

Cross-section evaluation
of independent evaluations in 2007
in the thematic priority area
Renewable Energies and Energy Efficiency

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List of acronyms

ADA	Austrian Development Agency
AURA	Development-policy Framework for Contracts and Cooperation
BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BMZ	German Federal Ministry for Economic Cooperation and Development
CDM	Clean Development Mechanism (emissions trading instrument for developing countries according to the Kyoto Protocol)
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (Permanent Interstate Committee for Drought Control in the Sahel)
CODING	Corporación para el Desarrollo de la Ingeniería (NGO)
DAC	Development Assistance Committee of the OECD
DEDP	Department of Energy Development and Promotion
DFID	Department for International Development
DGIS	Directorate General for International Cooperation (Netherlands)
EAC	East African Community
EAP	Energy Advisory Program
EE	Energy efficiency
EnDev	Energising Development
ENEP	Energy Efficiency Promotion Project
ERIL	Local rural electrification initiative
FC	Financial cooperation
GEF	Global Environment Facility
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HE	Household energy
HEP	Household energy programme
HERA	Household energy sector programme
IEG	Independent Evaluation Group of World Bank
KfW	Kreditanstalt für Wiederaufbau
MDGs	Millennium Development Goals
M&E	Monitoring and evaluation
MOFCOM	Ministry of Commerce
NDRC	National Development and Reform Commission
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
P+D	Planning and Development Department at GTZ
PERACOD	Programme for Rural Electrification and Sustainable Management of Household Fuels, Senegal

List of acronyms (contd.)

PIEEP	Project for increasing productive and energy efficiency in Argentine SMEs
PPP	Public-private partnership
PPR	Project progress review
PREDAS	Regional Programme for the Promotion of Alternative Domestic Energies in the Sahel
ProBEC	Programme for Biomass Energy Conservation
PROFER	Promoting Renewable Energy in the Dominican Republic
PVP	Photovoltaic pump
RE	Renewable energy
REEE	Renewable energy and energy efficiency
SADC	Southern African Development Community
SHP	Small hydropower
SHS	Solar home system (photovoltaic unit for individual households)
SME	Small and medium-sized enterprise
TC	Technical cooperation
TEENET	Thailand Energy and Environment Network
TERNA	TERNA wind energy sector programme
ToRs	Terms of reference
UNDP	United Nations Development Program
UTA	Tarapacá University
ZAK	Approval for the offer design (GTZ body)

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Summary

In energy-related projects, the main aim is that technical cooperation should address the right themes (relevance). The question of whether the objectives formulated are actually reached (effectiveness) is less important than the development-policy results (impact) that are achieved. The relationship between the effort involved and the results (efficiency) is of secondary importance. However, if the results are not lasting, all the efforts made will have been wasted (sustainability).

Considering these aspects, it is possible to summarise the results of this thematic cross-section evaluation in relation to the weighting of the DAC criteria.

This cross-section evaluation covers 15 independent evaluations from the year 2007 in the thematic priority area 'Renewable Energies and Energy Efficiency', including six interim evaluations (Nepal, Pakistan, SADC, Senegal, Uganda and Ethiopia), three final evaluations (two in China and one in the Dominican Republic), and six ex-post evaluations (in the Sahel, Argentina, Brazil, Thailand, Turkey and Chile). Some of the evaluated projects and programmes differed considerably in terms of their objectives and activity areas. One third of the projects have objectives on the level of the requirements or general conditions needed for using renewable forms of energy, or improved energy efficiency. The majority of projects were intended to bring about results at intermediary level, i.e. specific measures were to be implemented for using sustainable energy systems. All the energy-efficiency projects and programmes had objectives in this field. Only one programme (China) had objectives at target-group level.

The projects and programmes reviewed were given an average overall rating of 2.47, which is between 'good' (2) and 'satisfactory' (3). A large proportion of the projects/programmes (80%) were rated as 'successful' (points 1 - 3); only three projects were rated as 'unsuccessful' (the Sahel, Turkey and Thailand).

Rating	Number	Per cent
very good (1)	1	6.7
good (2)	9	60
satisfactory (3)	2	13.3
unsatisfactory (4)	3	20
inadequate (5)	-	-
useless (6)	-	-
successful (1-3)	12	80
unsuccessful (4-6)	3	20

The 'relevance' of these projects was rated as especially good (1.6). By contrast, there was a large discrepancy between weighting and rating for the criteria of 'sustainability' and 'impact'. Despite a high-scoring weighting, there were no entirely good results (sustainability: 2.47; impact: 2.73). The discrepancy for 'effectiveness' was even more marked (rating 2.53). 'Efficiency' is regarded as less important and obtained a mid-range rating of 2.33.

It is noticeable that the timing of the evaluation greatly affected the rating of the projects and programmes. For example, all the interim evaluations received a rating of at least 'good', while the Ugandan project was in fact rated 'very good' (average: 1.83). Ratings in the final evaluations were much worse, averaging 2.67; the ex-post evaluations received an even lower rating of 3.0. All of the unsuccessful projects and programmes fall within this last group. No significant differences were found in the assessments of the various regions (Asia, Africa and Latin America) or the method of implementation (e.g. implemented by GTZ, consulting projects/programmes, etc.). Neither does the scope of the measures (funding volume) allow any definite conclusions to be drawn.

The evaluated projects and programmes are not clearly geared to poverty reduction, as has been required since 2007 in the new BMZ sector strategy. In most cases, this is not due to incorrect project or programme design and does not mean that no poverty reduction occurred in these projects. However, little is known about specific results. The same applies to the theme of gender. Despite its importance in development cooperation, the energy-related projects and programmes evaluated have difficulty in integrating this theme into their planning and implementation. This relates to the markers of the projects/programmes, and also to the lack of gender analyses and corresponding indicators. Notwithstanding the obvious importance of the theme, evidence of the direct effects that energy projects have on women remains anecdotal and speculative, and the measures implemented by the projects tend to remain sporadic and unfocussed.

In the evaluated projects and programmes, capacity development took place on many levels and turned out to be a decisive factor determining their success. The reports reveal that the greatest results can be achieved at the institutional and system level, yet most of the projects are still designed to work principally at the level of individual persons. Furthermore, it is important (above all for complex projects and programmes) to take into consideration GTZ's concept of sustainable development, but not all the projects actually consider it to the same extent.

The methodological approach taken by the projects/programmes received an overall positive rating. With the exception of four projects/programmes, all of them were active on all three levels (multilevel approach); the assessment of complex projects/programmes also revealed this approach to be more useful. In most cases, the meso level is regarded as the focus, in association with interventions at framework level, and demonstration measures at target-group level. However, the methodological approach has to be put into effect within a suitable implementation structure. Problems occur if the target level is not firmly anchored within the institution. Most projects and programmes work with the ministry responsible for energy as the most important implementation partner.

The evaluated projects and programmes have generated a number of technical and organisational innovations, in particular concepts for operating and financing sustainable energy systems. The reports also contain statements concerning subsidy models, investment and other sector-related issues. However, the reports do not go into much depth on these subjects.

In most cases, the evaluators regarded the modes of delivery as appropriate. Cooperation with other donors is also well coordinated by almost all the projects and programmes. The weakness, though, is results-based monitoring, which only exists in six projects/programmes (40%). Contributions to indirect results were recorded by the monitoring system in only two projects. Greater emphasis must be placed on this aspect during future project/programme implementation.

The major recommendations of this cross-section evaluation relate to the management of both current and future energy projects. The following points are recommended:

- a more critical evaluation of current projects/programmes, e.g. by recording milestones
- greater project orientation towards impact and sustainability by introducing indicators for poverty, gender and indirect results, and providing 'best practices' on these topics
- a more systematic approach to capacity development, especially on the level of organisational, network and system development

- improved knowledge management, including the systematic implementation of ex-post evaluations and a networked cross-sectoral monitoring and evaluation (M&E) system.

Furthermore, recommendations are made for the strategic orientation of the energy portfolio:

- greater focusing/profiling in Africa, where GTZ can raise its profile with some successful projects and its leading position in the field of domestic energy
- avoiding new projects/programmes in countries that are no longer to receive promotion, in order to avoid the sudden termination of failed projects/programmes
- expedient design of the German Federal Ministry for the Environment (BMU) climate protection fund (where projects without any direct relevance to poverty reduction are also possible)
- clear project/programme orientation to the objective of access to energy or climate protection, whereby individual technologies only represent a means to an end
- medium-term tripartite cooperation with anchor countries so that important experience gained in these countries can be passed on to others.

1. Introduction

1.1 Background, objectives and object of the cross-section evaluation

GTZ extended and optimised its evaluation system in 2005. The major innovation was to introduce independent evaluations, which, unlike self-evaluations (project progress reviews, PPRs) are not steered by the projects and programmes themselves, but by an independent unit at GTZ (Unit 08)¹. In 2007, GTZ commissioned independent research institutes and consulting companies to perform 30 independent evaluations (interim, final and ex-post evaluations) in two thematic priority areas, one of which was 'Renewable Energies and Energy Efficiency'. Based on the evaluation reports, one meta evaluation is conducted for each priority area. This serves to support institutional learning at GTZ and reporting to the German Federal Ministry for Economic Cooperation and Development (BMZ). The results contribute to GTZ's knowledge management and are made available to the public.

The cross-section evaluation is based on 15 evaluation reports from 2007 on the thematic priority area 'Renewable Energies and Energy Efficiency'. The following individual projects and programmes were evaluated in the following countries:

- six interim evaluations (Nepal, Pakistan, SADC, Senegal, Uganda, Ethiopia²)
- three final evaluations (two in China, one in the Dominican Republic)
- six ex-post evaluations (Africa supraregional, Argentina, Brazil, Thailand, Turkey, Chile³)

The object of this meta evaluation, according to preestablished Terms of Reference⁴, is to compile a summary of the results of the 15 individual evaluations, identify recurring strengths and weaknesses and factors determining success and failure, and deduce lessons learned that transcend individual projects or programmes, as well as to make recommendations for the future implementation of energy projects and programmes and the strategic orientation of the energy portfolio⁵. In so doing, the aim is to identify characteristics or differences between the thematic areas 'Renewable Energy for Rural Electrification', 'Household Energy' and 'Energy Efficiency'.

¹ PPRs are regularly performed at the end of each promotion phase of a project or programme, whereas independent evaluations only take place sporadically in selected sectors.

² Country measure of the TERNA wind energy sector programme (supraregional)

³ Country measure of the sector programme Resource-conserving irrigation with photovoltaic pumping systems (supraregional)

⁴ ToRs, see annex

⁵ The choice of Africa as a priority area and the planning of energy projects and programmes within the scope of climate protection programmes was of particular interest in this context.

1.2 For the reader's guidance

1.2.1 Overview of the evaluated projects and programmes

The summary below lists the evaluated projects and programmes according to when they began, including the abbreviations used in this report (second column):

Project title	Abbreviation	Country	Theme ⁶			Timing of eval.	Funding volume ⁷ million EUR		Term
			R	H	E				
Energy Efficiency Promotion Project	ENEP Thailand	Thailand			X	ex-post	6.4 15.1	BMZ Partner	Oct. 1993 to March 2002
Rural Infrastructure and Vocational Training in Tibet (Comp. 3: Rehabilitation of small hydropower stations)	SHP Tibet	China	X			final	1.8 0.5	BMZ Partner	Dec. 1994 to Sept. 2006
Energy saving in small and medium-sized industries in the state of Rio de Janeiro, Brazil	EE Brazil	Brazil			X	ex-post	3.1 2.9	BMZ Partner	July 1995 to June 2004
Household energy programme Sahel, regional component of the supraregional household energy programme (HEP supraregional)	HEP Sahel	Mali, Burkina Faso		X		ex-post	2.8 5.4	BMZ EU	Jan. 1997 to Dec. 2005
TERNA wind energy programme; country measure Ethiopia	TERNA Ethiopia	Ethiopia	X			interim	0.3 0.1	BMZ ADA	May 1997 to Oct. 2008
Resource-conserving Irrigation with Photovoltaic Pumping Systems (PVP); country measure Chile	PVP Chile	Chile	X			ex-post	0.1	BMZ	Jan. 1998 to May 2002
Programme for Biomass and Energy Conservation in Southern Africa - ProBEC	ProBEC	SADC		X		interim	4.4 1.6 6.0	BMZ EU DGIS	June 1998 to May 2008
Energy Advisory Project Uganda	EAP Uganda	Uganda	X	X	X	interim	6.1 2.0	BMZ DGIS	June 1999 to May 2008
Project for increasing productive and energy efficiency in Argentine SMEs	PIEEP	Argentina			X	ex-post	2.6 1.4	BMZ Partner	July 1999 to Dec. 2005
Small Hydropower Promotion, Nepal	SHPP Nepal	Nepal	X			interim	5.1 2.0	BMZ Partner	April 2000 to Sept. 2009
Renewable Energies in Rural Areas, China	RE China	China	X			final	7.1 31.3 6.9	BMZ/TC BMZ/FC Partner	Sept. 2001 to Sept. 2007
Promotion of Energy Efficiency in Buildings, Erzurum, Turkey	EE Turkey	Turkey			X	ex-post	1.4 0.2	BMZ Partner	Nov. 2002 to Oct. 2005
Programme for Rural Electrification and Sustainable Management of Household Fuels	PERACOD	Senegal	X	X		interim	15.2 2.6 0.4	BMZ DGIS Mepred	Aug. 2003 to July 2015
Promoting Renewable Energy in the Dominican Republic	PROFER	Dominican Rep.	X			final	1.1 0.4	BMZ Partner	March 2003 to Feb. 2007
Renewable Energy and Energy Efficiency in Pakistan	REEE Pakistan	Pakistan	X		X	interim	3.5	BMZ	Sept. 2005 to Aug. 2011

Table 1: Overview of evaluated projects and programmes

⁶ R = Renewable energies, H = Household energy, E = Energy efficiency

⁷ Only refers to the evaluated part of the projects/programmes. In three cases (SHP Tibet, PVP and TERNA), this does not correspond to the total funding volume of the project/programme.

