used so produc

impact

The fall of the apartheid regime and the difficult co-existence with the water authorities has severely limited the benefits of the Corrumana station. The savings come from reduced imports from South Africa valued at about 2 US cent/ kWh. Half of this is

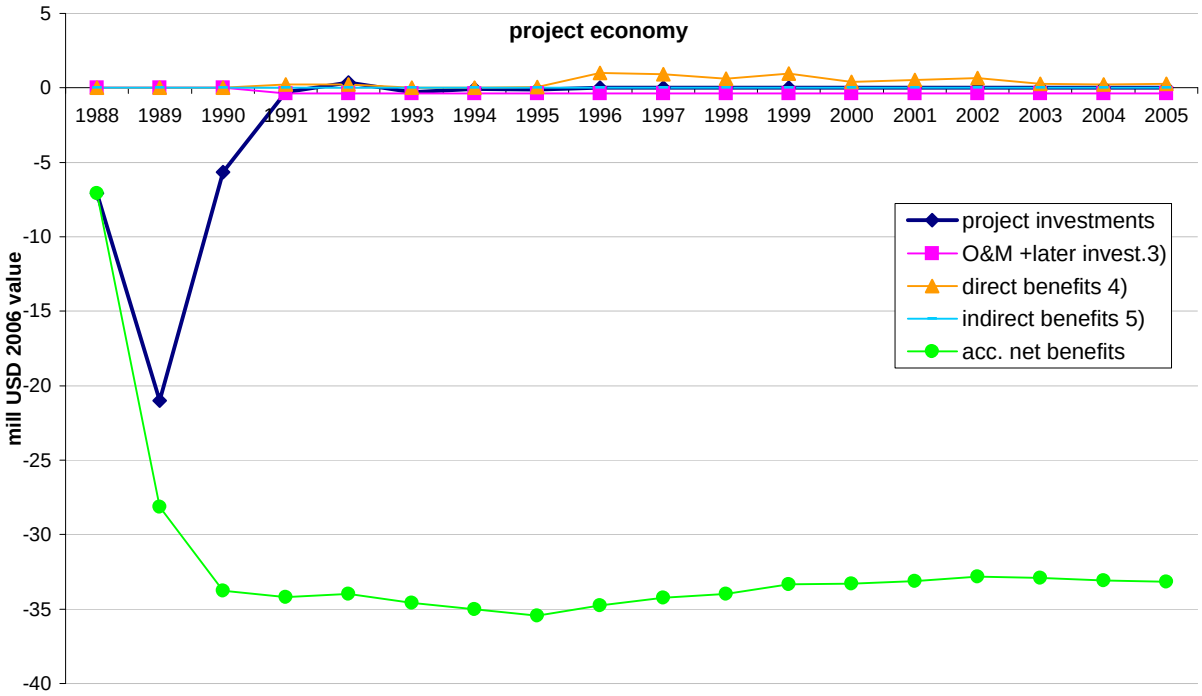
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Corumana	65%	84%	60%	7%	38%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	3
the poor	0,1
project	-33



* footnotes are listed below

Corumana hydroelectric project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	2	the perceived need was to reduce dependency on thermal power in Maputo. Substitution potential 15% only.	3	**6**
1.2	the feasibility study assessed also alternative ways to get the wanted results	2	site chosen at existing irrigation dam without clarifying water availability for power generation	2	**4**
1.3	the feasibility study gave a realistic estimate for inputs	0	severely underestimated due to consultant mistake	2	**0**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	feasibility study was mostly technical/economics, but based on poorly substantiated assumptions	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	to some extent, but with a number of contraditions	1	**1**
1.6	the time budget was realistic	2	acceptable	1	**2**
1.7	the resource budget was realistic	0	severely underestimated due to consultant mistake	1	**0**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	1	marginally	3	**3**
1.9	the plans included provisions for sustainable operation and development afterwards	2	expected to be run by EDM	3	**6**
1.10	the plans were developed in agreement with the local counterpart	3	full agreement with EDM	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	1	not explicity addressed	3	**3**
1.12	monitoring of environmental impact and safety was part of the plan	0	no evidence that it was done	1	**0**
1.13	gender measures were part of the plan	0	none	1	**0**
1.14	the input from consultants were of high quality	1	available studies focus on economics. Hydrology and substantial strategy issues	1	**1**
1.15	a relevant and complete baseline for impact measurement was done	0	none	1	**0**
1.16	risks were properly assesed and mitigation measures included	0	none	2	**0**
1.17	stakeholder support and roles was clearly defined	3	defined in consultant's contract, and role of EDM	2	**6**
1.18	the plans were coordinated with complementary interventions	2	local small industry was rehabilitated and supported	2	**4**
	total score 1			33	**1.3**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	1	some equipment not tendered, but offer of single supply assessed	2	**2**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	1	**3**
2.3	implementation was organised to assure sustainability by local resources	2	EDM personnel available for operation	1	**2**
2.4	on-the-job training was done to utilise local personnel	3	yes, to the largest possible extent	2	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	3	best performance was prioritised over lowest price	2	**6**

2.6	gender issues were not in focus at the time	0	no evidence	1	**0**
2.7	locally produced components were used whenever possible	0	dam is rock-fill, but not part of project	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	appears poorly coordinated with irrigation project. Flood gates were never installed	1	**1**
2.9	the work of contractors were of high quality	3	yes, including errection and commissioning	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	1	no evidence, but negative impact may be considered marginal	2	**2**
2.11	safety in the work-place was good	2	one minor accident reported	1	**2**
2.12	the components used were of high quality	3	quality was preferred over price	2	**6**
2.13	the work of consultants was relevant and of high quality	3	in general it was satisfactory	1	**3**
2.14	the work of the project management was of high quality	3	It was dedicated, competent	2	**6**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	2	assured by heavy expatriate presence throughout	1	**2**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	2	possibly a degree of overdesign	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	it was done by project management, but not in a fully transparent manner re. cost increases	2	**4**
2.20	effective coordination with other donors/ org.	2	coordinated with financial contribution of Sida	1	**2**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	0	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	2	no specific problems	1	**2**
2.26	the input from training personnel/ educators was relevant and of high quality	0	no specific training personnel	0	**0**
2.27	Training results were measured and assessed	0	no evidence, and not reported on	1	**0**
	total score 2			26	**2.1**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	assumed approptiate	2	**4**
3.2	coaching efforts were made to assure the quality of operation	2	assumed appropriate	2	**4**
3.3	the work of intructors was of high quality'	2	no contrary evidence	1	**2**
3.4	the input from twining personnel was of high quality	0	not used	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance	2	sufficient equipment was made available	2	**4**
3.6	Results could not have been achieved more effectively in any other way	1	results in terms of generating output very poor.	2	**2**
	total score 3			9	**1.8**

4	**Preparation for further development**				
4.1	a realistic plan for the operation and further development was in place	0	none	3	**0**
4.2	a competent organisation took over responsibilities	2	EDM took over, and was reasonably prepard	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported	2	reporting not satisfactory, most reports not located by evaluation	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes	0	final report not located	0	**0**
4.5	all disbursements were documented and audited according to NORAD rules	0	completion report not located	0	**0**
	total score 4			7	**1.1**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	no donor-specific after-project monitoring carried out.	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	1	plant fully utilised only in 1996 and 1999. Today used for peaking only, due to water charge levied by the water authority.	2	**2**
5.3	the impacts were measured using the baseline study	0	no	1	**0**
	total score 5			4	**0.5**
	grand total score				**1.6**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Alto Molocue - Gurue transmission project

1998 to 2001

The project consists of a regional transmission line from Alto Molocue to Gurue and a transformer station and local distribution in Gurue. It was initially started up in the eighties when most of the equipment was purchased with funding from Italy but due to the war is was postponed. The purpose of the project was to replace the local diesel fired power plant in Gurue with grid electricity and to facilitate electrification of the area.

output

The project resulted in the 75 km 110 kV line, the RT station for Gurue town and 42 km of high voltage distribution and 12 distribution stations in the area. It also provided on-the-job training for unskilled and skilled workers in construction and maintenance.

outcome

Energy transported on the line has shown a rapid increase partly due to increased consumption as new customers are connected and el. use per customer increase, but also because the output from the local hydro- and diesel stations have gone down. The grid serves as part of the national transmission backbone allowing further electrification. The grid connection and rehabilitated local distribution network has ensured delivery at an acceptable quality level. The future increase is assumed to follow 50% of historical trends

impact

The main benefits are replacement of diesel power and local electrification, including replacement of kerosene, and indirect benefits from commercial activities, higher level of education, health benefits etc. Also, the basis for further electrification of Niassa province has been established as the transmission line is a pre-condition for the transmission line project Gurué - Cuamba - Lichinga. Only the diesel power replacement according to the cost fraction of TR lines (ca 4%) is included.

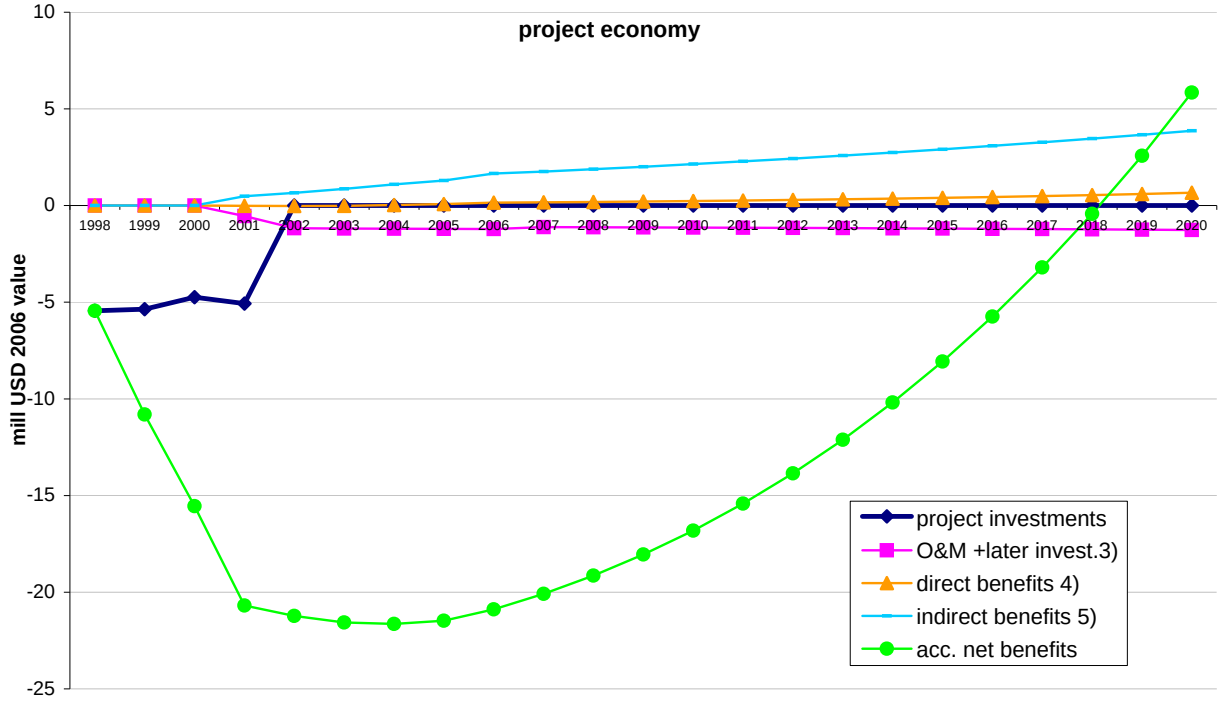
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
AMG	75%	93%	106%	101%	113%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	47
the poor	4.3
project	61



* footnotes are listed below

Alto Molocue - Gurue transmission project quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	2	EDM project memorandum outlines the economic situation, and formulates objectives	3	**6**
1.2	The strategy was grid extension. Alternative ways of providing power had been rejected earlier	3	According to the pre-defined strategy, the question did not arise	1	**3**
1.3	the feasibility study gave a realistic estimate for inputs	1	under estimated	2	**2**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	Industrial growth and related job creation was grossly exagerrated. There was no basis for such projections	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	objectives definition is too broad to provide relevant indicators	1	**1**
1.6	the time budget was realistic	2	time overrun could not have been foreseen	1	**2**
1.7	it was severely underestimated	2	it was under estimated	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	2	transformer defect discovered late	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	3	EDM routine operation foreseen	3	**9**
1.10	the plans were developed in agreement with the local counterpart	2	kick-off meeting with EDM and contractors held to coordinate activities	2	**4**
1.11	Marginal environmental procedures in place at the time	1	none planned, because it was not deemed necessary	3	**3**
1.12	Monitoring was not an established procedure at the time	1	no evidence	1	**1**
1.13	Gender was not a consideration at the time	2	no evidence	1	**2**
1.14	the input from consultants were of high quality	2	available studies appear sound	1	**2**
1.15	A socio-economic study was carried out	2	The study is only moderately useful as a base line	1	**2**
1.16	risks were properly assesed and mitigation measures included	0	not assessed	2	**0**
1.17	stakeholder support and roles was clearly defined	3	all work contracted out, and FIDIC contracts awarded	2	**6**
1.18	the plans were coordinated with complementary interventions	1	it was attempted	2	**2**
	total score 1			32	**1.7**
2	**Implementation**				
2.1	The practice was bidding by invited parties	1	NVE had previously found the chosen suppliers competitive	2	**2**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	3	appropriate	1	**3**
2.3	implementation was organised to assure sustainability by local resources	3	routine activity for EDM	1	**3**
2.4	on-the-job training was done to utilise local personnel	1	It was planned, however there is no reporting on effectively carrying it out	1	**1**
2.5	Technology was pre-determined with materials on stock from earlier project attempt	0	not relevant	0	**0**