Six of the projects and programmes were or are located in Asia, five in Africa and four in Latin America. The **overall volume** of the reviewed projects and programmes is **EUR 137.2 million**, of which 89.7 million is financed by BMZ (one of the projects/programmes being a cooperative project/programme with a substantial financial cooperation component of EUR 31.3 million). The contributions implemented by GTZ had a volume of EUR 76.5 million (55%). This includes three projects/programmes with combined financing totalling EUR 10.6 million within the Dutch-German energy partnership Energising Development (EnDev). GTZ entrusted five projects/programmes to consulting companies (SHP Tibet, SHPP Nepal, EE Turkey, PROFER, REEE Pakistan). The overall costs of the individual projects and programmes differ substantially. More than EUR 45 million was expended for the cooperative programme RE China, whereas the PVP country measure in Chile only cost EUR 0.1 million⁸. Partner contributions to the overall costs amount to EUR 29.4 million (21.4%) and vary individually between 0% (e.g. all projects and programmes in Africa) and 70% (EE Thailand). The average duration of the projects and programmes is about eight years, in some cases up to 12 years. Three projects/programmes were discontinued due to political decisions by BMZ: EE Turkey (after one phase, i.e. three years), PIEEP (only one phase, repeatedly extended for a short period) and PROFER (only one phase of four years).

In most cases, evaluation focused on an entire development measure, including less complex projects and complex programmes. In one case, an (energy-related) component of a vocational training programme was examined (SHP Tibet). Besides bilateral projects/programmes, three supraregional projects/programmes were reviewed, though in the case of the photovoltaic pumping system programme (PVP), only the country measure in Chile and in the TERNA wind energy programme, only the country measure in Ethiopia were examined⁹. HEP Sahel, on the other hand, was assessed as a supraregional programme in nine Sahel countries.

1.2.2 Classification of projects and programmes according to themes

Although in name the meta evaluation only refers to renewable energies (RE) and energy efficiency (EE), it also covers a third theme, that of household energy (HE). Wherever expedient, this thematic division is retained in the following chapters. It should, however, be borne in mind that some of the projects and programmes cover several themes. REEE Pakistan is a programme devoted equally to using renewable energies for rural electrification and to improving EE in small and medium-sized enterprises (SMEs). This programme addresses two different core problems and bases its interventions on two different results

⁸ plus the costs from supraregional measures, making a total of about EUR 0.4 million

⁹ The supraregional sector programme 'Resource-conserving Irrigation with Photovoltaic Pumping Systems' (PVP) also conducted country measures in Jordan and Ethiopia. The supraregional TERNA wind energy sector programme carried out eight more country measures.

chains for each theme. EAP Uganda is active via three components in all three thematic areas aimed at different target groups. PERACOD Senegal is active both in the fields of RE and HE, but the target group is the same. Although the TERN programme focuses on renewable energies, it does not serve to promote rural electrification. Altogether, nine projects and programmes are concerned with the theme of RE, four with HE and six with EE. These projects and programmes are each allocated to a thematic area as summarised in Section 2.1, but in the assessment according to DAC criteria and in the analysis of individual aspects, they are examined with regard to all the thematic areas in which they intervened.

1.2.3 Comparability of the evaluation reports

In order to identify cross-cutting results from the overview of the 15 evaluations, the reports must be comparable to a certain degree. In particular, they need to have the same structure and to apply the same criteria for assessment, i.e. the evaluation criteria relevance, effectiveness, impact, efficiency and sustainability established by the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD-DAC). In addition, quality assurance was performed by GTZ's Evaluation Unit (induction of evaluators, inception report, preliminary discussion, final discussion with comments on methodology and contents) and by the institutions commissioned by GTZ.

However, readers of this report should be aware that there is a limit to the comparative assessment of the projects and programmes. On the one hand, the objectives and general conditions (including the duration of implementation and the budget) of the individual projects and programmes differ considerably. On the other, the evaluations were implemented by different experts and the projects/programmes were therefore analysed, interpreted and assessed according to subjective grids – despite all efforts to be objective and apply the specified criteria – with different experiential values of the evaluators being applied as benchmarks for comparison. The projects and programmes reviewed also allow only limited statements to be made on GTZ's overall portfolio in this sector since they are merely a *selection* that makes no claim to be representative.

This meta evaluation nevertheless offers valuable findings that should be borne in mind for steering ongoing projects and programmes, but especially when planning new ones. For the first time, comprehensive ex-post evaluations for technical cooperation projects/programmes in this sector are available as a basis for analysing long-term results and identifying factors that are crucial for the sustainability of the development measures.

1.3 Methodological procedure

The meta evaluation is based on the evaluation reports of the independent evaluations and, as an additional source of information, on the offers of the evaluated projects and programmes (especially to prove formal aspects such as objectives, indicators and markers). This means no further surveys, inquiries or other documents were consulted with regard to the reviewed projects/programmes. Further important documents that served as background material were the BMZ sector strategy 'Sustainable Energy for Development' (2007) and GTZ's concepts of sustainable development¹⁰ and capacity development¹¹ (which were only written after many of the evaluated projects and programmes had been planned and implemented, however).

The quantitative results of this report (average ratings of DAC criteria) are therefore statistical assessments that must be viewed subject to the limitations outlined above. Readers should be aware that the qualitative assessment is based on a qualified but subjective selection and interpretation of statements by the author. Another author might have selected and interpreted these quite differently.

2. Objectives and activity areas of the evaluated projects and programmes

2.1 Brief description of projects and programmes

Although the evaluated development measures all fall under the 'Energy and sustainable development' sector in the wider sense, in some cases they differ substantially in terms of their objectives and activity areas. This may affect their comparability, but can be seen as a positive result of planning that is geared to the specific framework, power base and interests of the intermediaries (avoiding ready-made 'blueprints'). In the following section, the reviewed projects and programmes in the three thematic areas are briefly presented together with their objectives and major activity areas. For more detailed examination, it is recommended to read the executive summaries or the complete evaluation reports¹².

2.1.1 Renewable energies for rural electrification

Most of the evaluated projects and programmes come under this thematic area, as befits their share of GTZ's energy portfolio. Some of the projects and programmes have a clear technological focus (small hydropower in the case of SHP Tibet and SHPP Nepal, photovoltaics in PVP Chile and wind energy in the TERNA programme), but not all forms of renewable energy are or were promoted to the same extent in the other projects and

¹⁰ GTZ (2006): Sustainable development - GTZ's concept (<http://www.gtz.de/en/publikationen/12347.htm>)

¹¹ GTZ (2007): GTZ's Understanding of Capacity Development - A Guiding Framework for Corporate Action

¹² Executive summaries of the evaluation reports are available at

<http://www.gtz.de/en/leistungsangebote/11126.htm>. The complete reports can be ordered from GTZ's Evaluation Unit.

programmes either. In PERACOD, for example, the main emphasis is on disseminating photovoltaic (PV) systems. RE China, REEE Pakistan and PROFER promote small hydropower as well as PV. Biogas does not play a role in any of the projects and programmes.

Besides supplying electricity, some projects and programmes also utilise biomass (PERACOD) and provide hot water using solar heating systems (REEE Pakistan, PROFER, EAP Uganda). None of the reviewed projects and programmes address rural electrification in a technology-neutral way, e.g. by including conventional systems (grid extension, diesel generators)¹³.

EAP Uganda promotes a variety of technologies but is listed under household energy due to its focus on this thematic area. REEE Pakistan, on the other hand, is also listed in this area despite its activities in EE because the major implementation partner is the Alternative Energy Development Board. PERACOD is also listed here although it includes a household fuels and forest management component¹⁴.

Rehabilitation of small hydropower (SHP) stations, Tibet

Evaluated component 3 of the GTZ programme Rural Infrastructure and Vocational Training in Tibet aimed to have SHP stations rehabilitated and sustainably operated by the population (leaseholders) and the public administration. In so doing, the target group was to find 'economically advantageous and lasting employment opportunities' (programme objective). The implementation partner of the component carried out from 2002 to 2006 by a consulting company was the Prefecture Water Resources Bureau of the Tibet Autonomous Region of the People's Republic of China. The component design was geared to productive use of electricity, improved management capabilities and technical understanding, to be acquired in training courses and by applying the leaseholder principle. This improved knowledge was intended to ensure sustainable operation of the SHP stations.

Country measure of the supraregional wind energy sector programme (TERNA Ethiopia)

The overall objective of the TERNA wind energy programme is 'to improve the technical and economic capacities of experts and managers of public and private organisations so as to promote on-grid wind energy use'. This is done by means of country measures that advise the relevant partners on assessing wind energy potentials and resources, on energy policy and on how to train experts and managers in the energy sector. In Ethiopia, TERNA has been concentrating since the end of 2004 on building the capacities of the project partner, the

¹³ This is possible for example in the projects/programmes promoted by the Dutch-German Energy Partnership 'Energising Development', whose central objective is to improve the energy supply to the target groups.

¹⁴ The evaluation reports and offers do not show clearly which proportion of funds is used for which component, otherwise it would have been possible to allocate the projects/programmes more precisely.

national energy company EEPCo in the wind energy sector, and conducting feasibility studies to prepare for funding and implementing actual wind energy projects. The project objective of the Ethiopia country measure is 'The technical and economic capacities of the experts and managers of energy provider EEPCO are improved to enable increased use of wind energy for on-grid power generation'¹⁵.

Country measure of the supraregional sector programme 'Resource-conserving Irrigation with Photovoltaic Pumping Systems', Chile (PVP Chile)

Within the pilot project, the possibilities for using photovoltaically operated pumps (PVPs) for small-scale irrigation were tested from 1998 to 2002 in three partner countries (Ethiopia, Chile and Jordan), and their advantages over conventional diesel systems were documented. The project objective was: 'Users and operators of the pilot plants and intermediary institutions can assess PV-operated irrigation systems and disseminate the experience they have gained with regard to application'. The evaluated project contribution in Chile covered the provision of the PVPs, on-the-job training, PR work, advice and ongoing support as well as documentation of experience. The partner was the energy centre of the University of Tarapacá (UTA-CER) and the non-governmental organisation (NGO) Corporación para el Desarrollo de la Ingeniería (CODING).

Small Hydropower Promotion (SHPP Nepal)

SHPP Nepal commenced in 2000 and is due to end in 2009. At the time of the evaluation, the project was about to begin its third promotion phase. The lead executing agency is the Nepalese Ministry of Water Resources (MoWR). Various institutions under the MoWR and NGOs and the private sector companies investing in SHPP are involved as implementing organisations. The project addresses the problem of inadequate power supply and endeavours to improve the social and economic living conditions of the rural population by promoting private investment in small hydropower plants and their use by the population. The overall objective of the project is: 'The further spread of plants to ensure energy supply through small hydropower in rural areas of Nepal is guaranteed'. The project pursues a three-level approach: At macro level, it advises government departments on auditing and on producing general guidelines. At meso level, which is the project's priority area, the project serves as a mediation body for investor groups, financial service providers and end consumers in the SHP sector. At micro level, the project supports end consumers through training measures. The project focuses on activities at meso level.

Renewable Energy in Rural Areas (RE China)

¹⁵ In February 2008 (after the evaluation), the partner launched a competitive bidding procedure for wind parks, which led to a EUR 210 million contract being awarded to set up a 120 MW wind park in Ashegoda, Ethiopia. The project ended in October 2008.

The Renewable Energy in Rural Areas Programme in China is the most costly of the evaluated projects and programmes (at total costs of EUR 45 million) and also the only cooperative programme. It was implemented from 2001 to 2007 together with the National Development and Reform Commission (NDRC), the Ministry of Commerce (MOFCOM) and KfW. The objective of the technical cooperation programme was to improve the living and working conditions of the rural population by providing energy services based on renewable energies. The programme supported the state Brightness Programme to supply some 23 million people in western parts of China with electricity. For this, PV plants were installed in decentralised village and municipal systems, and to a lesser extent, hybrid systems (wind/PV) and micro hydropower stations (less than 5 KW) were installed. In the provinces of Yunnan and Gansu, KfW financed the hardware and installation of PV systems. To ensure the sustainability of these purely hardware-based programmes, the GTZ programme secured the long-term operation of the plants through training and quality assurance measures. Three programme components concentrated on institutional advice, dissemination strategies and technical quality improvement.

Programme for Rural Electrification and Sustainable Management of Household Fuels, Senegal (PERACOD)

The overall objective of the programme commenced in 2003 is: 'The rural population's access to energy services has improved in the two priority areas of German development cooperation'. The major partners at national level are the Directorate of Energy, the Directorate of Forestry and the rural electrification agency ASER. Component 1, *national energy planning*, aims to implement improved energy planning among partners. Component 2, *household fuels and forest management*, aims to balance supply and demand for household fuels, mainly wood and charcoal. It is composed of the three sub-components alternative household fuels, improved stoves and forest management. Component 3, *rural electrification*, tries to improve rural electrification structures, methods and instruments. Here, PERACOD operates chiefly by implementing decentralised solar electrification measures within the local rural electrification initiative ERIL. With funds from the Dutch-German energy partnership EnDev, activities to promote improved stoves and decentralised rural electrification were supplemented during the ongoing phase. One of the programme's approaches is to establish measures via pilot projects that can then be continued at national level.

Promotion of Renewable Energies in the Dominican Republic (PROFER)

The objective of the technical cooperation project PROFER was to support political decision-makers in the Dominican Republic in creating favourable conditions for using renewable energy. In so doing, it was able to build on the initial steps that had been taken (draft legislation and special fund to promote RE). The project had been planned to run for an overall term of eight years, with two promotion phases of four years each. However, due to BMZ prioritisation, only the first phase was conducted from 2003 to 2007. The project acted at several intervention levels. At macro level, the two partners (the Ministry of Industry and Commerce and the National Energy Commission) were advised on formulating the political and strategic objectives and on fleshing out the existing framework. At micro level, models were developed in cooperation with the rural municipalities for planning, installing and operating micro hydropower plants for rural power generation. The meso level dealt with identifying and promoting investments for the use of renewable energies together with the private sector.

Renewable Energies and Energy Efficiency Promotion, Pakistan (REEE)

The REEE programme was started in 2005 and is still ongoing. Its overall objective is to enhance capacities in the private and state sectors to promote renewable energies (RE) in the context of rural electrification, and to implement EE measures in small and medium-sized industries. Intermediaries are the experts and managers of the partner institutions the Alternative Energy Development Board and the National Energy Conservation Centre (ENERCON), as well as employees in the energy service sector and the industrial associations of the productive sector. The programme consists of the following two components: (1) decentralised supply of renewable energies to off-grid regions, and (2) boosting energy efficiency in selected industrial sectors. The programme strategy comprises elements of multi-level and multi-actor approaches. To achieve the programme objective, activities concentrate on training and capacity building, institutional development and policy advice, and on implementing pilot and demonstration measures.

2.1.2 Household energy (HE)

Only two projects and programmes fit into this thematic area in the stricter sense (HEP Sahel and ProBEC), whereas EAP Uganda is also concerned with promoting RE and EE. This project has a very comprehensive approach, with components on strategy development, implementation at district level, capacity building in the private sector for EE and among key actors for RE and HE. This means it cannot be clearly allocated to the thematic areas. It is listed in this section due to the importance of HE for Uganda.

Household Energy Programme (HEP Sahel)

HEP Sahel was a regional component of the supraregional household energy programme (HEP supraregional) from 1996 onwards. When the second phase commenced from 2000 onwards, it became an independent development measure financed by BMZ for nine countries in the Sahel zone, headquartered in Burkina Faso, and at the same time was completely integrated into the Permanent Interstate Committee for Drought Control in the Sahel (CILSS). It was also given a new name, the Regional Programme for the Promotion of Alternative Domestic Energies in the Sahel (PREDAS). From 2002, PREDAS received support from the European Union (EU) in addition to assistance from the German Federal Government. German financing ended in December 2005. In the course of its implementation, the programme underwent a substantial change in design. Whereas in previous projects, the main focus was on technical issues and sectoral support for stove dissemination projects, from 1994 HEP supraregional began to provide more conceptual advice to these technical cooperation projects. The objectives then included the social and economic effects that applying new technologies and saving firewood had on women users. In its final phase from 2003, HEP supraregional concentrated on policy advice, especially in the context of two regional components in southern and West Africa. Mention should be made of the integrated and participatory design of the programme, which included various development cooperation actors and sectors, such as health and forestry.

Programme for Biomass and Energy Conservation in Southern Africa (ProBEC)

The ProBEC programme had been running for almost 10 years when the evaluation was performed. The objective of this programme, conducted jointly with the Directorate of Infrastructure and Services of the Southern African Development Community (SADC), was to pilot concepts for commercially disseminating technologies for the efficient use of biomass energy in selected member states, and to introduce an enabling environment into political processes. The three components were directed at the political level, the intermediary level and the consumer level. Services included training and advice for energy ministries, national advisory groups and NGOs, technical and commercial advice for producers of efficient stoves and information initiatives among private and commercial consumers. At micro level, demonstration events were held in villages and communal kitchens. The programme was financed solely by the German and Dutch side, and ended in 2008.

Energy Advisory Project (EAP Uganda)

The Energy Advisory Project provided useful support in its initial years, from 1999 onwards, particularly for strengthening the institutional and staffing capacities and raising the profile of the partner, the energy department of the Ministry of Energy and Mineral Development. In the

third phase on which the independent evaluation focused (and which ended in 2008), the project work concentrated on measures for the efficient use of biomass, increasing energy efficiency in the industrial, commercial and private sectors, and the widespread introduction of technologies for using renewable energy sources for decentralised power generation. Priority was given to the poor rural population in three districts of Uganda. The agreed overall and phase objective was: 'Access to modern sustainable energy services for businesses and the population is improved, with special consideration being given to poor population groups'. In addition to the German contribution, the project received funding from Dutch development cooperation. Its sectoral implementation focused mainly on the macro and meso levels.

2.1.3 Energy Efficiency (EE)

Four of the projects and programmes exclusively addressed the theme of energy efficiency. EE Brazil and PIEEP were concerned with energy efficiency in SMEs, whereas EE Turkey dealt with EE in buildings. ENEP Thailand focused equally on both areas. None of these projects and programmes were concerned with EE in the transport sector or HE consumption, for example. While the project title and objective of EE Brazil mention energy savings and the rational use of energy, these terms are no longer used in more recent projects and programmes (which speak instead of energy efficiency). PIEEP extended the approach by integrating EE into general productive efficiency, i.e. it promoted the efficient use of other resources such as water and raw materials as well as energy.

Apart from 'pure' EE projects and programmes, one component of REEE Pakistan is also concerned with EE in industry, which is given equal priority to rural electrification (with its own implementation partner). EAP Uganda also has a component that deals with EE in general (industry, commerce and households). In a forthcoming phase, the theme of traffic is to be included as well.

Energy Efficiency Promotion Project (ENEP), Thailand

The Energy Efficiency Promotion Project (ENEP) ran from 1993 to 2002. The implementation partner was the Bureau of Energy Regulation and Conservation and the Energy Conservation Programme of the Department of Energy Development and Promotion (DEDP) in the Ministry of Interior. The point of departure was the Thai Energy Conservation and Promotion Act, whose implementation the project was designed to support. Its objective was to implement measures to improve energy efficiency in industry and buildings in order to reduce energy intensity and cut CO₂ emissions. The project focused its interventions on the meso level. During the final phase (1999 to 2002), four service packages were implemented: training programmes, a demand-oriented marketing and information concept in cooperation with suppliers of EE technologies, improvement of DEDP's management capacity and the

establishment of a results-based monitoring system. Support was also provided to the Thailand Energy and Environment Network (TEENET).

Energy Efficiency for Improving the Competitiveness of SMEs in the state of Rio de Janeiro (EE Brazil)

This project was conducted from 1995 to 2004 (two promotion phases). The project objective for the first promotion phase was: 'SMEs are enabled to make efficient use of energy'. In the second phase, the implementation of relevant measures was added. The project was designed to complement the governmental energy savings programmes whose target group was mainly large industrial companies. To this end, it operated in four areas with one cooperation partner in each: SEBRAE/RJ was responsible for overall coordination, raising awareness at SMEs, providing information and transferring the results to the northeast of the country. INT was to give technical and sectoral advice to SMEs and establish them as demonstration units, and launch demand-driven EE advisory services on the market. SENAI/RJ had the task of developing basic and further training concepts and integrating them into its training system. CEFET/RJ was to help train EE advisors in the second promotion phase.

Project for increasing productive and energy efficiency in Argentine SMEs (PIEEP)

The *Proyecto Incremento de la Eficiencia Energética y Productiva* (PIEEP) was one of the last German bilateral technical cooperation projects in Argentina. The lead executing agency was the *Secretaría de Energía* in the Ministry of Economy. The project objective was: 'The conditions for implementation measures geared to the efficient and ecologically sustainable use of resources at SMEs are improved, and selected SME sectors implement exemplary measures and act as multipliers. Implementation of the project (1999 - 2005) coincided with a period of rapidly changing overall conditions and economic and political crises. To achieve its objectives and outputs, the project chose a concept based on a multi-level approach, one of regional and sectoral diversification based on demonstration projects, and of combining energy efficiency with general process optimisation (productive efficiency).

Promotion of Energy Efficiency in Buildings, Erzurum, Turkey (EE Turkey)

This project was carried out between November 2002 and October 2005 by the consulting company MVV. Its objective was to implement measures to cut energy consumption by the municipal government and public and private users of buildings in Erzurum. This aimed to help reduce the increasing rate of energy consumption in buildings in line with the national energy policy and act as an incentive for other municipalities. The project design was based on a multi-level approach. At macro level, the National Energy Conservation Centre was supported in developing training courses for energy managers and in adjusting legislation and statutory

orders to promote energy efficiency. At meso level, the local government of the regional capital of Erzurum in the eponymous region was supported in setting up an energy advisory centre. At the same time, three different buildings were identified at micro level as demonstration projects (a residential building, a fire brigade building and an office building), and stakeholders were trained in themes related to energy efficiency in buildings.

2.2 Comparison of objectives levels

The design of German technical cooperation projects and programmes is based on so-called results models, which present the causal relationships between concrete activities and their results. According to this, GTZ or the commissioned consulting company provides outputs together with partners. These outputs are used by intermediaries (in exceptional cases, also directly by the target groups). The use of these outputs creates desired changes at intermediary level, e.g. an improved range of energy services, implemented measures, and improvements in general conditions. However, results can only be achieved for target groups when the latter make use of these changes. The objectives of the projects and programmes are generally formulated at the direct results (outcome) level. GTZ is responsible for achieving objectives together with its partners.

Looking at the GTZ results model, it becomes apparent that the objectives of the reviewed projects and programmes are located at different levels¹⁶.

¹⁶ Most of the evaluated projects and programmes were commenced before the introduction of the Development-policy Framework for Contracts and Cooperation (AURA) in 2003/2004. This means that no results models were available for the ex-post evaluations in particular, but were subsequently formulated during the evaluations.

Fig. 1: Objectives of the reviewed projects and programmes along a general results chain

One third of the projects and programmes have objectives at the level of prerequisites or overall frameworks for using renewable energy sources or improved energy efficiency. REEE Pakistan starts at an even lower level by aiming to build the capacities of the relevant actors. Whether these then use the capacities to achieve overarching objectives such as poverty reduction, environmental and climate protection, and to what extent this use benefits the target groups is no longer the responsibility of the project or programme. A similar statement applies to PVP Chile, where users and operators are to be enabled to assess PV pumps and disseminate their experience. Whether they actually do so lies beyond the project's objective.

In the majority of the projects and programmes, results should be produced at intermediary level, i.e. concrete measures to use sustainable energy systems should be implemented. The objectives of all **EE projects and programmes** are located in this area, even if this is restricted to pilot measures or selected regions or sectors.

In EAP Uganda and SHPP Nepal, changes are not only aimed at among intermediaries, but are meant to be used by the target groups. Whereas PERACOD is only meant to improve access to energy services, EAP Uganda targets the *use* of these services. Only one programme (**RE China**) has its overall objective at the level of results for the target groups ('The living conditions of the rural population are improved').

In all, the objectives of most of the projects and programmes are considered appropriate. Problems occur where objectives apply to a mixture of levels. Thus, the phase objective of SHPP Nepal aims to establish a market, but also to facilitate economic activity at target-group level. While the project met the first part of the objective, it was not possible to achieve a clear benefit for the target groups. When formulating objectives, care must therefore be taken to allocate them clearly and avoid 'ands'.