2.6	Gender was not a consideration at the time	1	there is no evidence of specifically addressing the issue	1	**1**
2.7	locally produced components were used whenever possible	0	not applicable	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	3	project coped well with delay of sub-station completion by supplying power at 33 kV to the 110 kV line.	1	**3**
2.9	the work of contractors were of high quality	1	some problems encountered	1	**1**
2.10	monitoring was not current practice at the time	1	no reporting on any environmental aspect	2	**2**
2.11	safety in the work-place was good	2	no contrary evidence	1	**2**
2.12	the components used were of high quality	1	some items needed to be exchanged	2	**2**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory. Acted professionally in handling problems	1	**2**
2.14	the work of the project management was of high quality	3	It was competent	2	**6**
2.15	storage was provided for materials for more than 10 years	2	As no major quality reduction was noted, storage was appropriate	1	**2**
2.16	work management was of high quality	2	no specific evidence to the contrary	1	**2**
2.17	civil works was of high quality	2	no specific evidence to the contrary	1	**2**
2.18	engineering was of high quality	2	no evidence to the contrary	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	it was done by project management in a conscientious manner	2	**4**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	0	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	0	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	0	0	**0**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	0	0	**0**
2.27	Training results were measured and assessed	0	0	0	**0**
	total score 2			22	**1.8**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	no contrary evidence	2	**4**
3.2	coaching efforts were made to assure the quality of operation	0	0	0	**0**
3.3	the work of intructors was of high quality'	0	0	0	**0**
3.4	the input from twining personnel was of high quality	0	0	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	basic but, sufficient equipment was available	1	**2**

3.6	Results could not have been achieved more effectively in any other way	1	Unforeseeable problems were solved as quickly as possible. However, wrong delivery of supplier caused avoidable	1	**1**
	total score 3			4	**1.8**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in	2	further connections made after project, and Niassa supply achieved	3	**6**
4.2	a competent organisation took over responsibilities	2	EDM routine operation	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	2	reporting did not follow a standard format	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	1	final report not that comprhensive and forward looking	1	**1**
4.5	all disbursements were documented and audited according to NORAD rules	2	it was properly reported. Audit reports not seen	1	**2**
	total score 4			9	**1.9**
5	**5. Follow up work**				
5.1	Monitoring was not standard practice at the time	1	none	1	**1**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	routine EDM operation	2	**4**
5.3	the impacts were measured using the baseline study	0	none so far	1	**0**
	total score 5			4	**1.3**
	grand total score				**1.7**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Cahora Bassa - Zimbawe interconnection

1987 to 1998

A transmission line was built to allow export of Cahora Bassa power to Zimbabwe and thus ensuring an alternative route for power exports.

output

The output of the project is the 250 km 110 kV line and the necessary RT stations for transformation.

outcome

The line transported between 1400 and 3500 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. Long-term economics are doubtful, but the project has achieved the political objective of an alternative destination for popwe3r exports.

impact

Up to 2001 the connection facilitated power export to Zimbabwe and the estimated revenue (for HCB) of this export is credited the project. After 2001 only EDM's wheeling charge per year is credited, and this is expected to continue in spite of Zimbabwe's political troubles. In the longer term, HCB and EDM appear not to have power available for export through this line. Also, its importance to Zimbabwe has become minor, as Eskom also provides power directly through lines between SA and ZIB. Overall, the impact is moderate in economic terms, but important for regional integration.

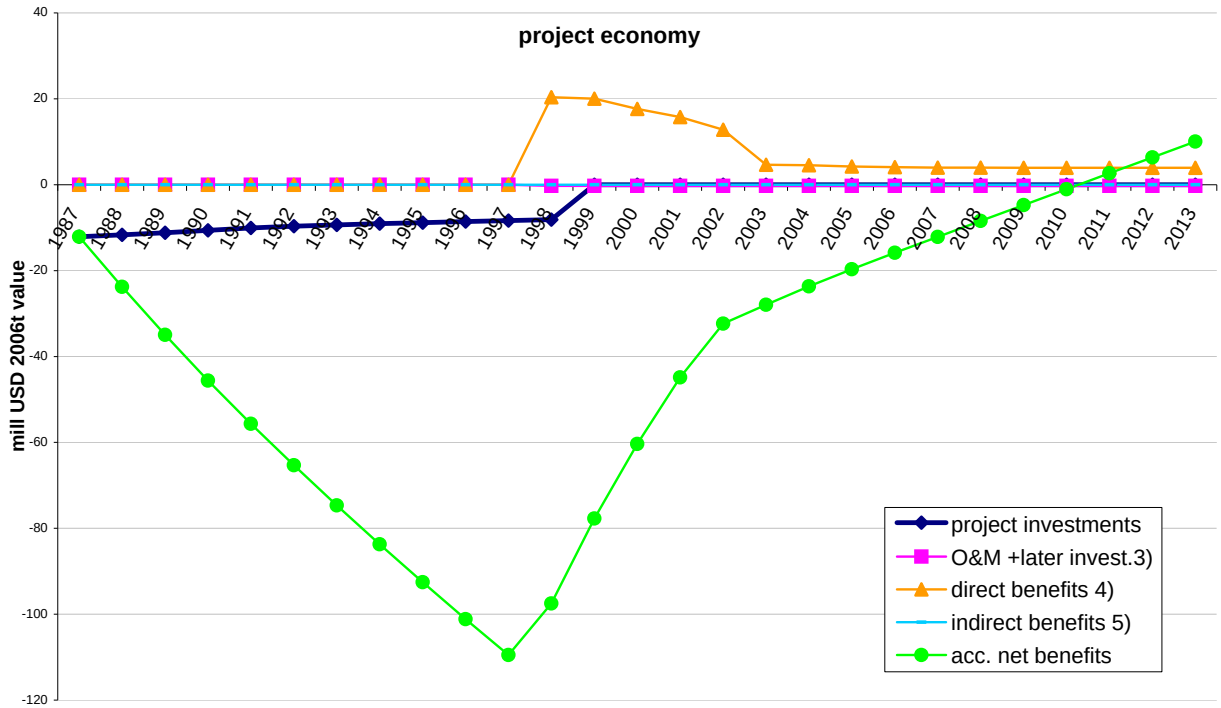
Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
CBZ	74%	96%	37%	139%	18%
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 25 yrs

	mill USD
country	161
the poor	1.7
project	33



* footnotes are listed below

Cahora Bassa - Zimbawe interconnection quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 6)	reason for grade	wght 7)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	2	the perceived power surplus from Mavuzi/Chicamba was soon outdated but ESKOM was willing to agree to cede 500 MW from HCB	3	**6**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	Alternate use of power surplus in Mozambique was not considered	2	**0**
1.3	the feasibility study gave a realistic estimate for inputs	1	Political complexity was underestimated. Budget appropriate	2	**2**
1.4	Much political importance was on reducing dependence on South Africa	1	The positive forecast was more politically than economically motivated	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	to some extent, quite general	1	**1**
1.6	the time budget was realistic	1	under estimated	1	**1**
1.7	the resource budget was realistic	2	appropriate	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	1	marginally	3	**3**
1.9	the plans included provisions for sustainable operation and development afterwards	3	expected to be run by HCB and owned by EDM	3	**9**
1.10	the plans were developed in agreement with the local counterpart	3	Bilateral agreement with Zimbabwe 1992	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	2	appropriate	3	**6**
1.12	monitoring of environmental impact and safety was part of the plan	0	no evidence that it was done	1	**0**
1.13	Gender not considered at that time	1	none	1	**1**
1.14	the input from consultants were of high quality	2	complexity of the multi-donor approach was a challenge	1	**2**
1.15	a relevant and complete baseline for impact measurement was done	0	none	1	**0**
1.16	risks were properly assesed and mitigation measures included	0	none	2	**0**
1.17	stakeholder support and roles was clearly defined	3	defined in consultant's contract, and role of EDM	2	**6**
1.18	the plans were coordinated with complementary interventions	2	complexity and required time under estimated	2	**4**
	total score 1			33	**1.5**
2	**Implementation**				
2.1	Tied aid at that time. Bidding limited to Norway	3	Tied aid approach	2	**6**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	2	appropriate	1	**2**
2.3	implementation was organised to assure sustainability by local resources	3	Ownership and opterational responsibility was clear	1	**3**
2.4	on-the-job training was done to utilise local personnel	0	no evidence	0	**0**
2.5	technology was selected with a view to total discounted cost as well as sustainability	3	international standard applied	2	**6**
2.6	Gender not considered at that time	1	no evidence	1	**1**
2.7	locally produced components were used whenever possible	0	not applicable	0	**0**

2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	delays caused by political complexity, bad weather	1	**1**
2.9	the work of contractors were of high quality	2	yes, including errection and commissioning	1	**2**
2.10	environmental impacts were monitored and reduced as much as possible	1	no evidence, but negative impact may be considered marginal	2	**2**
2.11	safety in the work-place was good	2	standard practices applied	1	**2**
2.12	the components used were of high quality	3	international standard applied	2	**6**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory	1	**2**
2.14	the work of the project management was of high quality	3	It was competent	2	**6**
2.15	logistics and storage was of high quality	0	not applicable	0	**0**
2.16	work management was of high quality	2	appropriate	1	**2**
2.17	civil works was of high quality	0	not applicable	0	**0**
2.18	engineering was of high quality	2	international standard applied	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	it was done by project consultant in satisfactory manner	2	**4**
2.20	effective coordination with other donors/ org.	2	coordinated with other contracts, to the extent possible	1	**2**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	not applicable	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	no specific training personnel	0	**0**
2.27	Training results were measured and assessed	0	not applicable	0	**0**
	total score 2			22	**2.2**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	assumed approptiate	2	**4**
3.2	coaching efforts were made to assure the quality of operation	0	not used	0	**0**
3.3	the work of intructors was of high quality'	0	not used	0	**0**
3.4	the input from twining personnel was of high quality	0	not used	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	sufficient equipment was made available	1	**2**
3.6	Results could not have been achieved more effectively in any other way	2	probably	1	**2**
	total score 3			4	**2**

4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	2	appropriate	3	**6**
4.2	a competent organisation took over responsibilities	2	HCB and EDM took over	3	**6**
4.3	progress reports were available	2	satisfactory	1	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	0	final report not located	0	**0**
4.5	all disbursements were documented and audited according to NORAD rules	0	completion report not located	0	**0**
	total score 4			7	**2.0**
5	**5. Follow up work**				
5.1	Post project monitoring was not a pratice at the time	1	no donor-specific after-project monitoring carried out.	1	**1**
5.2.	proper action was taken to assure sustainability of outputs when necessary	1	Bilateral agreement valid till 2017, but availability of 500 MW intended to be called back by ESKOM 2003. Consequently, future economics is uncertain	2	**2**
5.3	the impacts were measured using the baseline study	0	no	1	**0**
	total score 5			4	**0.75**
	grand total score				**1.8**

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level.

2) the benefits for the country is the lifetime net benefits + the grants given. O&M cost, negative impacts and additional investments are subtracted from the gross benefits. The benefit for the poor is the proportion of kerosene savings and indirect benefits according to the part of (added) delivery going to the poor plus the poor's estimated part of GDP increase. The benefits for the project is added revenue or realised cost savings minus the cost of investment depreciation, financial cost, O&M cost and further investments. All cost figures are given in international US dollar at 2006-value

3)The cost of O&M and additional investments is set to average international figures

4) the direct benefits are the calculated benefits of end-user savings on kerosene for lighting, the savings from reducing imports or use of diesel/oil power and increased income from exports. Negative impacts are also included if relevant.

5) indirect benefits are savings or value added due to increased and more efficient production, higher level of education, better health services and other effects of electrification estimated as 0% of gross economic gain per GWh in similar projects when conversion to dollars is done using the ppp-index.

6) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

7) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

Assistance to EDM

1981 to 1997

Assist the national power utility EDM to develop into an independent and economically sound organization

output

Institutional cooperation with NVE was provided with a resident adviser, but the extent of this support is not documented. 58 courses provided by the national utility of Portugal were financed. Specialized training courses for example to use the Management information system MIS, Agresso accounting software, and other tools. In sum 697 EDM staff received training.

outcome

EDM's professional capabilities have improved at all levels, thanks to better trained staff. Institutional cooperation between EDM and NVE has had mixed results over time, and was discontinued in the early Nineties.

impact

Support to some of the training efforts has been taken over by Sida for a period. Due to staff turnover and expansion of EDM activities the number of highly skilled staff is still insufficient at most levels. EDM management now realises that a comprehensive human resources development strategy is required to address further capacity development.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
EDM	69%	89%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed avbove

Assistance to EDM quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	1	There was no diagnostic at inception of the Institutional Development and Training Project but diagnosis for human resources development and training needs was ongoing effort since 1981. Plans were made and revised.	3	**3**
1.2	the feasibility study assessed also alternative ways to get the wanted results	2	EDM assessed the value of tied and untied aid, and negotiated with Norad to mostly receive untied aid, thus able to provide training in Portugal and develop its own Training Centre for example.	2	**4**
1.3	the feasibility study gave a realistic estimate for inputs	2	0	2	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	0	Inpacts were not estimated	2	**0**
1.5	the objectives and goals were clearly defined in line with diagnosis	3	Objectives and goals targeted the institutional development of EDM and the sustainability of the organization.	3	**9**
1.6	the time budget was realistic	3	A time-frame of four years (1980-1984) is very appropriate for a capacity development project. Extentions provided additional time-resources.	3	**9**
1.7	the resource budget was realistic	2	The financial budget was not only realistic but also sufficient flexible to adjust to changing needs.	3	**6**
1.8	the plans dealt with measures and mitigations with a view to the full institutional value chain	2	Work plans and resources were combined to develop management, administrative and human resources capabilities.	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	2	Projects included holistic components, combining provision of administrative and managerial instruments and training.	3	**6**
1.10	the plans were developed in agreement with the local counterpart	3	Local counterparts had ownership and leadership of the Project.	3	**9**
1.11	all negative impacts were dealt with by the mitigation measures	0	There is no evidence that negative impacts were assessed at the planning stage.	2	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	There is no evidence	1	**0**
1.13	gender measures were part of the plan	0	Gender was not part of the Project planning.	3	**0**
1.14	the input from consultants were of high quality	2	Assessment based on staff involved in the project development.	3	**6**
1.15	a relevant and complete baseline for impact measurement was done	0	No baseline was done	1	**0**
1.16	risks were properly assesed and mitigation measures included	0	No evidence of risk assessment.	2	**0**
1.17	stakeholder support and roles was clearly defined	3	Support for the Project at all levels of EDM and by related institutions. Roles clearly defined.	3	**9**
1.18	the plans were coordinated with complementary interventions	1	Some coordination with Sida regarding training.	2	**2**
	total score 1			44	**1.7**

2	**Implementation**				
2.1	international bidding for tenders whenever relevant	2	Took place when appropriate.	2	**4**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	2	0	3	**6**
2.3	implementation was organised to assure sustainability by local resources	2	Plans and activities focused on transferring knowledge and skills to local staff working at different levels.	3	**6**
2.4	on-the-job training was done to utilise local personnel	2	Consultants worked closely with local staff. On-the-job training in Portugal also seemed to have worked well.	3	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	1	Mostly yes, but billing and accounting systems not selected with care forcompatibility.	3	**3**
2.6	genders issues were adressed in a successful way	1	Training Centre instituted gender sensitivity course. Somewhat systematic efforts to attact and retain female staff at all levels.	3	**3**
2.7	locally produced components were used whenever possible	2	0	2	**4**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	Coordination with other support (Sida, Germany, Portugal, World Bank, etc) became progressively more effective within the institution and project.	3	**3**
2.9	the work of contractors were of high quality	2	Assessment based on staff involved in the project.	3	**6**
2.10	environmental impacts were monitored and reduced as much as possible	0	Through some training activities.	0	**0**
2.11	safety in the work-place was good	1	Training Centre was in precarious situation at the inception.	0	**0**
2.12	the components used were of high quality	2	According to assessment of staff	2	**4**
2.13	the work of consultants was relevant and of high quality	2	According to assessment of staff	3	**6**
2.14	the work of the project management was of high quality	2	Project managed with holistic view of the organization and its sustainability.	3	**6**
2.15	logistics and storage was of high quality	0	Not applicable	0	**0**
2.16	work management was of high quality	2	Management of activities were reasonably well managed and coordinated.	3	**6**
2.17	civil works was of high quality	0	not applicable	0	**0**
2.18	engineering was of high quality	0	not applicable	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	1	Project disbursement documentation and accounting was satisfactory	3	**3**
2.20	effective coordination with other donors/ org.	1	Coordination with other support progressively improved.	3	**3**
2.21	an optimal mix of training instruments was used	2	Various training instruments used, based o	3	**6**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	2	Most training took place in Portuguese, in Mozambique and in Portugal.	3	**6**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	2	0	2	**4**
2.24	the input from twining personnel was relevant and of high quality	2	Cooperation with NVE, as assessed by staff.	3	**6**
2.25	change of resident advisers were well planned	0	Not applicable	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	2	According to assessment of staff and Training Centre.	3	**6**

2.27	Training results were measured and assessed	1	Attempt to measure training results since middle 1990s.	2	**2**
	total score 2			58	**1.7**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	As possible.	3	**6**
3.2	coaching efforts were made to assure the quality of operation	1	During study-tours and visits to Norway and Portugal.	2	**2**
3.3	the work of intructors was of high quality'	2	According to assessment of staff and Training Centre.	3	**6**
3.4	the input from twining personnel was of high quality	0	not applicable	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	0	0	**0**
3.6	Results could not have been achieved more effectively in any other way	2	0	2	**4**
	total score 3			10	**1.8**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	2	EDM has developed and revised its own plan.	3	**6**
4.2	a competent organisation took over responsibilities	2	EDM capabilities have substantially increased.	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	0	Reporting do not provide lessons learned.	1	**0**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	0	Annual reports informative but do not provide information on full inputs, outputs and foreseen outcomes.	3	**0**
4.5	all disbursements were documented and audited according to NORAD rules	3	As far as consultant had access to documentation and according to Embassy.	3	**9**
	total score 4			13	**1.6**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	There is no systematic monitoring, although EDM uses and follow-up on most outputs (e.g. MIS system, use of AGRESSO, tariff studies, etc)	2	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	0	3	**6**
5.3	the impacts were measured using the baseline study	0	0	1	**0**
	total score 5			6	**1**
	grand total score				**1.7**

Assistance to MIREME/ME

1998 to 2005

Improve energy sector management through twinning with NVE, for consultancy on regulations and staff training.

output

More than 80 Ministry and Provincial Directorates staff were trained through 149 training activities. Long-term adviser and short-term consultants provided on-the-job training, workshops (3), courses (2), and seminars (4).

outcome

Most of the staff trained through Norwegian support remains in the organisation or in the sector, but further capacity development is considered necessary Approximately 90% of the equipments and all the software acquired through the Norwegian support are currently in use by ME. A new Energy Strategy was approved in 2000 and an Electricity Law in 2005 enabling private sector involvement

impact

One private company has received a concession for supplying the Inhambane area, but prices are very high and requires considerable capital subsidy (WB ERAP). The concessionaire is said to be unable to fulfil the requirements of the concession contract. It is unlikely that areas will be found where the model can be replicated.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
MIREME	48%	90%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Assistance to MIREME/ME quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	0	No feasibility study or institutional needs assessment done at ourset of Institutional Cooperation Poject.	3	**0**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	Support was provided within the context of tied-aid. No other options were explored.	2	**0**
1.3	the feasibility study gave a realistic estimate for inputs	1	Realistic time inputs were estimated for many component of the Project:Structuring DNE:, Energy Master Plan, Strategy Plan Rural Electrification, and Regulation Framework	3	**3**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	Since no institutional needs assessment was done, impact of the institutional cooperation was not realistically assessed.	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	There was no diagnosis; objectives and goals broadly defined according to the the sector's need and to enable flexibility.	2	**4**
1.6	the time budget was realistic	3	A time-frame of four years (1998-2002) is very appropriate for a capacity development project.	3	**9**
1.7	the resource budget was realistic	3	The financial budget was not only realistic but also sufficient flexible to adjust to changing needs.	3	**9**
1.8	the plans dealt with measures and mitigations with a view to the full institutional value chain	1	Work plans were too general to serve as a basis for improving management of the Project. Outputs and expected outcomes were generally stated, not proporly visited and re-visited.	3	**3**
1.9	the plans included provisions for sustainable operation and development afterwards	0	Plans did not deal with sustainability issues.	3	**0**
1.10	the plans were developed in agreement with the local counterpart	2	Local counterparts took ownership of the plans.	3	**6**
1.11	all negative impacts were dealt with by the mitigation measures	1	The resource budget was flexible enough to support mitigation measures, but	3	**3**
1.12	monitoring of environmental impact and safety was part of the plan	2	Environment impact and safety was a cross-cutting issue of the Project that was followed up.	2	**4**
1.13	gender measures were part of the plan	0	Gender was not part of the Project plans.	3	**0**
1.14	the input from consultants were of high quality	2	Assessment based on staff involved in the project development.	3	**6**
1.15	a relevant and complete baseline for impact measurement was done	0	No baseline was done and reporting is very poor.	2	**0**
1.16	risks were properly assesed and mitigation measures included	0	There is no evidence on reports or through interviews that risks were assessed and mitigations measures were developed along the Project.	2	**0**
1.17	stakeholder support and roles was clearly defined	2	Ministry (high level and staff), DNE, NVE, Norad (through the Embassy), and other institutions in the Energy sector supported the Project.	3	**6**

1.18	the plans were coordinated with complementary interventions	2	Co-ordination was ongoing with the World Banks' ERAP, Danida and Sida support.	3	**6**
	total score 1			48	**1.3**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	0	No international biding for resident advisers and consultants.	3	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	Support was tied to DNE-NVE institutional cooperation; value-chain was not main consideration.	3	**0**
2.3	implementation was organised to assure sustainability by local resources	0	The management of the Project focused more on the instuitutional cooperation per se instead of the progressive value-chain for the Ministry itself.	3	**0**
2.4	on-the-job training was done to utilise local personnel	2	Resident advisers and consultants worked closely with local staff.	3	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	2	Technology choice was appropriate.	3	**6**
2.6	genders issues were adressed in a successful way	0	Four ministry staff received training in Gender Analysis in Energy Planning Management in 2001 as part of the Project, but no outcome has issued from such traning.	3	**0**
2.7	locally produced components were used whenever possible	3	As possible and appropriate.	2	**6**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	Plans too vague to capture changing needs. Co-ordination with other intervention happened. Some adaptation to coordination reflected on the plans.	3	**6**
2.9	the work of contractors were of high quality	0	Not applicable	0	**0**
2.10	environmental impacts were monitored and reduced as much as possible	2	Through drafting of regulations.	3	**6**
2.11	safety in the work-place was good	3	0	2	**6**
2.12	the components used were of high quality	2	Office equipment, vehicles, and software puchased and used are of good quality.	2	**4**
2.13	the work of consultants was relevant and of high quality	1	Assessment based on staff involved in the project. Project outputs and outcomes shows mixed results, given resources and time-frame available to the Project	3	**3**
2.14	the work of the project management was of high quality	1	Work plans and reporting not produced as effective management tools.	3	**3**
2.15	logistics and storage was of high quality	0	Not applicable	0	**0**
2.16	work management was of high quality	2	Assessment based on staff involved in the project implementation.	3	**6**
2.17	civil works was of high quality	0	Not applicable	0	**0**
2.18	engineering was of high quality	2	Not applicable in terms of infrastructure. Applicable in terms of drafting Regulations, Training, etc.	3	**6**
2.19	disbursement, accounting and controlling ensured effective use of funds	0	Reporting of expenditure and cost-components extremely poor. As far as consultants had access to documentation, Auditing has been satisfactory.	3	**0**
2.20	effective coordination with other donors/ org.	2	Co-ordination with other intervention happened. Some adaptation to coordination reflected on the plans.	3	**6**

2.21	an optimal mix of training instruments was used	1	Various training instruments used (courses, study-tours, workshps, seminars, on-the-job) but they were based neither on a training needs assessment nor as an attempt to match training instruments and contents to the actual duties in office of the selected various staff.	3	**3**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	1	Not all resident advisers became fluent in Portuguese, making it difficult to perform mentoring and training activities. Most NVE consultants did not speak Portuguese or were not sufficient fluent.	3	**3**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	Selection based on tied aid. There is no evidence that selection of training institutions were based on cost-effectiveness, except for the volumous English training that took place in Maputo.	2	**0**
2.24	the input from twining personnel was relevant and of high quality	1	Assessment based on staff involved in the project. Project outputs and outcomes shows mixed results, given resources and time-frame available to the Projec.	3	**3**
2.25	change of resident advisers were well planned	2	Assessment based on staff involved in the project.	2	**4**
2.26	the input from training personnel/ educators was relevant and of high quality	1	Relevance of training to the actual duties in office of the various staff could most probably be improved.	3	**3**
2.27	Training results were measured and assessed	0	No training results measured and assessed.	3	**0**
	total score 2			28	**2.9**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	As possible.	3	**6**
3.2	coaching efforts were made to assure the quality of operation	2	Resident advisers provided some coaching, but they were more attuned to providing services and products, training activities and on-the-job training.	3	**6**
3.3	the work of intructors was of high quality'	2	According to staff assessment.	3	**6**
3.4	the input from twining personnel was of high quality	1	Assessment based on staff involved in the project. Project outputs and outcomes shows mixed results, given resources and time-frame available to the Projec.	3	**3**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	2	The Project aimed at building such capacities : develop some systems, provide needed equipments, etc.	2	**4**
3.6	Results could not have been achieved more effectively in any other way	1	Results could have been achived through a different aid provision modality (eg untied aid).	2	**2**
	total score 3			16	**1.7**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	2	There is a plan for further institutional support by Norway and other development partners.	3	**6**
4.2	a competent organisation took over responsibilities	1	The Ministry has been restructuring and operations are still adapting.	3	**3**