Although no significant trends can be identified in terms of the project/programme objectives, most of the more recent projects and programmes planned since the introduction of the Development-policy Framework for Contracts and Cooperation (AURA) have less ambitious goals, while the last-mentioned three projects/programmes were all begun in the period prior to AURA. Altogether, a move can be detected away from technology-based projects and programmes to target-group-related ones and 'sustainable energy systems', also in terms of the implementation over time of individual projects and programmes. As will be shown in Section 3, the objectives level does not play a central role for the success of the projects and programmes¹⁷.

The objectives do not differentiate between target groups. Results at overarching levels were only formulated in the objective in one case, that of ENEP Thailand in the field of the environment and climate protection ('Activities to improve energy efficiency are carried out in factories and buildings as stipulated in the ECP Act, which contributes to the decrease of energy intensities in industrial, commercial and private sectors and the reduction of CO₂ emission'). Sections 3.1 (Relevance) and 4.1 (Poverty reduction and the MDGs) provide further details on the project/programme orientation to overarching development goals.

¹⁷ see also the table in Annex 7

3. Rating according to DAC criteria

GTZ's independent evaluations and their assessment grid are in line with the 'relevance', 'effectiveness', 'impact', 'efficiency' and 'sustainability' criteria established by the Development Assistance Committee of the Organisation for Economic Cooperation and Development (OECD-DAC). A six-point scale was used to assess the projects and programmes:

- | | |
|---|--|
| 1 | very good rating, significantly better than expected |
| 2 | good rating, fully in line with expectations, no significant defects |
| 3 | satisfactory rating, falling short of expectations but with positive results dominant |
| 4 | unsatisfactory rating, significantly below expectations, and negative results dominate despite identifiable positive results |
| 5 | clearly inadequate rating: despite several positive partial results, the negative results clearly dominate |
| 6 | the project/programme is useless, or the situation has deteriorated on balance |

An overall rating of 1-3 classifies a 'successful' project/programme, one of 4-6 an 'unsuccessful' project/programme. However, a project or programme can only be classed as successful if it receives a rating of at least 3 (satisfactory) for the criteria effectiveness, impact and sustainability.

Unlike in other international development organisations, in GTZ evaluations a decision is made regarding each of these criteria and reasons are given whether the criterion is very important in the special context of the project/programme (weighting of 3), important (weighting of 2) or less important (weighting of 1).

In the following sections, the reviewed projects and programmes are analysed with regard to the rating and weighting of the DAC criteria. In this context, it is also of interest how the three thematic areas (RE, EE and HE) differ with regard to these criteria. In terms of methodology, those projects and programmes that cover several thematic areas (PERACOD, EAP Uganda, REEE Pakistan) are included in the average rating of all relevant areas, i.e. REEE Pakistan is examined together with the RE and the EE projects/programmes.

3.1 Relevance

Relevance refers to the extent to which the objectives of the project or programme match the needs of the target group, the policies of the partner country and partner institutions, global development goals and BMZ's basic development-policy orientation (Are we doing the right thing?).

The relevance of the evaluated projects and programmes was rated best of all DAC criteria, i.e. as very good or good (average of all projects and programmes: 1.6), with just one exception. At the same time, the relevance criterion was also weighted as important (in fact, as very important at six projects and programmes)¹⁸. This is an excellent testimony to technical cooperation's orientation in the energy sector: the projects and programmes are largely in line with the policies of the partner countries, BMZ and international agreements. Technical cooperation is doing the right thing. Only PVP Chile received a rating of less than 2¹⁹, but it is a supraregional pilot project with a strong technological focus (which is why the evaluators only gave the relevance criterion a weighting of 'less important').

Looking at the three dimensions of relevance, most reports show a high degree of compliance with the goals of the German Government (Program of Action 2015, Agenda 21, BMZ sector strategy). However, the needs of the target groups are only mentioned in very few cases (e.g. SHP Tibet).

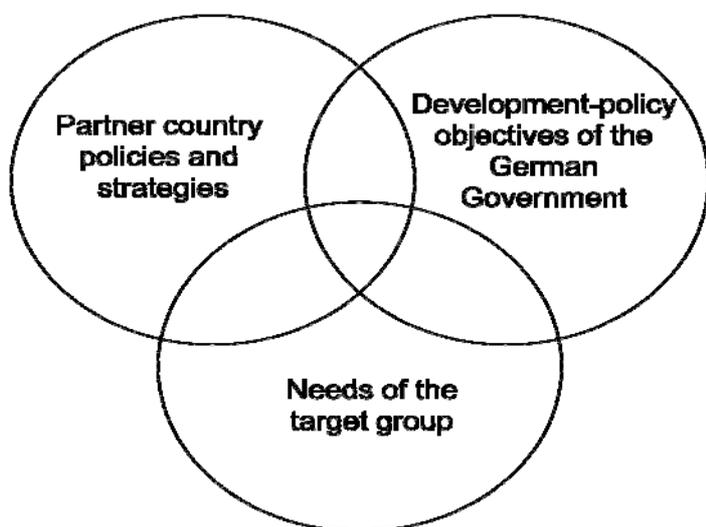


Fig. 2: The three dimensions of relevance

With regard to the extent to which the projects and programmes are embedded in the partner countries' policies and strategies, almost all of them (except PVP Chile) cite corresponding

¹⁸ Here too, PVP Chile is the exception (see above)

¹⁹ Here, the evaluators only see a high priority at local level. The project was almost completely unknown at national level.

documents at various levels (national development strategies, laws, energy strategies). In many partner countries, the energy sector is one of the priority areas of national development strategies (e.g. in Nepal and Pakistan). Energy security and conventional energies, rural electrification and the use of environmentally friendly local resources usually play a role too. Some reports make a distinction between the *formal* importance (harmonious objectives in national policies and strategies) and the *actual* priority which the relevant institutions give to the project and programme themes. Thus, the national energy and development strategies frequently include objectives that refer to RE, EE or HE. However, at the relevant partner institutions (including the energy ministries), this is not reflected in the allocation of adequate attention and resources (PIEEP, HEP Sahel). The evaluators also state the prior existence of an HE strategy in three of the nine Sahel states as a factor that reduces the relevance of HEP Sahel.

The needs of the target groups are consulted much less frequently when rating the relevance. While the evaluators see HEP Sahel as being highly relevant for the target groups, they establish that the latter 'were neither involved in the programme nor in developing national strategies' (para. 57).

The following table presents an overview of the relevance rating at all projects and programmes:

Renewable energies (RE) for rural electrification	Rating	Household energy (HE)	Rating	Energy efficiency (EE)	Rating
SHP Tibet	2	HEP Sahel	2	ENEP Thailand	1
TERNA Ethiopia	2	ProBEC	1	EE Brazil	2
PVP Chile	3	EAP	1	EAP Uganda	1
EAP Uganda	1	PERACOD	1	PIEEP Argentina	2
SHPP Nepal	2	Average	1.25	EE Turkey	1
RE China	1			REEE Pakistan	1
PERACOD Senegal	1			Average EE	1.33
PROFER Dom.	2				
REEE Pakistan	1				
Average RE	1.67				

Table 2: Relevance rating of energy projects and programmes

The only project/programme that is not rated very good or good is **PVP Chile**, which operates as a pilot project in a 'new' thematic area that has not yet been embedded in the partners' strategies. The evaluators do, however, rate the relevance criterion as 'less important' in this case.

There are only slight differences with regard to the three thematic areas. **HE projects and programmes** receive the highest average relevance rating, followed closely by **EE projects and programmes**. This is mainly due to the strong alignment with the needs of target groups, in the evaluators' opinion. Agenda setting is one of the prime tasks at these projects and programmes since biomass does not generally enjoy high priority within energy strategies²⁰.

The relevance of **RE projects and programmes** is lower overall but is still rated as high (average of 1.67). Projects and programmes with a technological focus (PVP Chile, TERNA, SHP Tibet, SHPP Nepal), or those with only indirect relevance to the target groups (grid feed-in) like PROFER receive a lower rating than projects and programmes with comprehensive objectives and direct relevance to the target groups (EAP Uganda, PERACOD, RE China).

The higher weighting of two **EE projects and programmes** mainly has to do with existing or forthcoming energy supply crises (EE Brazil, PIEEP). Here too, some of the projects and programmes were not in line with the partner strategy, but made a substantial contribution to including the theme in the strategy (PIEEP, EE Turkey). In **EE Turkey**, the special aspect was the partner's motivation to adjust to EU standards. **PIEEP** is an example of shifting priorities. Whereas in the beginning, the project mainly focused on the competitiveness of SMEs, towards the end it concentrated on the energy supply crisis. According to the evaluators, the project only became particularly relevant 'after the event', by laying solid foundations for quick political reactions to the present crisis.

3.2 Effectiveness

Effectiveness is seen as the extent to which the direct results (objectives) of the development measure are being achieved. The average rating of the evaluated projects and programmes was 2.33, between good and satisfactory. This criterion is also relatively easy to measure by means of the objectives indicators. The assessment was usually made by comparing the actual situation with the target; the decision which percentage of goal achievement was rated as good or satisfactory obviously depended a great deal on the subjective opinion of the evaluators. Only two projects/programmes deviated from these two ratings: one was rated

²⁰ see ProBEC report, para. 32

'very good' (EAP Uganda) and one as 'unsatisfactory' (HEP Sahel). Again, only two projects/programmes deviated from the average weighting (ENEP Thailand, PIEEP). In both cases, these were ex-post evaluations that explain the deviation by the fact that the weighting shifted after this time from direct to indirect results (impact), i.e. in the long term it is no longer as crucial which direct results were achieved. The important thing is which long-term results were achieved among the target groups in terms of the overarching development goals.

In **EAP Uganda**, the reason given for the very good rating was that it had clearly surpassed the indicator values. The evaluators did not qualify this assessment by pointing out that the indicators had been too unambitious. With project support, some 100,000 households are supplied with energy-saving stoves each year, and the objective of the national bio energy strategy (to supply 10% of all households) was already reached in mid-2008²¹. However, as regards rural electrification, only 210 solar home systems (SHSs) are mentioned, and the results in the EE component are also rather sobering²².

The only programme rated 'inadequate' was **HEP Sahel**. The evaluators do not see this as the 'consequence of too ambitious or unrealistic planning' (para. 73), but consider the main reason to be the programme's integration into its partner institution CILSS, with additional and much higher EU funding, due to which the programme lost sight of the actual objectives and methodological approach of German technical cooperation. Additional reasons were the cash crisis, orientation towards experts rather than towards processes, and the lack of a mandate for successful policy advice, the centralised structure and shortfalls in CILSS's capacity as a project partner (HEP Sahel, para. 73). Although the project supplied a number of studies and publications, 'none of these results was put to recognisable use' and it was therefore unable to generate direct results, even two years after its completion.

The following table gives an overview of the ratings of the individual projects and programmes:

²¹ At this point, the evaluators project the results achieved so far into the future. The report merely says that 100,000 stoves are disseminated per year, but not how many have been disseminated at the time of the evaluation. Nor are there any statements on the sustainability of stove use. Despite all possible allowances, the figures are well above the 36,000 households targeted by the indicators over the entire term of the project.

²² Energy audits were performed at 30 SMEs; according to the report, measures were implemented in some of the companies.

Renewable energies (RE) for rural electrification	Rating
SHP Tibet	2
TERNA Ethiopia	2
PVP Chile	3
EAP Uganda	1
SHPP Nepal	3
RE China	3
PERACOD Senegal	2
PROFER Dom. Rep.	3
REEE Pakistan	2
Average RE	2.33

Household energy (HE)	Rating
HEP Sahel	5
ProBEC SADC	2
EAP Uganda	1
PERACOD Senegal	2
Average HE	2.5

Energy efficiency (EE)	Rating
ENEP Thailand	2
EE Brazil	2
EAP Uganda	1
PIEEP Argentina	3
EE Turkey	3
REEE Pakistan	2
Average EE	2.17

Table 3: Effectiveness rating of the evaluated energy projects and programmes

No clear statements can be made about the three **thematic areas**. The differences in their average rating are not significant. However, it is striking that the evaluations of ongoing projects and programmes (average of 2.0) are much better than final (3.0) and ex-post evaluations (2.83). This suggests that the achievement of objectives is judged too optimistically during implementation, despite measurable indicators. This could be improved by the introduction of additional 'milestones' by means of which the target values are broken down into individual years, for instance.

3.3 Impact

Impact is the extent to which the project/programme contributes to achieving the intended overarching results and indirect results. According to the GTZ results model, these are not directly causal related to the inputs of the project or programme, but are located beyond the so-called attribution gap. There is only a degree of plausibility that the project or programme contributes to changes at this level. Nevertheless, these results are precisely what development cooperation aims to achieve, but many of these results only occur after a certain time lag.

Measuring impact is a challenge for evaluators. As shown in Section 6, indicators related to this criterion were only identified in two projects/programmes. In most evaluations, interviews were performed or statements collected in the e-VAL reports. In Pakistan, SWOT²³ analyses of relevant stakeholders were assessed. It is therefore not surprising that only a few of the evaluation reports state concrete figures to describe the impact. Often, the statements sound like the corresponding passages in the offers, without substantiation or quantitative proof of an actual result. PROFER is a good example of this: 'If the objectives are *achieved* on schedule, investments up to the year 2015 *would* total some EUR 650 million, with commensurate advantages for the country's economy' (stress placed by author). Firstly, it is not sure whether the objectives will be reached at all (effectiveness). Whether the estimated investments are then actually made and these actually offer benefits for the economy (impact) is pure speculation and, as has actually happened in the case of TERNA Ethiopia, can only be confirmed in the future.