4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	0	Poor reporting on activities and learning curve of the Project.	2	**0**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	0	Very poor reporting of inputs, outputs and forecast outcomes.	3	**0**
4.5	all disbursements were documented and audited according to NORAD rules	0	Reporting of expenditure and cost-components extremely poor. As far as consultants had access to documentation and according to Embassy, Auditing has been satisfactory.	3	**0**
	total score 4			14	**0.6**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	2	Operation has not yet ended due to extensions; some outputs are monitored (draft regulation, consessions, contracts) while other not (training)	2	**4**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	Regulation, consessions, contracts are followed-up.	3	**6**
5.3	the impacts were measured using the baseline study	0	No impact has been measured.	0	**0**
	total score 5			5	**2**
	grand total score				**1.7**

Assistance to UTIP for promotion of hydro-projects

1999 to 2006

The objective was/is to help Mozambique to develop the hydro power potential in the Zambezi river by building governmental capacity and competence.

output

Outputs include technical documents, feasibility studies and promotion activities for power projects. For UTIP was provided budgeting and accounting system, filing code, human resource development program, computer network with store/retrieve data-bank, WEB-site, training and in-house workshops. 10 UTIP staff participated in 31 events.

outcome

Staff trained by the Project developed and delivered 12 workshops and seminars and made presentations at 3 international seminars/ conferences. 7 of 10 staff trained by the Project remain at UTIP, 2 remain in the Energy Sector and 1 at the University. UTIP is a reasonably effective institution with strengthened capability and capacity to perform in accordance with its functions and responsibilities. It has been enabled to raise interest in the mega projects, and specifically address the issues being brought up by potentially interested promoters.

impact

No real impact yet, but the Mozambique Government has established Memorandum of Understandings (MOUs) related to one project (Cahora-Bassa North Bank and Mphanda Nkuwa) with BHP Billiton, Exibank and Sinohydro of China, and Camargo Correa (Brazil).

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
UTIP	91%	102%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Assistance to UTIP for promotion of hydro-projects quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	1	No feasibility study done for the technical assistance and training components; instead a model for TA was designed based on Panel of Experts and Core Consultants.	3	**3**
1.2	the feasibility study assessed also alternative ways to get the wanted results	1	No feasibility study done but the alternative for commissioning in country vis-a-.vis expatriate expertise was assessed.	3	**3**
1.3	the feasibility study gave a realistic estimate for inputs	2	Cost estimates and persons-months estimates for the institutional support was reasonably realistic and in line with actual cost. Use of Panel of Experts underestimated.	3	**6**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	Impact of the institutional support was generally assessed: training and technical assistance would increase institutional capabilities.	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	3	Project objective and goal clearly defined in accordance with UTIP's mandate	3	**9**
1.6	the time budget was realistic	3	The original time budget of 3 years plus 2 years extention was appropriate for a institutional capacity building project.	2	**6**
1.7	the resource budget was realistic	3	The Project budget was realistic.	2	**6**
1.8	the plans dealt with measures and mitigations with a view to the full institutional value chain	2	Support was foreseen and provided holistically, covering most pertinent aspects of building the institution's capacities. It was flexible to adapt to change in institutional function and status.	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	1	Government co-financing was not foreseen, thus neglecting to take the sustainability of the institution into account. Incentives for staff retention have positively impacted sustainability of capacities built through the Project.	3	**3**
1.10	the plans were developed in agreement with the local counterpart	3	Local counterparts have had ownership of the Project.	3	**9**
1.11	all negative impacts were dealt with by the mitigation measures	0	0	2	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	0	0	**0**
1.13	gender measures were part of the plan	0	Gender was not considered throughout the life of the project.	3	**0**
1.14	the input from consultants were of high quality	2	0	0	**0**
1.15	a relevant and complete baseline for impact measurement was done	0	The Project supported the building of a newly created institution.	1	**0**
1.16	risks were properly assesed and mitigation measures included	1	0	2	**2**
1.17	stakeholder support and roles was clearly defined	2	Within UTIP roles and support for Project was clear.	3	**6**
1.18	the plans were coordinated with complementary interventions	2	UTIP was basically supported by the Norwegian Project.	3	**6**

	total score 1			41	**1.6**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	3	Core Consultant selected through international bidding.	3	**9**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	3	The Core Consultant have pool of consultants located in various places in the region and outside. The fat that it has an office in Maputo offered an added value to UTIP.	3	**9**
2.3	implementation was organised to assure sustainability by local resources	2	Much of the expertise and knowledge brought by expatriate has been passed and retained to various degree by institution.	3	**6**
2.4	on-the-job training was done to utilise local personnel	2	Short- and long-term advisers worked in an integrated fashion with local staff.	3	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	2	Accounting program (Agresso) too complex for institution, but IT solutions in appropriate use.	3	**6**
2.6	genders issues were adressed in a successful way	0	Gender issues were not considered.	3	**0**
2.7	locally produced components were used whenever possible	3	0	2	**6**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	The Project lagged behind in adapting to change in UTIP's statute and function within the Energy sector. While changes to institutional support should indeed be carefully considered, the Project adaptation to changing environment was somehat slow.	3	**3**
2.9	the work of contractors were of high quality	1	The quality of training institutions contracted varied.	2	**2**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	3	0	3	**9**
2.12	the components used were of high quality	0	0	0	**0**
2.13	the work of consultants was relevant and of high quality	2	Service rendered by consultants were rated highly but follow-up has been weak.	3	**6**
2.14	the work of the project management was of high quality	2	The Project has been well managed, providing leadership and a conducive environment for institutional growth.	3	**6**
2.15	logistics and storage was of high quality	3	0	3	**9**
2.16	work management was of high quality	2	Activities related to feasibility study and other technical development managed well but training activities ad hoc.	3	**6**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	0	0	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	1	Annual reports are not clear, information inconsistent and incomplete. Audits seem to be in order.	3	**3**
2.20	effective coordination with other donors/ org.	1	Support to UTIP not coordinated very well with other institutions in the Energy sector.	2	**2**

2.21	an optimal mix of training instruments was used	1	Selection of staff and matching staff to training instruments was mostly, although not always ad hoc. Better matching achieved through on-the-job training.	2	**2**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	2	Most staff receiving training in English were sufficietly fluent in the language of training. Some staff, however, received training in English without fluency in the language.	3	**6**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	2	To some extent cost-effectiveness has been considered, especially when background of selected staff matched training content.	2	**4**
2.24	the input from twining personnel was relevant and of high quality	0	Not applicable	0	**0**
2.25	change of resident advisers were well planned	2	Except for transition from the first RA, which left under somewhat frictional condition, subsequent change was smooth.	2	**4**
2.26	the input from training personnel/ educators was relevant and of high quality	2	Inputs from Core Consultant (RAs and consultants) were relevant, good quality. Some leakage experienced due to language of consultant and Ras and local staff.	3	**6**
2.27	Training results were measured and assessed	0	No assessment or measurement was made.	0	**0**
	total score 2			52	**2.115**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	3	Best personnel was selected as per market availability.	3	**9**
3.2	coaching efforts were made to assure the quality of operation	2	Coaching from Resident Advisers have been provided and well utilized by UTIP	3	**6**
3.3	the work of intructors was of high quality'	2	Based on staff assessment.	2	**4**
3.4	the input from twining personnel was of high quality	0	Not applicable	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	UTIP was a newly created institution. Equipment, etc was purchased with support of the Project	0	**0**
3.6	Results could not have been achieved more effectively in any other way	1	UTIP's function could have been carried out through extending EDM or MIREME's mandates and expanding capabilities. This could have been a more cost-effective option, but difficult to assess more effective.	1	**1**
	total score 3			9	**2.2**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	1	No plan for training component. Planning for the technical and administrative consulting services were in place. Plan for the RAs were too general. Outputs were not defined as part of the planning for each TA or training components.	3	**3**
4.2	a competent organisation took over responsibilities	2	UTIP is a reasonably competent organization but remains very weak on sustainability.	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	1	Reporting of activities have not included lessons learned. The feasibility study and its review can be a base for more sistematic learning.	1	**1**

4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	1	The final report (1999-2003) lacks information on outputs, cost disclosures (activity to outputs), and has no forecast on oucomes and impacts.	3	**3**
4.5	all disbursements were documented and audited according to NORAD rules	2	According to embassy and UTIP staff.	2	**4**
	total score 4			12	**1.4**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	Project is only now ending.	0	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	3	UTIP has produced instruments to enable the institution to achieve its goals of promoting economic development through promoting MNk and paving the way for the project realization through Memorandum of Understanding with various perspective investors.	3	**9**
5.3	the impacts were measured using the baseline study	0	0	0	**0**
	total score 5			3	**3**
	grand total score				**1.9**

Khimti Khola training

1997 to 1999

Training was provided to local companies involved in the construction of the Khimti khola I HEP; including Himal Power Limited (owner), Nepal Hydro Electric and Himal Hydro, both sub-contractors to the international main contractors.

output

Outputs included a large volume of training for workers, skilled workers and technicians .

outcome

The capability and competence of contractors and utility at the operational level was significantly improved, and they are using the acquired competence and capacity to the benefit of the Nepalese economy.

impact

The companies supported have become industry leaders in their respective fields. The training provided in this project has contributed significant to this.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
tkhimti	79%	112%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Khimti Khola training quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	The need identified at an early stage	3	Good planning	3	**9**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	0	0	**0**
1.3	the feasibility study gave a realistic estimate for inputs	2	appropriate	2	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	vague picture	2	**2**
1.5	the objectives and goals were clearly defined in line with diagnosis	2	appropriate	1	**2**
1.6	the time budget was realistic	2	appropriate	1	**2**
1.7	the resource budget was realistic	2	appropriate	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	0	0	0	**0**
1.9	the plans included provisions for sustainable operation and development afterwards	3	institutional development for sustainability was the main objective	2	**6**
1.10	the plans were developed in agreement with the local counterpart	3	yes	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	0	0	0	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	0	0	**0**
1.13	gender measures were part of the plan	0	mentioned in documents	0	**0**
1.14	the input from consultants were of high quality	3	dedicated and long-term	1	**3**
1.15	a relevant and complete baseline for impact measurement was done	0	0	0	**0**
1.16	risks were properly assesed and mitigation measures included	1	risk of non-sustainability not addressed explicitly	1	**1**
1.17	stakeholder support and roles was clearly defined	3	yes	2	**6**
1.18	the plans were coordinated with complementary interventions	3	training plan within framework of overall implementation planning	2	**6**
	total score 1			20	**2.5**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	0	0	0	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.3	implementation was organised to assure sustainability by local resources	3	yes, capacity building for sustainability	2	**6**
2.4	on-the-job training was done to utilise local personnel	3	in addition to formal training	2	**6**
2.5	technology was selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.6	genders issues were adressed in a successful way	0	of no importance? Because there is nothing we can say	0	**0**

2.7	locally produced components were used whenever possible	0	0	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	no evidence to the contrary	1	**2**
2.9	the work of contractors were of high quality	3	very satisfactory	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	0	0	0	**0**
2.12	the components used were of high quality	0	0	0	**0**
2.13	the work of consultants was relevant and of high quality	0	0	0	**0**
2.14	the work of the project management was of high quality	2	no evidence to the contrary	1	**2**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	0	0	0	**0**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	0	0	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	no evidence to the contrary	1	**2**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	0	of no importance? Because there is nothing we can say	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	1	no evidence to the contrary	1	**1**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	2	suppliers were contracted	2	**4**
2.24	the input from twining personnel was relevant and of high quality	2	no evidence to contrary	1	**2**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	0	0	**0**
2.27	Training results were measured and assessed	1	Assessment was done. Reports not located: How was it done is open.	1	**1**
	total score 2			13	**2.2**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	no evidence to the contrary	1	**2**
3.2	coaching efforts were made to assure the quality of operation	2	to a large extent	1	**2**
3.3	the work of intructors was of high quality'	2	yes	2	**4**
3.4	the input from twining personnel was of high quality	0	0	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	0	0	**0**
3.6	Results could not have been achieved more effectively in any other way	2	Training was very specifically needs based, and carried out results-oriented	2	**4**

	total score 3			6	**2**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in	1	this was only vaguely addressed	3	**3**
4.2	a competent organisation took over responsibilities	3	competent companies already existing	3	**9**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	1	activity, but no results reporting	1	**1**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	1	activity reporting mainly	1	**1**
4.5	all disbursements were documented and audited according to NORAD rules	1	no contrary evidence, but no accounts located	1	**1**
	total score 4			9	**1.7**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	no	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	so far appropriate	2	**4**
5.3	the impacts were measured using the baseline study	0	none so far	1	**0**
	total score 5			4	**1**
	grand total score				**2.1**