In many cases, the evaluations are geared to the project/programme contributions to the Millennium Development Goals (MDGs).

With an **average rating of 2.73**, the impact of the projects and programmes 'falls short of expectations' according to the assessment grid definition, and got the worst rating of all DAC criteria. None of the projects and programmes was rated 'very good', but only one received a rating of 4 (inadequate) and one a rating of 5 (unsatisfactory). The reason for the poor rating of **HEP Sahel** was related to the deficient achievement of objectives: 'no recognisable development results were achieved due to the insufficient direct results'. Since this programme mainly concentrates on HE strategies, which were not implemented, the programme was not able 'to positively influence the provision of energy or more thrifty consumption' (para. 80). The low effectiveness also influenced the lack of achievements in terms of impact. In **EE Thailand** too, the main deficit concerns the *implementation* of concepts and the low plausibility of its contribution to overarching objectives: 'There is no evidence that ENEP consultations

²³ SWOT = Strengths, Weaknesses, Opportunities and Threats

contributed to the changes in the ECP Act', or 'Even if there are significant impacts on energy consumption achieved via TEENET, it is very difficult to attribute them to ENEP inputs'. The report establishes that: 'The achieved indirect effects (...) were good in general, but they did not sum up to satisfying impacts'.²⁴

Concrete figures were not collected systematically, but if at all only mentioned in very specific areas. For example, **PIEEP** was able to reduce the gas consumption of the Argentine sugar industry by 60 million m³ in three years, leading to cost savings of over EUR 1 million, which corresponds to about 0.1% of the entire quantity of natural gas produced in Argentina. **EE Turkey** cites a rise in the sales of insulating material from 3 to around 6.6 million m³ during the term of the project for example, which according to interviewees is 'at least partially attributable to the project's PR work, demonstration projects and advisory services' (para. 48).

The challenge generally facing **RE projects and programmes** for rural electrification is to offer energy services such that users do not have to pay additional costs, i.e. the costs of power supply are lower than previous energy expenditure (for candles, kerosene, batteries etc.), or additional income could be generated through the productive use of electricity (see BMZ sector strategy). This is particularly important in countries like Nepal with a per capita income of US\$230. It is surprising that only few projects and programmes provide statements on these or similar effects on the target groups.

In its M&E system, **SHP Tibet** registers a number of indicators besides the objectives indicators that provide information on the effects on target groups. For example, income development in the villages supported by the programme is compared with the general trend in Tibet. According to this, the income of the target villages in 2002 was 21.5% above the average, and this went up to 42.1% in 2006. The programme also monitored the effect of its measures on the creation of jobs.

The following table gives an overview of the impact rating of the individual projects and programmes and the thematic areas:

²⁴ The effectiveness of this project was rated 2, but this did not have any positive influence on the impact.

Renewable energies (RE) for rural electrification	Rating	Household energy (HE)	Rating	Energy efficiency (EE)	Rating
SHP Tibet	2	HEP Sahel	5	ENEP	4
TERNA Ethiopia	3	ProBEC SADC	2	EE Brazil	3
PVP Chile	3	EAP Uganda	2	EAP Uganda	2
EAP Uganda	2	PERACOD Senegal	2	PIEEP	2
SHPP Nepal	3	Average HE	2.75	EE Turkey	3
RE China	3			REEE Pakistan	2
PERACOD Senegal	2			Average EE	2.67
PROFER Dom. Rep.	2				
REEE Pakistan	2				
Average RE	2.44				

Table 4: Impact rating of the evaluated energy projects and programmes

As with efficiency, there are no significant differences related to this criterion in terms of the **thematic areas** (RE, EE, HE). Despite receiving the poorest rating, HE projects and programmes can nevertheless be expected to show greater *potential* for a positive impact, since (apart from HEP Sahel) all other projects and programmes are fully in line with expectations.

The rating in terms of the timing of the evaluation is of greater interest. It is noticeable that at 3.33, the impact ratings in ex-post evaluations are an entire point lower than those in interim and final evaluations (2.33 in each case). The assessments of these often contain assumptions or ratings of a state that has not yet occurred (see above). This is apparently due to the presumption that the impact only emerges after longer periods²⁵. The ex-post evaluations, on the other hand, contain poorer ratings because many of the anticipated results have not come about even several years after the end of the project.

3.4 Efficiency

Efficiency is a measure of the ratio between the invested resources and outputs provided on the one hand and results achieved on the other hand. (Are the objectives being achieved cost-effectively)? This criterion was classed as the least important (1.8) in the reviewed projects and programmes. The average rating (2.33) was quite good on the whole, i.e. the

²⁵ This is proved true in some cases, e.g. TERNA. Investment projects were frequently only commissioned or implemented after the country measures had been concluded. Nevertheless, the relationship with the projects/programmes can be proved in each case.

projects and programmes worked cost-effectively for the most part. Once again, the only exception is **HEP Sahel**, whose efficiency was rated 4. In this programme, the lack of efficiency of the short-term assignments is criticised (which did in fact make up 30% of the budget, para. 82), which were poorly managed, disregarded core issues (economic and institutional matters) and could therefore not be put to expedient use by PREDAS. A further reason was the lack of flexibility in utilising resources due to the five-year advance planning required by EU funding. Added to this is the sluggish administration of the partner CILSS. This means that greater ownership was achieved at the cost of management problems. However, it must be mentioned that there were also problems with providing funds on the German side. With regard to the organisational structure, the evaluators criticised the inadequate capacities of regional coordination that led to communication bottlenecks (para. 84).

The table shows the efficiency rating of the individual projects and programmes and of the thematic areas:

Renewable energies (RE) for rural electrification	Rating	Household energy (HE)	Rating	Energy efficiency (EE)	Rating
SHP Tibet	2	HEP Sahel	4	ENEP Thailand	3
TERNA Ethiopia	2	ProBEC SADC	2	EE Brazil	2
PVP Chile	2	EAP Uganda	1	EAP Uganda	1
EAP Uganda	1	PERACOD Senegal	3	PIEEP Argentina	1
SHPP Nepal	2	Average HE	2.5	EE Turkey	3
RE China	3			REEE Pakistan	2
PERACOD Senegal	3			Average EE	2.00
PROFER Dom. Rep.	3				
REEE Pakistan	2				
Average RE	2.22				

Table 5: Efficiency rating of the evaluated energy projects and programmes

The following examples of efficient contract and cooperation management are named by various projects and programmes:

- appropriate organisational structure/project structure and coordination effort (related to the various intervention levels) (e.g. in ProBEC, SHPP Nepal)
- appropriate scheduling

- mobilisation of partner inputs (also unplanned ones) - (pilot projects, infrastructure, transport, communication, training/seminars and local salaries of CIM experts)
- good donor coordination, thus avoiding duplication of work (SHPP Nepal)
- provision of basic modules in key areas that are adapted to the specific conditions of the individual country by local actors (HEP Sahel)

There are no significant differences for this criterion either with regard to the **thematic areas**. The variation is considerable in all three areas. The fact that the HE projects and programmes rate somewhat worse is mainly due to HEP Sahel.

One problem that is typical of the efficiency of **RE projects and programmes** becomes apparent in SHP Tibet: the switching off of decentralised RE plants in the event of grid electrification. In Tibet, this affects 30% of the rehabilitated SHP stations. It means that most of the project/programme's efforts are in vain because planning of energy supply is not harmonised between the actors²⁶. In SHPP Nepal, the plants do feed power into the grid, but the benefit for the rural population is rather low. However, the evaluators obviously see no connection between this and the deficient achievement of objectives and impact, since they rate the efficiency as 'good'.

The preparation of costly studies is considered a problem in TERNA Ethiopia, and these had not led to any investment or implementation at the time the evaluation was performed²⁷.

PERACOD performs benchmarking with other projects and programmes of the Dutch-German energy partnership Energising Development, in order to rate its efficiency. According to this, the costs per disseminated stove are relatively low²⁸. Owing to untapped synergies between the programme and other donors, between the individual components and an inefficient implementation structure, the programme nevertheless receives an efficiency rating of only 3.

One joint problem of RE and HE projects and programmes is the **development and dissemination of technology**. In this respect, the ProBEC report asks to what extent the research and experimentation efforts are justified, or whether greater local use could have been made of the corresponding knowledge, and whether it was necessary to assume responsibility for further developing and adjusting the various stove models. The 'Maputo stove' is given as an example. This is a completely new development that can only be very slowly introduced onto the market. Another interesting example is the dissemination of new

²⁶ In the ideal scenario, SHP plants would only be installed in places that will not be connected to the grid in the foreseeable future. But this calls for long-term, binding planning of grid expansion.

²⁷ Here it becomes clear that such results may occur later on. In the case of the overall TERNA programme, a technical cooperation measure costing EUR 4 million did lead to total investments of approx. EUR 300 million - a very good leverage effect.

²⁸ The costs per electrified household are EUR 27, those per disseminated improved stove EUR 4.5.

products. Taking Malawi as an example, the ProBEC report shows that it takes a certain (significant) effort to achieve a breakthrough in disseminating a product. If demonstration measures are only performed sporadically, there is no broad-based effect. This can be confirmed by PVP Chile (although a broad-based effect was not the objective of this project/programme). ProBEC also shows the connection between the effort and the time requirement. According to the report, 'greater involvement of local NGOs and other intermediaries (...) might have produced comparable results, just somewhat later' (para. 63).

Among the **EE projects and programmes**, PIEEP is stated as a good example of how disseminating EE services can achieve strong effects by concentrating on just a few demonstration projects and conducting highly professional and effective PR work.

The possible **connection between costs and efficiency** is also of interest: of all five projects and programmes with a budget of EUR 1 million or more per annum, four received a rating of 3 or worse. The two other projects whose efficiency fell short of expectations (EE Turkey, PROFER) were both ones that were discontinued after the first phase. One hypothesis that could be examined is whether projects and programmes with a shortage of funds are more creative in their use and mobilisation than projects/programmes with lavish funding.

3.5 Sustainability

Sustainability is a measure of the probability that the positive results of the project or programme will continue beyond the end of assistance ('Are the positive results durable?'). This is the most important DAC criterion from the evaluators' viewpoint, **with an average weighting of 2.67**. In 10 projects and programmes, it was rated 'very important'. In contrast, the **average rating of 2.47** (between good and satisfactory) **is rather mediocre**. Here, there are substantial differences between the projects and programmes: two are rated 'very good' (PVP Chile, PIEEP), but two are classed 'inadequate' (HEP Sahel, EE Turkey).

The interesting thing is that these four assessments were made in the context of ex-post evaluations. At this point in time, the ratings were either fundamentally positive (two 'very good', two 'good') or fundamentally negative (two 'unsatisfactory'). In accordance with the very definition of sustainability, it can only be clearly decided after the end of the project or programme whether it is sustainable or not. The assessments of ongoing or just finished projects and programmes, on the other hand, contained no extreme ratings (four 'good', five 'satisfactory'). It is possible that the evaluators could not reach a final conclusion because sustainability has to be proved after the term has ended.

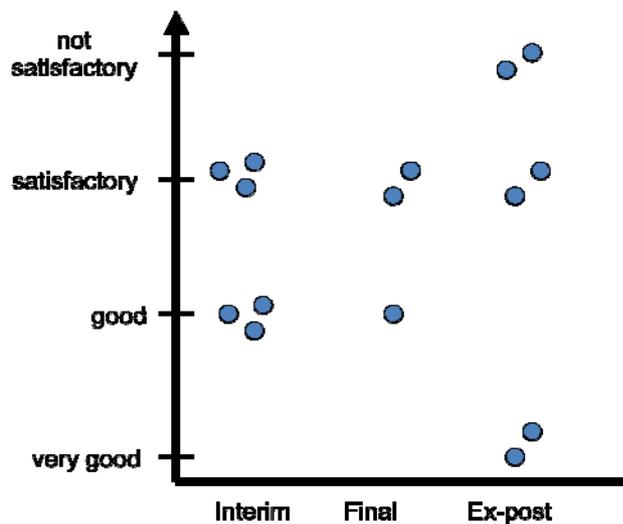


Fig. 3: Sustainability rating at different evaluation times

The following table gives an overview of the sustainability rating of the individual projects and programmes and of the thematic areas:

Renewable energies (RE) for rural electrification	Rating
SHP Tibet	2
TERNA Ethiopia	3
PVP Chile	1
EAP Uganda	2
SHPP Nepal	2
RE China	3
PERACOD Senegal	3
PROFER Dom. Rep.	3
REEE Pakistan	2
Average RE	2.33

Household energy (HE)	Rating
HEP Sahel	4
ProBEC SADC	3
EAP Uganda	2
PERACOD	3
Average HE	3.00

Energy efficiency (EE)	Rating
ENEP Thailand	2
EE Brazil	2
EAP Uganda	2
PIEEP	1
EE Turkey	4
REEE Pakistan	2
Average EE	2.17

Table 6: Sustainability rating of the evaluated energy projects and programmes

EE projects and programmes receive a better sustainability rating than RE and particularly HE ones, whose average rating is only 3. With the exception of the project in Turkey (which was discontinued after only one phase due to termination of cooperation, an important reason for the poor sustainability rating), all EE projects and programmes were rated 'good' (in the case of Argentina, 'very good'). A possible reason is the strong involvement of the private

sector, via which advisory services are established (if possible covering costs). If this succeeds and the environment is favourable, EE is a sure-fire success.