Fellowship program for training of professionals

1978 to 2002

The fellowship program has provided fellowships to Norway for thousands of students from the third world. Starting in 1978 ca 100 power engineers from Nepal were able to attend master level education at NTH/NTNU. The cost per student per year was estimated to be 500 000 NOK in 2003.

output

100 persons where given 1-2 years of education receiving a master degree in power economics and power systems development

outcome

The training provided is highly praised by all participants interviewed. The competence gained by the fellows was generally put to good use in the sector.

impact

Most of the fellows are today using their skills to play a vital role in developing Nepal's power sector. Some have reached high positions in government and the private sector

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
fellow	112%	101%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Fellowship program for training of professionals quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	3	The courses provided were in line with local needs	2	**6**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	supply driven project	1	**0**
1.3	the feasibility study gave a realistic estimate for inputs	4	0	1	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	1	not specificly dealt with	1	**1**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	0	2	**2**
1.6	the time budget was realistic	2	0	1	**2**
1.7	the resource budget was realistic	2	0	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	0	0	0	**0**
1.9	the plans included provisions for sustainable operation and development afterwards	0	no plans for keepin the competence in Nepal	1	**0**
1.10	the plans were developed in agreement with the local counterpart	1	0	1	**1**
1.11	all negative impacts were dealt with by the mitigation measures	0	0	0	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	0	0	**0**
1.13	gender measures were part of the plan	1	0	2	**2**
1.14	the input from consultants were of high quality	0	0	0	**0**
1.15	a relevant and complete baseline for impact measurement was done	0	no baseline	1	**0**
1.16	risks were properly assesed and mitigation measures included	0	0	0	**0**
1.17	stakeholder support and roles was clearly defined	2	0	1	**2**
1.18	the plans were coordinated with complementary interventions	1	0	1	**1**
	total score 1			16	**1.4**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	0	0	0	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.3	implementation was organised to assure sustainability by local resources	2	0	1	**2**
2.4	on-the-job training was done to utilise local personnel	0	0	0	**0**
2.5	technology was selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.6	genders issues were adressed in a successful way	1	0	1	**1**

2.7	locally produced components were used whenever possible	0	0	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	training was adapted to changing needs	2	**4**
2.9	the work of contractors were of high quality	4	training was of high quality	3	**12**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	0	0	0	**0**
2.12	the components used were of high quality	0	0	0	**0**
2.13	the work of consultants was relevant and of high quality	0	0	0	**0**
2.14	the work of the project management was of high quality	2	0	1	**2**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	2	0	1	**2**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	0	0	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	0	2	**4**
2.20	effective coordination with other donors/ org.	1	0	1	**1**
2.21	an optimal mix of training instruments was used	3	a good mix between prctical and theoretical	3	**9**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	3	0	2	**6**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	0	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	0	0	**0**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	3	0	3	**9**
2.27	Training results were measured and assessed	3	0	3	**9**
	total score 2			23	**2.7**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	0	3	**6**
3.2	coaching efforts were made to assure the quality of operation	0	0	0	**0**
3.3	the work of intructors was of high quality'	0	0	0	**0**
3.4	the input from twining personnel was of high quality	0	0	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	0	0	**0**
3.6	Results could not have been achieved more effectively in any other way	0	0	2	**0**

	total score 3		0	5	**1.2**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	0	0	0	**0**
4.2	a competent organisation took over responsibilities	0	0	0	**0**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	1	0	2	**2**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	0	0	2	**0**
4.5	all disbursements were documented and audited according to NORAD rules	3	0	2	**6**
	total score 4			6	**1.3**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	0	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	0	0	0	**0**
5.3	the impacts were measured using the baseline study	0	0	1	**0**
	total score 5			2	**0**
	grand total score				**1.9**

Assistance to Hydro Lab

1989 to 2002

Hydro Lab is a hydraulics research laboratory established as a private sector company, with the purpose of carrying out research and model testing for improved use of water resources, and training.

output

The project provided training and consultancy by top and high level Norwegian staff. A full range of laboratory facilities were built up, and appropriate equipment has been provided.

outcome

Hydro Lab provides high quality services to its clients enabling better designed water handling systems. This results in reduced investment costs and lower operation costs. An indirect result is the good name and image that Hydro Lab has achieved, beyond the borders of Nepal.

impact

Hydro Lab has had a significant impact on water resources development in Nepal, and perhaps in the entire Himalayan region. When using water from Himalayan rivers, sediment handling is of crucial importance. Effective water intake and sediment separation are the trademark of Hydro Lab, and its basis for an increasing impact on the industry.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
Hydrolab	125%	100%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 15 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Assistance to Hydro Lab quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	The need identified in the actual project Jhimruk, at an early stage	3	Pragmatic rather than analytical decision process	3	**9**
1.2	the feasibility study assessed also alternative ways to get the wanted results	1	briefly mentioned	1	**1**
1.3	the feasibility study gave a realistic estimate for inputs	2	appropriate	2	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full impacts	2	appropriate	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	yes, in fist phase, inadequate in second phase	1	**1**
1.6	the time budget was realistic	1	yes for first phase, inadequate for second phase	1	**1**
1.7	the resource budget was realistic	1	it was under estimated	1	**1**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	0	0	0	**0**
1.9	the plans included provisions for sustainable operation and development afterwards	1	no elaborate income projection or business plan prepared	2	**2**
1.10	the plans were developed in agreement with the local counterpart	3	with several partners	2	**6**
1.11	all negative impacts were dealt with by the mitigation measures	0	0	0	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	0	0	**0**
1.13	gender measures were part of the plan	1	mentioned in documents	1	**1**
1.14	the input from consultants were of high quality	3	dedicated and long-term	1	**3**
1.15	a relevant and complete baseline for impact measurement was done	0	0	0	**0**
1.16	risks were properly assesed and mitigation measures included	1	risk of non-sustainability not addressed	1	**1**
1.17	stakeholder support and roles was clearly defined	3	ICH and NTNU defined as partner, as well as Tribhuvan University	2	**6**
1.18	the plans were coordinated with complementary interventions	3	the other way round: hydro lab was complementary to HEP development, in particular Jhimruk	2	**6**
	total score 1			22	**2.1**
2	**Implementation**				
2.1	international bidding was not relevant	0	0	0	**0**
2.2	tender selection was not relevant	0	0	0	**0**
2.3	sustainability based on own income was projected to be achieved after 5 years	2	presently achieved, but little evidence of strong marketing	2	**4**
2.4	on-the-job training was done to utilise local personnel	2	yes	2	**4**
2.5	technology was selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.6	genders issues were adressed in a successful way	0	original plans not implemented	1	**0**
2.7	locally produced components were used whenever possible	3	yes	1	**3**

2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	no evidence to the contrary	1	**2**
2.9	the work of contractors were of high quality	3	very satisfactory	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	0	0	0	**0**
2.12	the components used were of high quality	2	appropriate quality instrumentation	1	**2**
2.13	the work of consultants was relevant and of high quality	3	very competent	1	**3**
2.14	the work of the project management was of high quality	2	no evidence to the contrary	1	**2**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	0	0	0	**0**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	0	0	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	no evidence to the contrary	1	**2**
2.20	effective coordination with other donors/ org.	0	not done	2	**0**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	2	long term expatriate residents	1	**2**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	3	senior experts were contracted	2	**6**
2.24	the input from twining personnel was relevant and of high quality	2	appropriate quality instrumentation	1	**2**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	0	0	**0**
2.27	Training results were measured and assessed	0	not done	1	**0**
	total score 2			19	**1.8**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	no evidence to the contrary	1	**2**
3.2	coaching efforts were made to assure the quality of operation	2	to a large extent	1	**2**
3.3	the work of intructors was of high quality'	2	yes	2	**4**
3.4	the input from twining personnel was of high quality	0	0	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	basic but, sufficient equipment was available	0	**0**
3.6	Results could not have been achieved more effectively in any other way	3	probably not	2	**6**
	total score 3			6	**2.3**

4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	1	this was only moderately addressed in appraisal of extension	3	**3**
4.2	a competent organisation took over responsibilities	2	Hydro Lab to day well established and competent	3	**6**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	1	no evidence to the contrary, but no reports located.	1	**1**
4.4	End-of-phase review assessed most aspects	2	appropriate	1	**2**
4.5	all disbursements were documented and audited according to NORAD rules	1	no contrary evidence, but no accounts located	1	**1**
	total score 4			9	**1.4**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	none	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	2	so far appropriate	2	**4**
5.3	the impacts were measured using the baseline study	0	none so far	1	**0**
	total score 5			4	**1**
	grand total score				**1.9**

Assistance to Ministry of Water Resources

1992 to 1998

The objective has been to assist the Nepal government in establishing necessary legislation, related regulation and the institutional framework for the future development of the power sector with private sector participation.

output

Top and high level advice was provided as well as training for department employees

outcome

Norwegian expert advice has had a marked influence on the following policy documents, laws and regulations: Hydropower Development Policy 1992, Water Resources Act 1992, Electricity Act 1992, Water Resources Regulation 1993 and Electricity Regulation 1993. The only visible outcome of the second phase is added competence through training and advice.

impact

Assistance provided in the first phase has made it possible to launch the Khimti HEP with private sector ownership. Successful conclusion of the Khimti agreement between the investors and the government is directly attributable to the „ground work“ done under phase one of the project, while phase two did not produce concrete results.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
MOWR	93%	78%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

Assistance to Ministry of Water Resources quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	An identification visit was paid to Nepal, to identify needs	3	The need for improved legislation identified	3	**9**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	0	0	**0**
1.3	the feasibility study gave a realistic estimate for inputs	1	yes, it failed however for the second phase. Rather than adisory services, Nepal required hands-on assistance.	2	**2**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full	2	appropriate	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	1	yes, in fist phase, inadequate in second phase	1	**1**
1.6	the time budget was realistic	1	yes for first phase, inadequate for second phase	1	**1**
1.7	the resource budget was realistic	1	it was under estimated	1	**1**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	0	0	0	**0**
1.9	the plans included provisions for sustainable operation and development afterwards	0	0	0	**0**
1.10	the plans were developed in agreement with the local counterpart	1	Insufficiently in the second phase	2	**2**
1.11	all negative impacts were dealt with by the mitigation measures	0	0	0	**0**
1.12	monitoring of environmental impact and safety was part of the plan	0	0	0	**0**
1.13	gender measures were part of the plan	0	0	0	**0**
1.14	the input from consultants were of high quality	3	seminar papers and final report 1998	1	**3**
1.15	a relevant and complete baseline for impact measurement was done	0	0	0	**0**
1.16	risks were properly assesed and mitigation measures included	0	0	0	**0**
1.17	stakeholder support and roles was clearly defined	3	all work contracted out, and FIDIC contracts awarded	2	**6**
1.18	the plans were coordinated with complementary interventions	1	no evidence	2	**2**
	total score 1			17	**1.8**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	0	0	0	**0**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	0	0	**0**
2.3	implementation was organised to assure sustainability by local resources	0	0	0	**0**
2.4	training was done through seminars and advice	2	0	2	**4**
2.5	technology was selected with a view to total discounted cost as well as sustainability	0	0	0	**0**

2.6	genders issues were adressed in a successful way	0	0	0	**0**
2.7	locally produced components were used whenever possible	0	0	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	1	First phase was prompltyl implemented. Second phase lingered, talked to wrong partner	1	**1**
2.9	work of contracted consultants was high quality	3	very satisfactory	1	**3**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	0	0	0	**0**
2.12	the components used were of high quality	0	0	0	**0**
2.13	the work of consultants was relevant and of high quality	1	in general it was satisfactory, but not reponding to needs in second phase	1	**1**
2.14	the work of the project management was of high quality	0	0	0	**0**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	0	0	0	**0**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	0	0	0	**0**
2.19	disbursement, accounting and controlling ensured effective use of funds	1	accounts not presented vs. budget and effective activities	2	**2**
2.20	effective coordination with other donors/ org.	0	not done	2	**0**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	0	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	3	senior experts were contracted	2	**6**
2.24	the input from twining personnel was relevant and of high quality	1	relevance not visible or reported on	1	**1**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	0	0	**0**
2.27	Training results were measured and assessed	0	not done	1	**0**
	total score 2			13	**1.4**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	0	0	0	**0**
3.2	coaching efforts were made to assure the quality of operation	2	at least two successful seminars	1	**2**
3.3	the work of intructors was of high quality'	2	yes	2	**4**
3.4	the input from twining personnel was of high quality	0	0	0	**0**

3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	basic but, sufficient equipment was available	0	**0**
3.6	Results could not have been achieved more effectively in any other way	1	Advice was welcome in second phase, but it was not what Nepal needed at that stage, hands-on support	2	**2**
	total score 3			5	**1.6**
4	**Preparation for further development**				
4.1	second phase planned in same way as 1st phase	1	this was only moderately realistic	3	**3**
4.2	a competent organisation took over responsibilities	1	EDC/DOED was in charge as the deisnated institution	3	**3**
4.3	consultant's progress reports specified	1	reporting did not follow a standard format	1	**1**
4.4	the final report summarised all issues in a comprehensive way	3	excellent	1	**3**
4.5	all disbursements were properly accounted for.	1	no contrary evidence	1	**1**
	total score 4			9	**1.2**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	none	1	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	1	follow up in second phase was only moderately effective	2	**2**
5.3	the impacts were measured using the baseline study	0	none so far	1	**0**
	total score 5			4	**0.5**
	grand total score				**1.5**

Khimti Khola, feasibility study

1992 to 1993

The Nepalese power company BPC was contracted to carry out a feasibility study for the Khimti I HEP 60 MW power scheme in collaboration with a Norwegian consultant (Norpower AS). The dual purpose was to specify a bankable project, and learn on the job from expatriate consultants.

output

Outputs included ca one man-year of training at bachelor and master level and 1,5 man-year of high level consultancy to develop the feasibility study for a 60 MW Hydro power scheme.

outcome

The study report was accepted by the multi-lateral finance agencies ADB and IFC. BPC as the implementing contractor has gained in expertise in international cooperation, the related design, reporting and communication requirements as well as environmental assessment and mitigation work.

impact

BPC gained in competence to the extent that it was able to enter into a cooperation agreement with Statkraft, for the project implementation. The ultimate impact is that the Khimti HEP is now fully operational and commercially successful under private sector ownership. This contributes to the countries power supply on a significant scale.

Benchmarkfactors 1) compared to the group of interventions

	efficiency	effectiveness relevance	sustainability	impact country	impact poor
ckhimti	91%	115%			
best	249%	129%	115%	273%	278%
worst	16%	78%	25%	7%	18%

Net benefit 2)

over useful lifetime: 10 yrs

	mill USD
country	
the poor	
project	

notes

1) the benchmark factors are shown as a percentage of the average. The efficiency factor is output divided by normalised input, the effectiveness factor is the grand total score as calculated in the table, the sustainability factor is the current outcome in relation to initial outcome and the impact factors is the lifetime benefits divided by lifetime cost. Normalised input is the total cost of the intervention normalised for local differences in cost level. For this project output is illustrated using the volume of CD input while outcome and impact could not be quantified.

2) for this project the benefits could not be quantified

3) the grade is set on a scale from 0 to 3 where 3 is the best; i.e. full compliance with best practice valid at the time of implementation

4) the weight is set on a scale from 0 to 3 where 3 is the highest; i.e. very important and 0 no importance/ not relevant

* footnotes are listed above

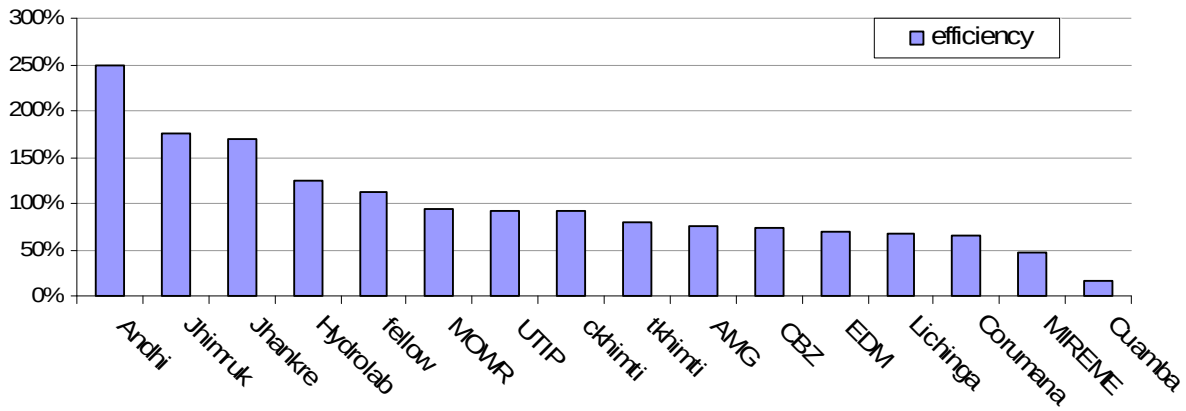
Khimti Khola, feasibility study quality, relevance, effectiveness

	best practice according to TOR and objectives - description	grade 3)	reason for grade	wght 4)	score
1	**Selection, preparation and planning**				
1.1	the feasibility study included a realistic evaluation of the needs based on local knowledge	2	appropriate	3	**6**
1.2	the feasibility study assessed also alternative ways to get the wanted results	0	the tas was specific to the present project, after the higher level had assessed alternatives	0	**0**
1.3	the feasibility study gave a realistic estimate for inputs	2	appropriate	2	**4**
1.4	the feasibility study / needs assessment gave a realistic estimate of the full	2	appropriate	2	**4**
1.5	the objectives and goals were clearly defined in line with diagnosis	3	excellent	1	**3**
1.6	the time budget was realistic	3	appropriate	1	**3**
1.7	the resource budget was realistic	2	appropriate	1	**2**
1.8	the plans dealt with measures and mitigations with a view to the full infrastructure value chain	2	appropriate	3	**6**
1.9	the plans included provisions for sustainable operation and development afterwards	0	not part of study	0	**0**
1.10	the plans were developed in agreement with the local counterpart	2	in agreement with HMG	2	**4**
1.11	all negative impacts were dealt with by the mitigation measures	2	appropriate	3	**6**
1.12	monitoring of environmental impact and safety was part of the plan	2	no evidence to the contrary	1	**2**
1.13	gender issues were not in focus at the time	2	none	1	**2**
1.14	the input from consultants were of high quality	3	BPC is reported to have learned a lot from Norpower	1	**3**
1.15	a relevant and complete baseline for impact measurement was done	1	marginally	1	**1**
1.16	risks were properly assesed and mitigation measures included	2	appropriate	2	**4**
1.17	stakeholder support and roles was clearly defined	3	defined in consultant's contract, and role of EDM	2	**6**
1.18	the plans were coordinated with complementary interventions	0	complexity and required time under estimated	0	**0**
	total score 1			26	**2.2**
2	**Implementation**				
2.1	international bidding for tenders whenever relevant	2	Tied aid approach, consultants pre-determined	1	**2**
2.2	tenders were selected with a view to total discounted cost as well as sustainability	0	appropriate	0	**0**
2.3	implementation was organised to assure sustainability by local resources	3	Ownership and opterational responsibility was clear. BPC was to learn from Norpower	1	**3**
2.4	on-the-job training was done to utilise local personnel	2	no evidence to the contrary	1	**2**

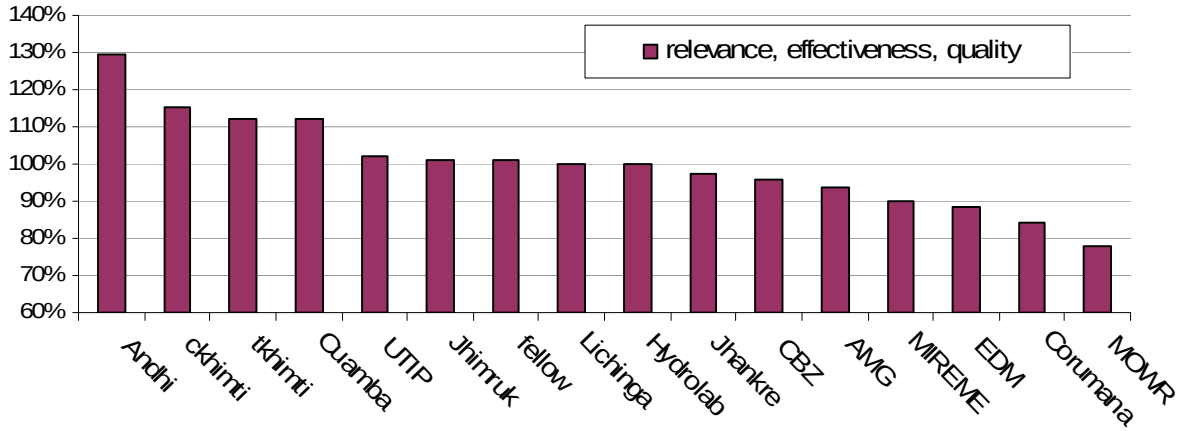
2.5	technology was selected with a view to total discounted cost as well as sustainability	2	international standard applied	2	**4**
2.6	gender issues were not in focus at the time	1	no evidence	1	**1**
2.7	locally produced components were used whenever possible	0	0	0	**0**
2.8	implementation followed the plans with adaptation to changing needs and good co-ordination with other interventions	2	no evidence to the contrary	1	**2**
2.9	the work of contractors were of high quality	2	yes	1	**2**
2.10	environmental impacts were monitored and reduced as much as possible	0	0	0	**0**
2.11	safety in the work-place was good	0	0	0	**0**
2.12	the components used were of high quality	0	0	0	**0**
2.13	the work of consultants was relevant and of high quality	2	in general it was satisfactory	1	**2**
2.14	the work of the project management was of high quality	2	It was competent	2	**4**
2.15	logistics and storage was of high quality	0	0	0	**0**
2.16	work management was of high quality	0	appropriate	0	**0**
2.17	civil works was of high quality	0	0	0	**0**
2.18	engineering was of high quality	2	international standard applied	1	**2**
2.19	disbursement, accounting and controlling ensured effective use of funds	2	it was done by project consultant in satisfactory manner	2	**4**
2.20	effective coordination with other donors/ org.	0	0	0	**0**
2.21	an optimal mix of training instruments was used	0	0	0	**0**
2.22	language of trainers/consultants was compatible with language of trainees/target staff	0	0	0	**0**
2.23	selection of training/twining institutions/ organizations was based on cost-effectiveness criteria	0	not used	0	**0**
2.24	the input from twining personnel was relevant and of high quality	0	not used	0	**0**
2.25	change of resident advisers were well planned	0	0	0	**0**
2.26	the input from training personnel/ educators was relevant and of high quality	0	no specific training personnel	0	**0**
2.27	Training results were measured and assessed	0	0	0	**0**
	total score 2			14	**2**
3	**From implementation to operation**				
3.1	competent local personnel was selected at all levels	2	assumed approptiate	2	**4**
3.2	coaching efforts were made to assure the quality of operation	0	0	0	**0**
3.3	the work of intructors was of high quality'	0	0	0	**0**
3.4	the input from twining personnel was of high quality	0	not used	0	**0**
3.5	necessary equipment, tools and systems for efficient operation and maintenance were in place when operation started	0	0	0	**0**

3.6	Results could not have been achieved more effectively in any other way	3	quite so	1	**3**
	total score 3			3	**2.3**
4	**Preparation for further development**				
4.1	a realistic (business) plan for the operation and further development was in place	0	appropriate	0	**0**
4.2	Prepare a summary of the organisational and legal basis on which the scheme could proceed as a private sector venture	2	Done successfully	2	**4**
4.3	the activities, results and lessons learned for all stakeholders were reported in a standard format suitable for systematic comparison with other interventions	1	no standard format	1	**1**
4.4	the final report documented the full inputs, outputs and forecasts for outcomes and impacts	3	final report complete and concise	1	**3**
4.5	all disbursements were documented and audited according to NORAD rules	2	apparently, but completion report not located	1	**2**
	total score 4			5	**2.0**
5	**5. Follow up work**				
5.1	The operation and further development of the outputs was monitored in the years after the project ended	0	0	0	**0**
5.2.	proper action was taken to assure sustainability of outputs when necessary	0	0	0	**0**
5.3	Full impact achieved: the project was bankable and was implemented, as planned	3	0	3	**9**
	total score 5			3	**3**
	grand total score				**2.2**