A major problem for the sustainability of **RE projects and programmes** is competition with grid electrification. If the target region is connected to the grid during the project/programme or after it has ended, often it is no longer possible to use the decentralised RE systems. In the case of SHP Tibet, 11 of the 31 rehabilitated SHP stations (more than 30%) were switched off again because the power they generated could not be fed into the grid. This had not been foreseen, or the objectives indicator²⁹ related to sustainability would have been worded differently ('susceptibility to repairs of the rehabilitated SHP stations'). In RE China, private SHP providers offer power at a lower price than the widespread SHSs. In other regions, there is already access to the public grid (para 87). In Gansu, 30% of the PV systems are therefore not used any more. This is not just a sustainability problem, but also one of efficiency. The evaluators presume: 'This development has not been anticipated or at least not expected during the planning phase' (para. 120). To prevent this, strategies should be developed for how to feed RE power into the grid (in the case of SHP) or how the stations can be handed over (e.g. in the event that an energy provider owns solar power plants).

A further problem is the high **cost** of the plants, which means their dissemination is often not possible without subsidies. Here, it is important for these subsidies to be financed in the long term via national budgets, or for a clear exit strategy to be in place for the end of the project/programme (see Section 6). The costs of operation and maintenance can also have a negative influence on the sustainability of RE systems, and the operator models used must at least secure these costs. Related to this is the problem of salaries for system operators. In RE China, according to the evaluators, their training gives them better employment options in other regions and prompts them to migrate. 'Almost in all the villages we visited, one of the two operators left for other jobs due to low salary and uncertainty about their future' (para. 90). Although it is correct to establish that jobs and income have been created in this way, for the sustainability of the project/programme the important question remains of who will operate and maintain the systems in the target region in future.

At sector programmes like **HEP Sahel**, sustainability relies heavily on the impact they have within GTZ, by their self-portrayal, linguistic and thematic links to the Planning and Development Department (P+D) and support by management. If the experience of such supraregional projects and programmes is used, they can create a good reputation for GTZ in this thematic area and among other donors. To do so, the experience must be perpetuated within GTZ, i.e. be incorporated into knowledge management and thus be available to other projects and programmes after their conclusion.

²⁹ SHP Tibet is the only programme with an objectives indicator related to sustainability.

3.6 Synopsis of all criteria

3.6.1 Weighting of the projects and programmes

Looking at the evaluators' weightings of all five DAC criteria, the result can be summarised as follows:

In energy projects and programmes, the main concern is that technical cooperation addresses the right themes (relevance). Whether the formulated objectives are achieved (effectiveness) is less important than the development-policy results generated (impact). The ratio of effort to outputs and goal achievement (efficiency) is secondary. However, if the results are not lasting, all efforts have been in vain (sustainability).

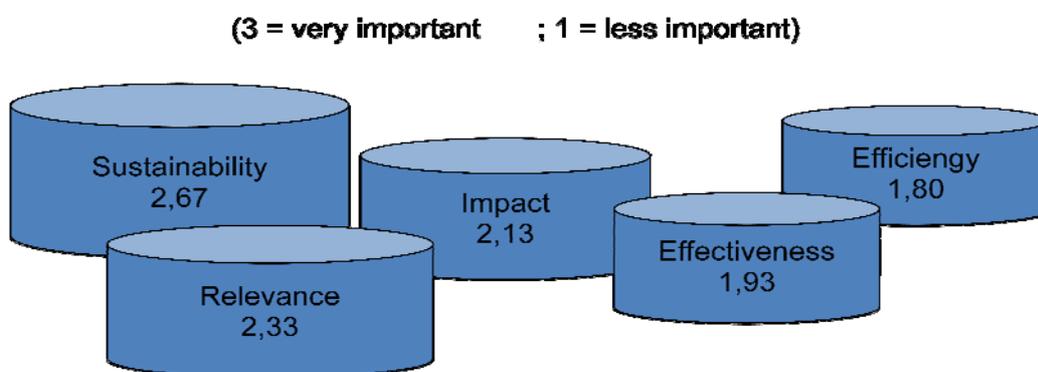


Fig. 4: Average weighting of DAC criteria in energy projects and programmes

Possible reasons for the weighting of the individual criteria were mentioned in previous sections. In the following sections, the ratings are summarised and analysed in relation to various issues.

3.6.2 Overall rating of the projects and programmes

With an average overall rating of 2.47, the reviewed projects and programmes vary between 'good' and 'satisfactory', i.e. most of them are in line with expectations.

The majority of the projects and programmes (80%) were rated 'successful' (rating of 3 or higher); only 3 projects and programmes were rated 'unsuccessful' (HEP Sahel, EE Turkey, ENEP Thailand).

The following table summarises the overall rating and the average ratings and weightings of the individual criteria:

	Overall rating	Relevance	Effectiveness	Impact	Efficiency	Sustainability
Average rating	2.47	1.60	2.53	2.73	2.33	2.47
Average weighting	2,17	2.33	1.93	2.13	1.80	2.67

Table 7: Average rating and weighting of all DAC criteria

This overview shows that the overall rating does not correspond to the sum of the individual ratings. This is due to the different weightings of the criteria and the fact that projects and programmes given a rating of 4 or worse in specific criteria are automatically downgraded to 4 in the overall rating³⁰.

The graph once again shows the ratio between the importance of the criteria and their average rating in the 15 projects and programmes:

Fig. 5: Weighting and rating of DAC criteria

It becomes apparent that the discrepancy between weighting and rating is especially great when it comes to the criteria 'sustainability' and 'impact'. Despite the significance, the results achieved are not all positive. This discrepancy is also clear as regards 'effectiveness'. That is all the more surprising because, according to the logic of AURA, the achievement of objectives

³⁰ According to the 'Guidelines on evaluating the success of projects and programmes', a project or programme can only be assessed as 'successful' (points 1-3) in terms of development policy if the effectiveness, impact and sustainability have been rated as at least 'satisfactory' (3).

is the focus of contract and cooperation management and project success is predominantly measured according to this criterion towards GTZ's main client BMZ. So it would have been expected that the best ratings could be achieved in this area. Possibly, the fact that this criterion can be measured by objectives indicators (which is generally not the case with the other criteria) leads to a more critical assessment. However, there is no connection with an overly ambitious setting of objectives³¹.

This means that more attention must be paid to impact and sustainability as well as achieving objectives when steering projects and programmes. This calls for a change in mindset, because effectiveness (degree to which objectives are achieved) has so far been the crucial measure of project success according to AURA and the binding one towards BMZ. However, the evaluations clearly show that high effectiveness does not necessarily lead to the achievement of overarching results. This is proven by the fact that more than half of the projects and programmes received different ratings: in five cases, the impact was rated worse than effectiveness, and in three it was rated better. One example is **SHP Nepal**. Although a market was established for SHP in line with the project objective, 'so far only marginal results have been established as regards the improvement of the social and economic living conditions of the population', because nearly all the stations supported by the project serve villages that have already been electrified and where 100% of power is fed into the grid.

The strong difference in the rating of the projects and programmes at different evaluation times are very noticeable. All interim evaluations received a rating of at least 'good', and of 'very good' in the case of Uganda (average: 1.83). At an average of 2.67, final evaluations received much poorer ratings, and the ex-post evaluations received even worse ratings of 3. All unsuccessful projects and programmes come within this last group. One reason could be that evaluators hesitate to make a fundamentally poor assessment of ongoing projects and programmes because the final result cannot be anticipated. Facts are clearer at finished projects and programmes. In two of three unsatisfactory projects and programmes, the poor rating of one criterion led to a downgrading of the overall rating³². In **EE Thailand**, the poor impact rating (4) led to an overall rating of unsatisfactory. With **EE Turkey**, it was the sustainability (4). **HEP Sahel** was rated 'unsatisfactory' or 'inadequate' with regard to three criteria (effectiveness, impact and sustainability).

³¹ Comparison of the objectives levels (Fig. 1) shows no significant connection. Although the objective in RE China was fixed at the highest level, the effectiveness only received a rating of 3. In EAP Uganda, though, the objective is also set at the level of use by the target groups, and here the effectiveness was rated 1. In HEP Sahel (with comparatively low objectives), effectiveness receives the poorest rating.

³² As explained earlier on, an unsatisfactory rating (4-6) of effectiveness, impact or sustainability automatically leads to a downgrading of the overall rating to 4 (unsatisfactory).

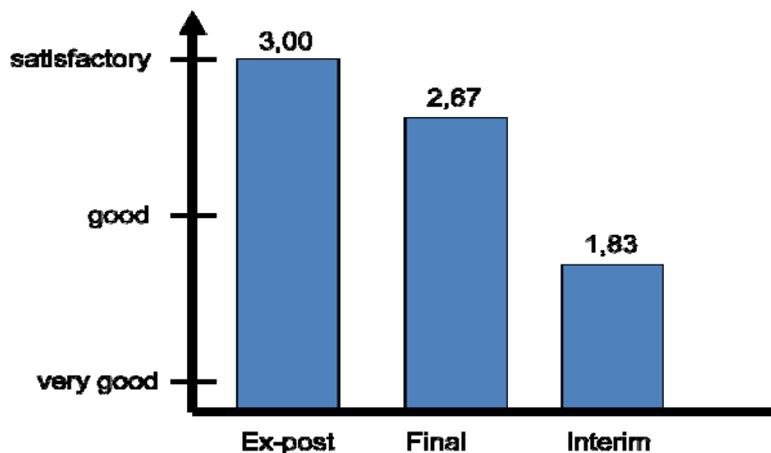


Fig. 6: Rating of the DAC criteria at different evaluation times

3.6.3 Rating in proportion to the funds used

Previously, all projects and programmes were given the same weighting, whether they were small measures like PVP Chile with funds of only EUR 0.1 million or a programme like PERACOD (more than EUR 15 million). To make a statement about the overall success of the funds employed, the ratings of the projects and programmes were weighted in proportion to the overall costs of the projects and programmes or of the German technical cooperation contribution. This leads to a slightly lower rating (2.72) in the overall average, which was basically due to the greater weight of RE China, which was only rated 'satisfactory'. However, it cannot be concluded from this that smaller projects and programmes are more successful than large ones.

	Overall rating	Relevance	Effectiveness	Impact	Efficiency	Sustainability
With the same weight given to all projects/programmes	2.47	1.6	2.53	2.73	2.33	2.47
In proportion to the overall costs	2.72	1.21	2.56	2.93	2.66	2.66
In proportion to German technical cooperation	2.38	1.28	2.35	2.63	2.46	2.55

Source: Evaluation report and calculations by the Evaluation Unit

Table 8: Average rating of projects and programmes (given the same weighting and in proportion to the overall costs or the costs of the GTZ contribution)

The analysis indicates that large projects and programmes appear to receive a somewhat better relevance rating, but small measures rate slightly better in terms of efficiency³³ and sustainability. However, a distinction has to be made whether the weighting is based on the overall project/programme costs (including the inputs of partners or third parties) or the German technical cooperation contribution. Projects and programmes with a larger German technical cooperation contribution receive slightly better ratings in all criteria (apart from relevance).

3.6.4 Rating according to continents and modes of implementation

It seems obvious to group the projects and programmes according to regions and country classifications, in order to establish certain patterns. But as with the thematic analysis, it must be borne in mind that the number of projects and programmes is then very small, which reduces the representativeness of the observations.

Looking at the average rating according to continent, a big difference is apparent between Asia and Africa on the one hand, and Latin America on the other, in terms of relevance and sustainability. Particularly in Africa, the projects and programmes only receive a mediocre rating for sustainability, whereas in Latin America, the relevance is clearly below the overall average for all projects and programmes. However, this is mainly due to PVP Chile, the only project whose relevance was rated as just 3, which has a strong influence on the total group of only four projects and programmes. The low sustainability of the African projects and programmes might be related to the institutional shortfalls of many of the partner countries there. However, this is also where almost all HE projects and programmes are located, which received worse ratings for sustainability than the other thematic areas.