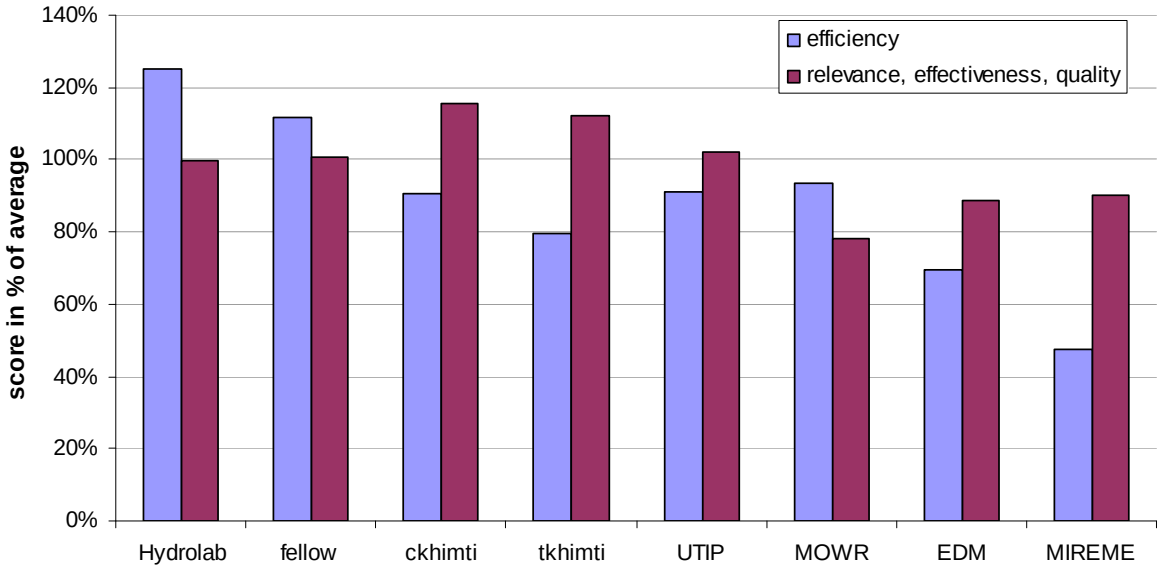
Benchmark Comparison Charts



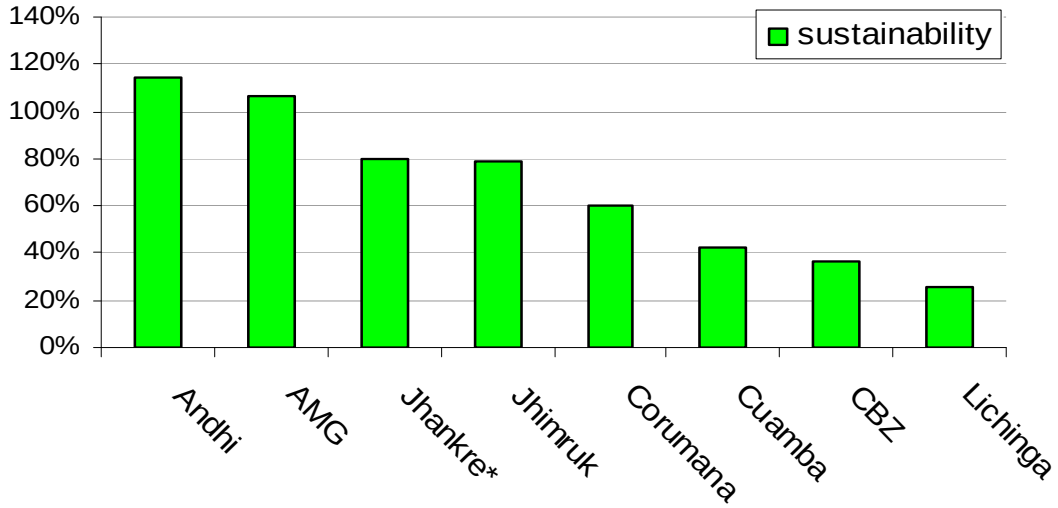
Efficiency Benchmark



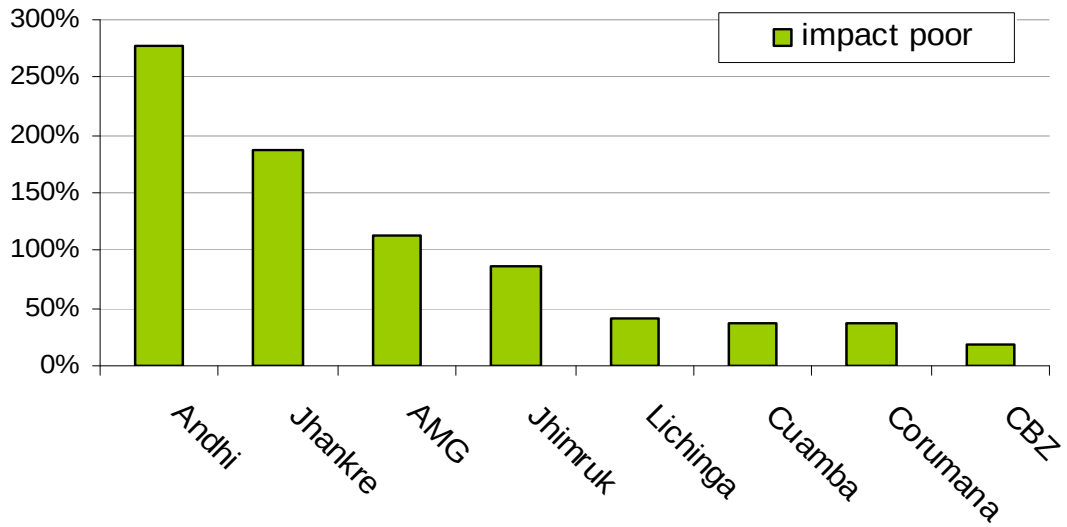
Relevance and Effectiveness Benchmark



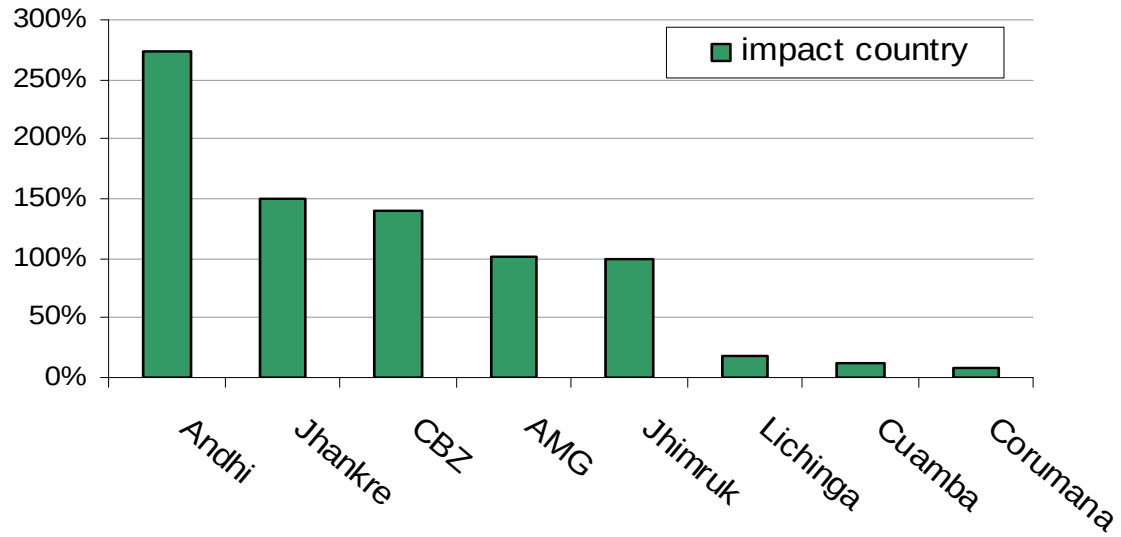
Non-infrastructure Projects Benchmark



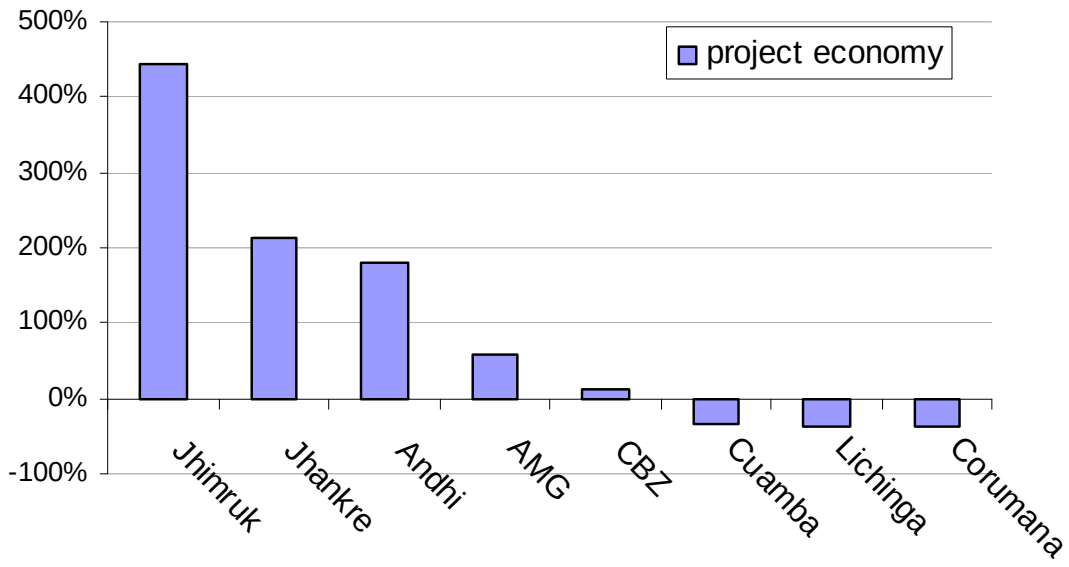
Sustainability Benchmark of Infrastructure Projects



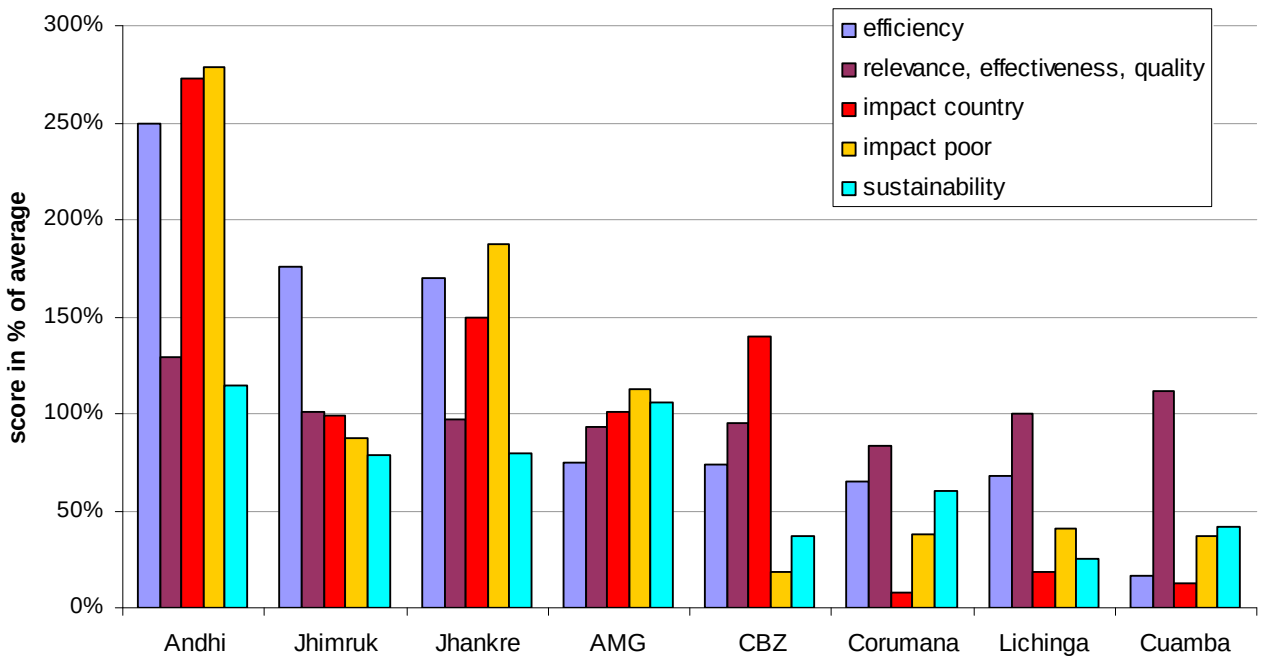
Poverty Impact Benchmark



Country Impact Benchmark



Project Economy Benchmark of Infrastructure Projects



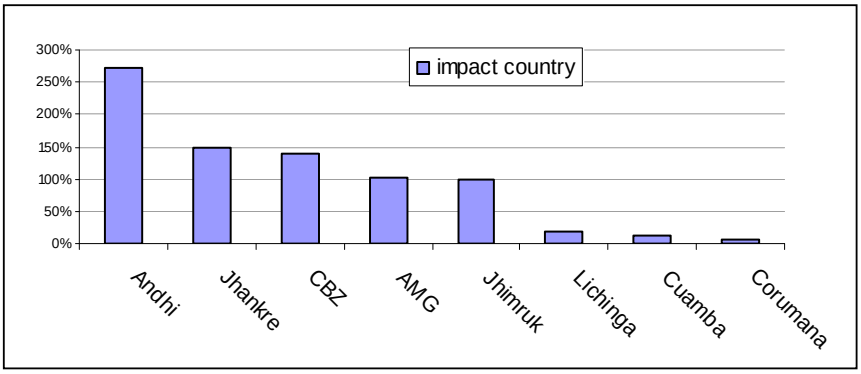
Benchmark Overview for Infrastructure Projects

Sensitivity analysis of "indirect benefit attributed to electricity" assumptions

The indirect benefit value (% of total benefits found in similar projects) is changed to observe the
The value is reduced to 50%, then doubled, to observe the change in country impacts of the project.