	Overall rating	Relevance	Effectiveness	Impact	Efficiency	Sustainability
Africa	2.20	1.40	2.40	2.80	2.40	3.00
Asia	2.83	1.33	2.67	2.83	2.50	2.50
Latin America	2.25	2.25	2.50	2.50	2.00	1.75

Table 9: Average rating of projects and programmes by continent

The poorer average overall rating of the projects and programmes in Asia can be explained by the fact that these include two 'downgraded' projects and programmes rated 4 (EE Turkey and ENEP Thailand). Otherwise, the criteria receive similar ratings to those of projects and programmes in Africa.

³³ This tallies with statements in Section 3.4

It would appear expedient to analyse the German implementing organisation too. Here, the table reveals no significant differences:

	Overall rating	Relevance	Effectiveness	Impact	Efficiency	Sustainability
GTZ	2.40	1.60	2.40	2.90	2.30	2.40
Consulting firms	2.63	1.60	2.80	2.40	2.40	2.60

Table 10: Average rating of projects and programmes according to mode of implementation

4. Rating of cross-cutting development-policy themes

4.1 Poverty reduction and MDGs

In line with the sector strategy adopted in 2007, German development policy in the energy sector aims to 'promote the creation of sustainable, decent living conditions, in particular for the poor, in our partner countries and thereby to help secure our global future'³⁴. Poverty reduction is seen as a core task whose achievement is supported by objectives such as 'access to energy', 'growth', 'crisis prevention' and 'environmental compatibility'. The sector concept underlines the fact that poor people, even if insufficiently supplied with 'modern' forms of energy, spend a considerable share of their income on satisfying their energy requirements (buying candles, kerosene, wood, charcoal and batteries). They spend a larger share of their income on energy than wealthier households, and supply companies often give low priority to providing them with services.

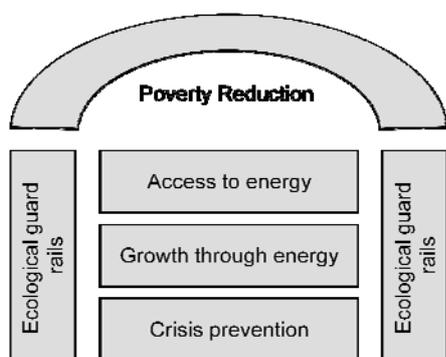


Fig. 7 System of goals 'Sustainable Energy for Development'

Improved access to modern energy is regarded by many organisations (UN 2005, WHO 2006, 2007, IEG 2008)³⁵ as a fundamental contribution to achieving the MDGs. The evaluation reports contain detailed accounts of how the projects and programmes have contributed to individual MDGs, but provide few concrete figures to support them (as described in Section 3.3.). Eight reports explicitly mention a contribution to MDG 1 (poverty) (56% of projects/programmes), including effects on employment, productivity, competitiveness and income. In SHP Tibet, an improvement in food supply is also mentioned. According to reports, 10 (66% of the projects/programmes) even contribute to MDG 7 (environment), and a further three name possible or future effects. Four reports mention effects on MDG 3 (gender). Beyond this, all HE projects/programmes contribute to MDGs 4 (health), 5 (child mortality) and 6 (HIV/AIDS) by reducing health risks through smoke and reducing the burden of collecting

³⁴ BMZ, sector strategy 'Sustainable Energy for Development', 2007

³⁵ The BMZ sector strategy also refers to these sources.

fuels. The report on SHP Tibet states that it also contributes to MDG 2 (education) and, like PVP Chile, to MDG 8 (networks and youth).

When reviewing the evaluated projects and programmes, it must be borne in mind that they were all planned, and some were concluded, before the sector strategy was adopted. Some of the MDGs were also worded after the projects and programmes had been planned. Yet most of them do have relevance to poverty reduction. Only in the case of TERNIA Ethiopia do the reports criticise the lack of relevance to poverty reduction (para. 62). A PPR stated as early as 2006 that there was a 'conflict' between promoting grid-connected RE technologies and achieving the MDGs³⁶.

4.1.1 Conceptual problems

Whereas HE projects and programmes have direct relevance to poverty reduction due to the fact that they intervene at the bottom of the 'energy ladder', this does not necessarily apply to rural electrification projects or the use of grid-connected RE. In this case, it is important to ensure that the additional costs for energy caused by the supply of modern energy services do not impose a burden on households. That is why the BMZ sector strategy understands poverty impact as reducing the costs of traditional energy systems or the costs as compared with these systems, increasing income or creating jobs. It distinguishes between poverty reduction through improved access to energy and through greater economic growth brought about by energy. However, interventions in favour of 'growth through energy' only reduce poverty 'when poorer population groups participate substantially in the growth process'.

For projects and programmes that aim to disseminate relatively expensive **RE systems** (e.g. SHSs), this often means that the poorest sections of the population cannot be reached. Although poorer population groups can be included by optimising the cost of the systems or using suitable financing instruments, very poor income groups remain excluded³⁷. SHP Tibet is consequently active in a region with a particularly low income and a low electrification rate as compared with the national average (60% compared with 93%). The poverty relevance may also come into conflict with other important criteria such as sustainability. For example, SHPP Nepal attempted to disseminate small hydropower based on market-economy principles with a strong emphasis being placed on financial sustainability. In the process, though, the relevance to poverty reduction was largely lost because almost all of the SHP plants disseminated according to this approach fed the generated power into the grid at a profit instead of supplying poor households. Economic practice dictates that new products first be

³⁶ see Annex p. 69. 'Conflict' probably refers to a different objective rather than an impediment to achieving the MDG.

³⁷ The investment costs for an SHS with an output of 50 Wp is between US\$ 300 and 800. Low-income households that have so far spent little on energy cannot usually even afford the operating costs of such systems (especially for replacing batteries).

disseminated at the prosperous end and not in the poverty segment. This also applies to renewable energies³⁸.

HE projects and programmes can cover wider income levels because self-help approaches are also possible in this sector (e.g. building energy-saving stoves). In its HE component, EAP Uganda impressively shows that a large number of people can be reached³⁹.

EE projects and programmes usually only make sense where large amounts of energy are consumed⁴⁰. These have a certain level of income, so the challenge lies in finding those areas in which poor population groups also benefit from savings. In EE Turkey, this was done by concentrating on one poor region (Erzurum in structurally weak eastern Turkey), where according to the problem analysis, expenditure on energy made up a 'relatively high' proportion of overall household expenditure (para. 6)⁴¹. EE Brazil and PIEEP concentrated on EE in SMEs, for which no adequate advisory services generally exist and where it can be presumed that members of poor households are more likely to find employment and income⁴².

As already stated in Section 3.3 (impact), proof of the plausibility of indirect results is a challenge for contract and cooperation management. This requires systematic monitoring and suitable indicators including a baseline study. But the reports do not say to what extent the projects and programmes tried to collect information on overarching objectives.

4.1.2 Mainstreaming in development strategies (in the field)

The good relevance rating of almost all projects and programmes already indicates that these are embedded in the development strategies of partner countries. This is particularly true of RE China, which makes an important contribution to the extensive and ambitious Brightness Programme. In Uganda, the Poverty Eradication Action Plan contains the objective of a reliable and comprehensive energy supply, which EAP Uganda helps to achieve. SHP Tibet makes a contribution via rural electrification and poverty reduction to two of the most important development goals of China's 'Western development strategy' (para. 41). However, only HEP Sahel makes direct references to poverty reduction strategies and above all, poverty reduction strategy papers. In this case, though, the reservation is made that this connection no longer existed during subsequent implementation and that the programme therefore lost some of its significance.

³⁸ However, RE technologies are increasingly being offered at a price level that is also affordable for poor population groups in developing countries, e.g. solar lamps.

³⁹ So far, the project has been able to disseminate 300,000 stoves in Uganda.

⁴⁰ As a sub-segment, EE also plays a role in RE projects and programmes because decentralised RE systems frequently have limited output and the efficient use of power is therefore important, e.g. by using energy-saving lamps.

⁴¹ Here it would have been interesting to learn how high this proportion is in comparison with households in other regions.

⁴² The evaluation reports do not say whether this assumption could be substantiated in the relevant projects and programmes. This would have been the task of a results-based monitoring system.

4.1.3 Poverty marker in the offers and its distribution

The following table summarises the poverty profiles of the evaluated projects and programmes:

Projects and programmes	Marker	Poverty analysis	Indicator	Poverty impact
ENEP Thailand	EPA	---	---	
SHP Tibet	SUA	X	---	The proportion of poor people has dropped from 16 to 10.8% through the promotion of productive use at SHP sites. In the reviewed households, inadequate food supply has dropped from 33% to 23% of households.
EE Brazil	EPA	---	---	Securing of jobs
HEP Sahel	MSA	---	---	
TERNA Ethiopia	MSA	---	---	---
PVP Chile	MSA	---	---	
ProBEC SADC	MSA	---	---	Jobs, reduced working hours
EAP Uganda	MSA/SUA	---	---	Creation of jobs in SMEs
PIEEP Argentina	---	---	---	Securing of jobs through improved competitiveness by advising over 500 SMEs
SHPP Nepal	SUA	---	---	
RE China	MSA	---	---	Creation of 400 - 500 jobs, reduced working hours
EE Turkey	EPA	---	---	
PERACOD Senegal	SUA	---	---	Expenditure for cooking energy per household reduced from EUR 36 to EUR 11-18 per month due to improved stoves
PROFER Dom. Rep.	MSA	---	---	
REEE Pakistan	MSA	---	---	

EPA = General development approach, SUA = Other direct poverty reduction esp. basic social services, MSA = Comprehensive poverty reduction at the macro and sectoral level

Table 11: Poverty profiles of the reviewed projects and programmes

The majority of the evaluated projects and programmes only have indirect relevance to poverty reduction according to their markers. Thus, eight of the 15 projects and programmes were

classed MSA (comprehensive poverty reduction at the macro and sectoral levels); three more were classed EPA (general development approach). Only four projects and programmes (29%) served to bring about direct poverty reduction (SUA - other direct poverty reduction, especially basic social services). These were the two devoted to disseminating small hydropower plants (SHPP Nepal, SHP Tibet), the cross-cutting programme PERACOD and the cross-cutting project EAP Uganda⁴³.

In **TERNA Ethiopia**, the evaluators only see a very weak link between the projects/programmes and poverty, since in their opinion there are no signs that the use of wind energy might cut power costs in Ethiopia (para. 62). On the contrary, they cite Colombia and Morocco as examples of countries where the average power costs rose after the installation of wind parks, and compare the cost of wind power with the (much lower) cost of hydropower⁴⁴. The question here is why this programme receives the same classification as 'pure' **HE programmes** (HEP Sahel, ProBEC), although the widespread dissemination of efficient stoves can be expected to have a direct effect on the income of affected households, at least in the case of ProBEC. In the author's opinion, these programmes should also be classed SUA (other direct poverty reduction). As expected, **EE projects and programmes** have a general development approach (EPA).

4.1.4 Target group differentiation and poverty analysis

At most projects and programmes, there can be no mention of target group differentiation in the sense of clearly delineated population groups. Target groups are delimited at only one third of the projects/programmes. In SHPP Nepal and SHP Tibet, the target group is the 'rural population in selected sites'. EAP Uganda is directed at private and industrial energy consumers *especially among the poor population* in three districts of Uganda. ProBEC also focuses on the 'poor rural population'. RE China restricts the target group to 'small and medium-sized farmers, nomads and tradespeople who have no access to electricity'. PVP Chile, as a very specific measure, also has specific target groups (small farmers with irrigation perimeters). At HE projects and programmes, the priority support given to women translates as a focus on this target group, even if this is not stated in the target group descriptions.

Other projects and programmes implicitly expect a trickle-down effect in their selection of target groups. All of the reviewed EE projects and programmes are directed mainly at companies and their employees as the target group, in the hope that improved competitiveness will create jobs there or at least secure existing jobs. With PERACOD too, 'supported tradespeople can certainly not be counted among the poorest section of the

⁴³ EAP Uganda was originally classed as MSA but later as SUA.

⁴⁴ The evaluators compare the anticipated cost of US cent 7/kWh with those of hydropower (3-3.5 c/kWh) (para. 64).

population in most cases, but in the final analysis, poor people also benefit from the programme by being included in the value-added processes as employees, for instance' (para. 24).

The evaluation report on PROFER terms it a 'project that is not in touch with the target group' (in the sense of the BMZ target group concept). Even if this is not mentioned in other reports, it certainly applies to many other projects and programmes, e.g. TERNA, which is explicitly geared exclusively to people who already have access to power from the grid (in Ethiopia certainly people more likely to belong in the upper income bracket).

No poverty analysis was performed at any of the projects and programmes, with the exception of **SHP Tibet**, where a poverty report was written as part of the monitoring process (para. 37), but the programme was not specifically directed at poor households. However, it did make targeted efforts to create employment and income by promoting economic processes, albeit with the restriction that really poor households (with an annual income of less than EUR 18) derived less benefit from the project/programme than others (para. 61). The number of poor households did, however, drop from 16 to 10.8% during the term of the programme. While the evaluators conceded that it was difficult to prove the relationship with the programme's activities, it was 'without doubt meaningful and plausible' (para. 96).