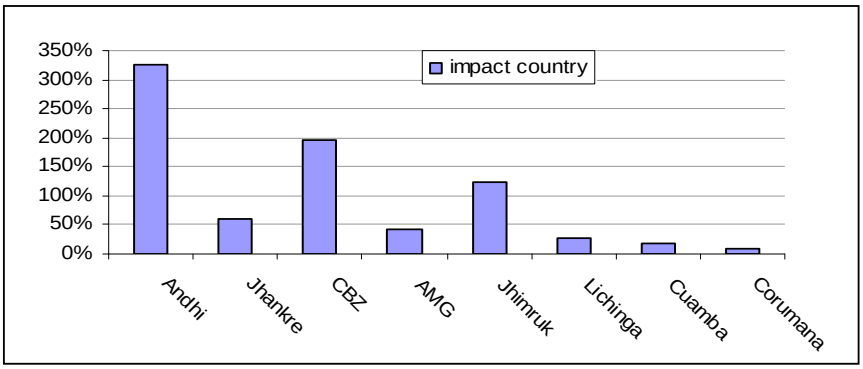
Best estimate: 30% of total benefits found in similar projects is attributed to the project

impact country	
Andhi	273%
Jhankre	149%
CBZ	139%
AMG	101%
Jhimruk	99%
Lichinga	18%
Cuamba	13%
Corumana	7%



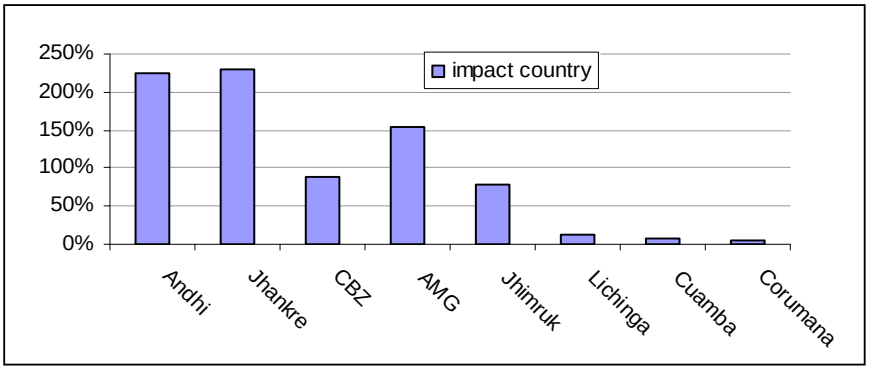
alt1: Only 15% of indirect benefits attributed to the project

impact country	
Andhi	326%
Jhankre	60%
CBZ	196%
AMG	41%
Jhimruk	123%
Lichinga	26%
Cuamba	18%
Corumana	10%



alt2: : 60% of indirect benefits attributed to the project

impact country	
Andhi	226%
Jhankre	230%
CBZ	88%
AMG	154%
Jhimruk	77%
Lichinga	12%
Cuamba	8%
Corumana	5%



Result: The projects without (CBZ) and those with a large proportion of indirect benefits (Jhankre, AMG) are affected significantly by a change in the variable, resulting in a distortion of the overall comparison.

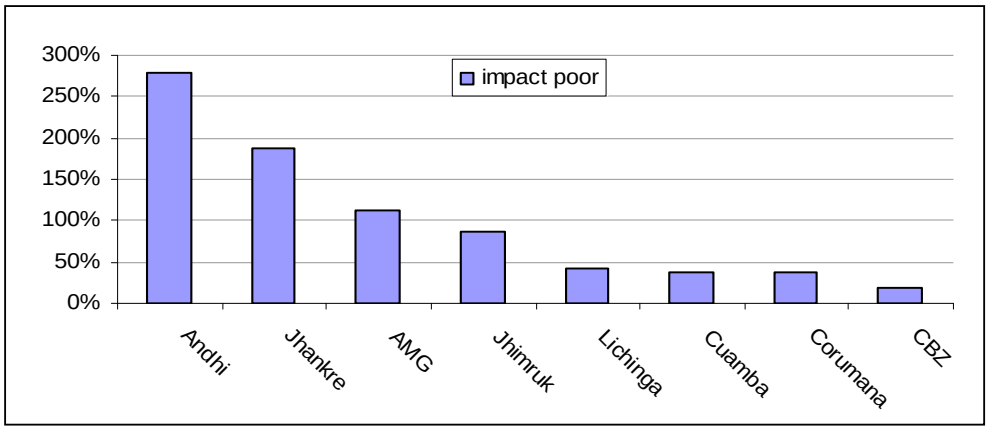
Conclusion: Because of the unbalanced impact of the variable, its value is relatively critical. The evaluation has used a value that resulted from a more in depth study (Mulder, Moz.) and finds it applicable also to Nepal.

Sensitivity analysis of "share of GDPattributed to the poor" assumptions

The share of GDP attributed to the poor section of the population is reduced to half, and doubled, and the change in project impact on the poor is observed.

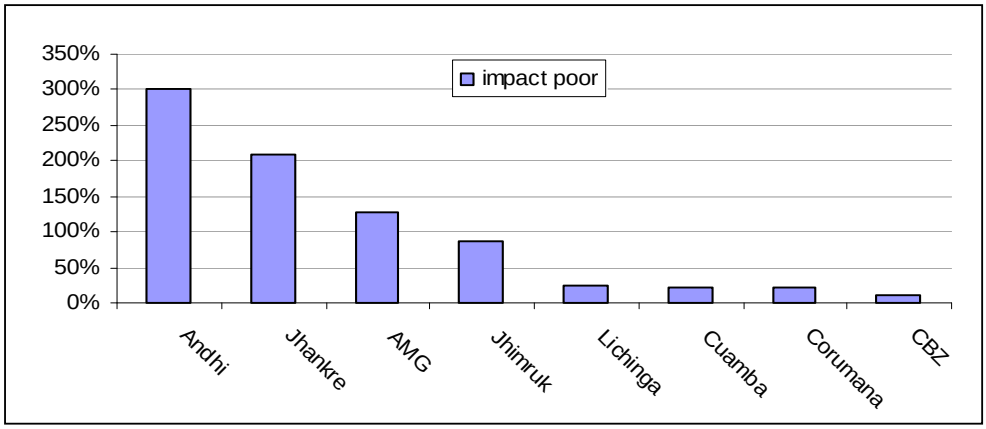
Original assumptio 10% share of GDP

impact poor	
Andhi	278%
Jhankre	187%
AMG	113%
Jhimruk	87%
Lichinga	41%
Cuamba	37%
Corumana	38%
CBZ	18%



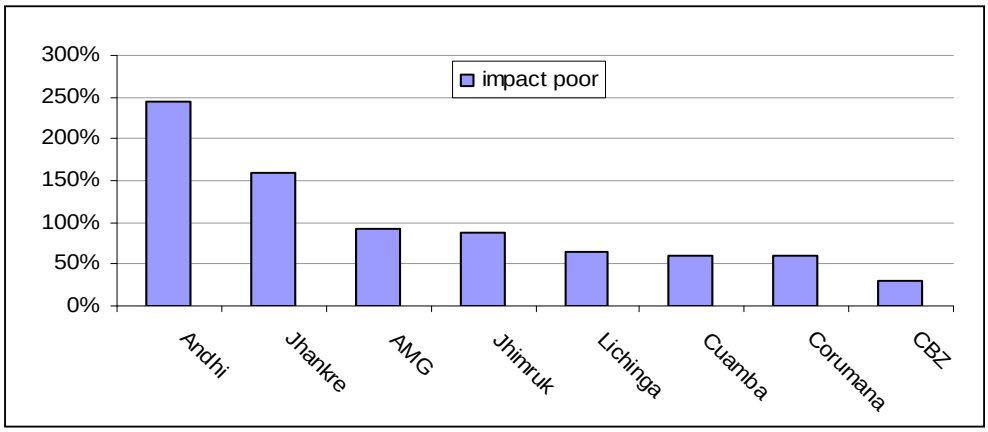
poor's part of GDP only 5%

impact poor	
Andhi	302%
Jhankre	208%
AMG	127%
Jhimruk	86%
Lichinga	24%
Cuamba	21%
Corumana	22%
CBZ	11%



poor's part of GDP 20%

impact poor	
Andhi	245%
Jhankre	159%
AMG	93%
Jhimruk	88%
Lichinga	66%
Cuamba	59%
Corumana	60%
CBZ	30%



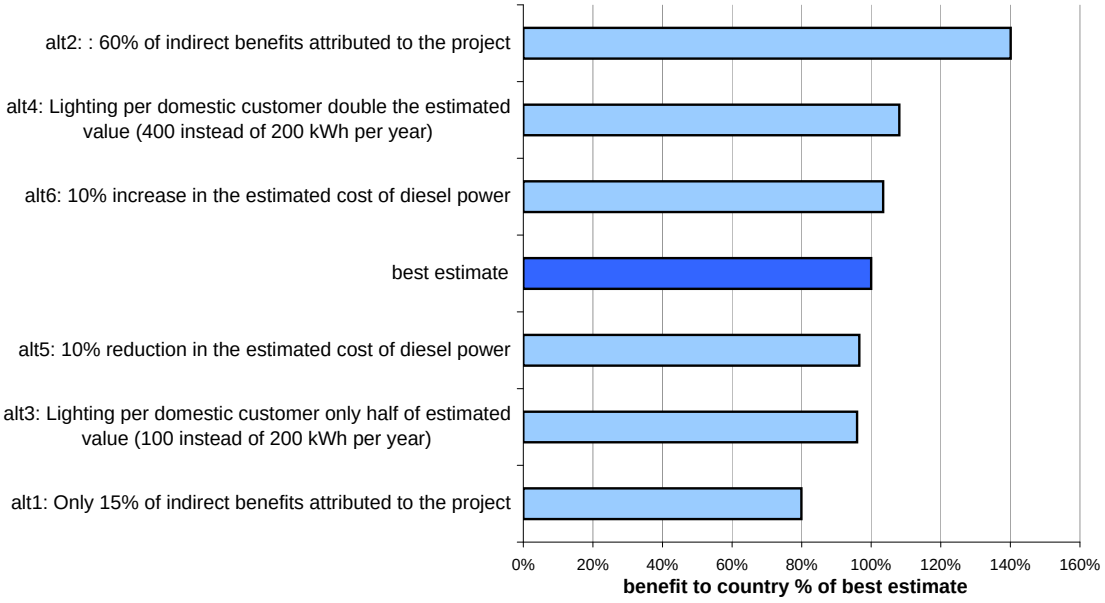
Result: A decrease in the variable increases the spread among the projects, and an increase has the opposite effect. This is because the benefit to the poor is variable among projects, and changing its value overstates the impact in projects with smaller benfit to the poor. Hower, project ranking is not affected.

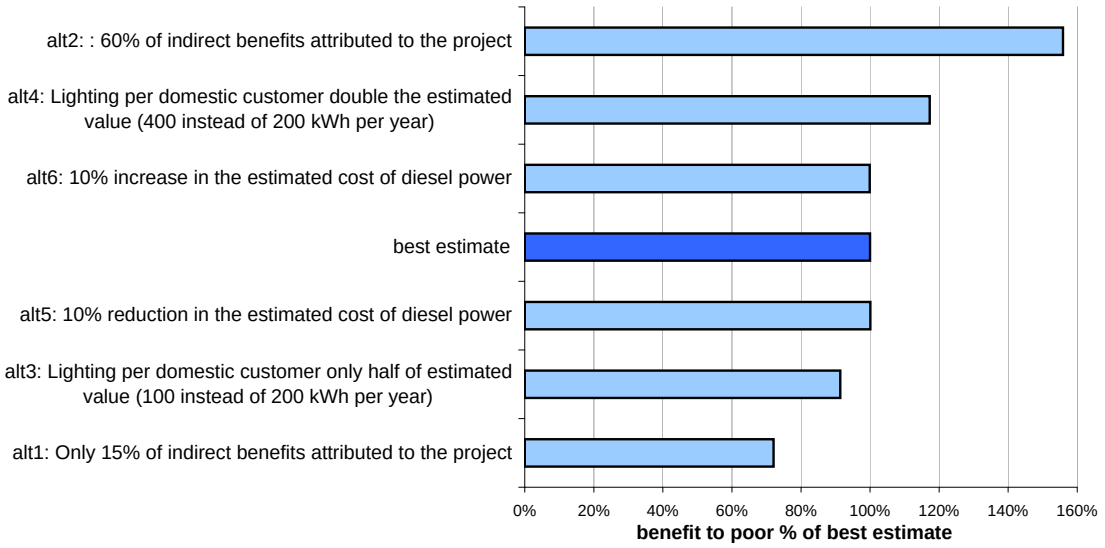
Conclusion: An error in the assumption does not affect project ranking.

Sensitivity analysis of key data on country benefit and benefit to the poor in terms of USDppp net benefit

Original data used result in the "best estimate" taken as 100%. Key variable s are doubled and put at half to observe the deviation of the results in relation to the best estimate.

	net benefit $ppp	country	poor
alt1: Only 15% of indirect benefits attributed to the project	301.8938	80%	72%
alt3: Lighting per domestic customer only half of estimated value (100 instead of 200	362.3195	96%	91%
alt5: 10% reduction in the estimated cost of diesel power	364.6525	97%	100%
best estimate	377.6032	100%	100%
alt6: 10% increase in the estimated cost of diesel power	390.5538	103%	100%
alt4: Lighting per domestic customer double the estimated value (400 instead of 200 l	408.1704	108%	117%
alt2: : 60% of indirect benefits attributed to the project	529.0219	140%	156%





Result: The "indirect benefits attributed to electricity" variable has a marked effect on the results. In view of the large change in variables. Tthe effect is moderate. All other variable changes have a marginal impact on the results.

Conclusion: The original results are relatively robust.