4.1.5 Conclusions

The evaluated projects and programmes lack a clear orientation to poverty reduction (stipulated in BMZ's new sector strategy since 2007). In most cases, this is not due to incorrect project/programme design, nor does it mean that no poverty reduction is achieved. However, by better analysing the target groups and systematically monitoring poverty indicators, the projects and programmes would be able to offer their services more specifically to those population groups who cannot afford an adequate energy supply due to their poverty, or for which an improved energy supply offers a way to escape from poverty.

RE projects and programmes with clearly defined target groups and a focus on the productive use of energy⁴⁵, as well as HE projects and programmes, have direct relevance to poverty reduction. EE projects and programmes and other RE projects and programmes only have an indirect poverty impact, e.g. by creating or safeguarding jobs. This experience is more or less corroborated by a World Bank study that examined 120 rural electrification projects and programmes to study their effects on the living conditions of the target groups⁴⁶. According to the study, 75% of projects and programmes aimed to improve energy supply, and 60% aimed to improve living conditions. However, only 7% had poverty reduction as an explicit objective.

⁴⁵ This applies in particular if the supported technologies can provide the required output, e.g. SHP

⁴⁶ IEG (2008), The Welfare Impact of Rural Electrification

The study establishes that poverty, like gender, has still not become a main concern addressed by rural electrification: 'The larger share of benefits from rural electrification is captured by the non-poor, although the gap closes as coverage expands'. With regard to the technological approach, the study also points out that decentralised approaches are in no way superior to grid electrification in terms of poverty reduction: 'Off-grid does not reach the poor better than grid extension does, particularly with private business models'. However, in remote areas with widely scattered settlements, they usually offer the only power supply option.

4.2 Gender equality

Giving consideration to gender aspects in development cooperation projects and programmes has high priority for BMZ and will be analysed in some detail here with regard to the evaluated projects and programmes. The gender marker of the projects and programmes was examined to see whether a gender analysis was performed up front, whether indicators were established for gender aspects and which gender impact was observed. Concrete gender-related strategies or activities are also identified at the reviewed projects and programmes.

4.2.1 Gender markers of the development measures (distribution)

Of the 15 projects and programmes, only three (20%) received the gender marker G-1. Most were classed as G-0 or received no marker at all (SHP Tibet). The evaluation reports do not clearly state whether a prior gender analysis was performed. Only eight reports contain statements that indicate that such an analysis was conducted. These include all the **HE projects and programmes**.

The following table gives an overview of the gender aspects of the evaluated projects and programmes:

Projects and programmes	Marker	Gender analysis	Indicator	Strategy	Gender-specific activities
ENEP Thailand	FU	---	---	---	
SHP Tibet	---	X	---	---	
EE Brazil	G-0	---	---	---	
HEP Sahel	FP	X	---	---	
TERNA Ethiopia	G-0	---	---	---	
PVP Chile	G-0	---	---	---	
ProBEC SADC	G-1	X	---	---	
EAP Uganda	G-0	(X)	---	---	Support for women's groups in integrating energy themes into their own information measures
PIEEP Argentina	G-0	---	---	---	
SHPP Nepal	G-1	---	---	---	Training for women on reading meters and connecting cables
RE China	G-0	---	X	---	
EE Turkey	FR	---	---	---	
PERACOD Senegal	G-1	---	---	---	Strengthening of women's groups to market improved stoves
PROFER Dom. Rep.	G-0	---	---	---	
REEE Pakistan	G-0	---	---	---	Seminar on gender Evaluation of gender aspects within rural electrification

Table 12: Gender profiles of the reviewed projects and programmes

In more than half of all projects and programmes, no importance was attached to the theme in the opinion of the evaluators. These include 'pure' **EE projects and programmes**. According to the PIEEP offer, there is no further need for action as regards the effects on gender equality, 'since women and men alike participate to the same extent in planning and in the benefits derived'. The project did in fact plan to give priority to promoting female managers. But with the exception of the director of the partner authority, PIEEP exclusively employed men. EE Brazil found that women were particularly affected by job losses. Within its monitoring system, the project was to take into account 'gender impact' and only promote implementation

measures if the negative effects on women remained at an acceptable level to be defined by the project. The project is given the G-0 marker. In TERNA Ethiopia as well, gender did not play a role or was not taken seriously during implementation: 'The feasibility studies conducted by Lahmeyer International do not discuss social impacts or gender issues, although this would have been required according to the terms of reference' (para. 60). Nor did the training measures include any female participants⁴⁷. Other projects and programmes like PROFER do recognise the importance of the theme but do not draw any consequences from this.

PVP Chile does not recognise any gender relevance because in the cultural setting dominated by the Aymara in northern Chile, women have equal opportunities in all important matters (including economic decisions).

A concrete **impact** on women is only documented in two projects/programmes (SHP Tibet, RE China). All other statements in the reports are assumptions. Since there is no significant information on gender impact at EE projects and programmes, only the two other areas are examined in more detail in the following section.

4.2.2 Gender impact in the field of household energy

The importance of women is clearly emphasised at all HE projects and programmes. In **HEP Sahel**, women were the major target group because of the theme alone: as users of household energy, they are most affected by improved access and more efficient use of biomass. 'Women bear the main responsibility for providing energy for the home and are therefore hardest hit by the energy crisis since it takes more and more time and effort to collect firewood. Since wood is becoming increasingly scarce, it takes longer to collect and transport, which increases its price and thus the burden on women and the household budget. More efficient use of wood frees up time for other purposes, including productive activities, or relieves the household budget for other vital expenditure' (offer). The programme is therefore given the **FP** marker in category F (the participation of women in the design, implementation and benefits of the projects is assured, positive effects on women outweigh any others). 'For these results to be achieved, the design makes clear that measures and technologies in the field of HE can only succeed if they are tailored to female users' (para. 101). The strategic interests of women in greater equality were not, however, taken into account by the programme. Few women (3%) took part in further training, and only 5% in the expert database were women (para. 104). This is also reflected by project/programme staffing. 'Women were mainly seen as passive beneficiaries of measures, not as active participants who were to contribute their specific interests' (para. 107). However, the evaluators see the general failure

⁴⁷ Here we must ask, though, how this could have been influenced by the programme: Should it prescribe a minimum quota of female participants to the partners, even if no sufficiently qualified female experts are available in the partner country?

to achieve objectives rather than the lack of a gender concept as the reason why women derived so little benefit from the programme.

Since women are responsible for the household and in many cases also for micro businesses like restaurants, dyeshops, potteries etc., as the beneficiaries of household energy measures, they also benefit from a whole range of other concrete, positive results, such as less effort for gathering wood, reduced levels of smoke and other pollutants, shorter cooking times and reduced energy costs.

In the case of **ProBEC**, the evaluators find the G-1 marker to be 'almost too cautious', because women definitely derive greater benefit from the programme. It reduces their workload and leads to health improvements (reduced number of accidents and respiratory diseases). Nevertheless, the programme 'is not explicitly designed in a gender-responsive manner' (para. 83), but only promotes women through the selection of its theme. No indicators were formulated, and the evaluation report says nothing about additional measures to strengthen women and their organisations. The same applies to **PERACOD**. Although women are the major target group, most of the partners at meso and micro level were men. While it is conceded that women are involved to an above-average degree according to an e-VAL report dating from 2007, it remains unclear how this is brought about (para. 110).

4.2.3 Gender impact in the field of RE for rural electrification

SHP Tibet does not have a gender-specific indicator, but the offer states: 'According to surveys conducted by the programme, 36% of participants in village meetings, 41% in agricultural training, 27% in business training and 35% of people taking out loans were women'. In the evaluators' opinion, these are impressive figures in view of the weak position of women in Tibet. M&E also shows that the number of girls who attend school has risen from 50% to 80-90%, among other things due to electrification (para. 93). This shows that systematic monitoring can demonstrate the gender-specific results of energy projects and programmes.

The offer for **EAP Uganda** explicitly names women in the description of the target groups. Although the project is presumed to have effects on women because they 'usually bear responsibility for the family budget and for supplying the household with firewood', it is given the G-0 marker. The reason stated is that households are only one of the target groups and the results chain is too long to be assessed and steered by the project without disproportionate effort. In the evaluators' view, this is an error: they believe the project could have oriented itself more towards gender at the political level. The G-1 marker is to be assigned to the planned new project.

The offer for **SHPP Nepal** promises: 'The provision of electrical energy will make women more independent of kerosene and firewood in their household management and will therefore reduce their physical workload'. This also improves the situation of women and their role in the project environment. Experience from the first promotion phase has been positive, since most of the physical work required to produce and process food in the villages was previously done by women. The increased use of electrical energy in these areas relieves the physical load on women and their time budget, but they must be able to finance the energy costs. Operational monitoring of SHP plants creates new jobs in the villages that are often assumed by women (offer). However, no indicator is in place to measure these results, nor are there any concepts for how to specifically promote women.

PROFER: 'In rural households, women in particular benefit from the provision of electricity in the household (reduced workload through lighting, refrigerators, other household appliances), for child care and education, and for preparing and preserving foods'. Hence 'the need for action during project implementation to safeguard any positive gender-specific impact of these individual activities and record it within results monitoring' (offer).

The latest programme, **REEE Pakistan** (which started in 2003) has planning deficits with regard to gender: 'The programme was not differentiated by gender, as no gender study and analysis was presented in the context of energy' (para. 87), although the evaluators establish that: 'Gender issues do play a key role in energy policies after all, because the gender differences have consequences for energy needs, use and priorities'. In its first phase, the programme conducted a gender analysis as the basis for a gender strategy, as well as a seminar on the theme of 'Gender and energy' (para. 91). However, the report also points out the difficulties of giving adequate consideration to gender in the programme design. First, considerable resources must be invested in training and awareness-raising among women before they can be successfully involved in implementing measures. It is also difficult to find female interviewers for socio-economic studies. The participation of women at seminars in rural regions was said to be difficult (para. 91).

In **RE China**, rural electrification was found to have improved the situation of women. Their workload has been reduced, as well as their willingness to migrate, in some cases. Although this programme does not explicitly mention women as a target group, it does have an indicator at objectives level that measures effects on women (see offer):

- At least 80% of approx. 500 women interviewed in the programme areas state that they have better working conditions in their homes (better lighting, less smoke) and say that this is due to better energy services (survey).

On this basis, it was possible to measure that the working hours of women in the reviewed regions had dropped from 11-15 hours a day (in 2002) to 7-10 hours (in 2005). Satisfaction

with the lighting situation rose from 13.8% to 100% (para. 44). In addition, the proportion of girls attending school increased from 50% to 80-90% (para. 104).

4.2.4 Conclusions

Despite the importance of this theme in development cooperation, the reviewed energy projects and programmes find it hard to take gender aspects into account during their planning and implementation. This starts with the markers of the projects and programmes, where G-0 markers were attributed although the importance of women is undisputed, at least in HE projects/programmes and those RE projects/programmes that are close to the target groups. But gender analyses and the relevant indicators are also missing at projects and programmes termed as gender-relevant. There is thus only anecdotal evidence of the direct effects of energy projects and programmes on women, and these effects are open to speculation. The measures taken by the projects and programmes tend to be sporadic and unfocused. It does become apparent, though, how difficult it is to achieve a breakthrough for gender themes in the largely male-dominated energy sector.

4.3 Effects on the partners' capacity for action (capacity development)

4.3.1 Dimensions of capacity development

According to GTZ's definition, capacity development takes place at four levels: the individual level, the institutional level and the levels of network and system development. This classification shows certain parallels with the intervention levels, but offers a further analytical model for the strategic orientation of projects and programmes.

It is noticeable that most projects and programmes mainly operate in the field of conveying knowledge (technical, but also management skills), and much less in organisational and system development. Networking has only been important at a few of the projects and programmes. Interventions aimed at system development are more likely to take place in RE projects/programmes than in other thematic areas. Unfortunately, information on the type of capacity development is presented very unsystematically in many evaluation reports, which makes it difficult to draw conclusions about factors influencing success and failure.

The following table shows the levels at which capacity development took place in the evaluated projects and programmes:

Project/programme	Persons	Org. devel.	Networks	System devel.	Results level ⁴⁸	Overall rating
SHP Tibet	++	++		+	high	2
TERNA Ethiopia	++			+	high	2
PVP Chile	++	+	+		high	2
SHP Nepal	++			+	high	2
RE China	++	+		++	high	3
PERACOD Senegal	++	+			high	2
PROFER Dom. Rep.	+		(+)	++	moderate	3
REEE Pakistan	++	+		+	high	2
HEP Sahel	+		(+)	+	low	4
ProBEC SADC	++	+			low	2
EAP Uganda	+	+	+	+	high	1
ENEP Thailand	+	++	+		low	4
EE Brazil	+	+		+	high	2
PIEEP Argentina	+	+	+		high	2
EE Turkey	+	+		+	moderate	4

Table 13: Dimensions and results of capacity development

⁴⁸ The results of capacity development were not explicitly assessed in the reports but are taken from the texts by the author. In future, it is recommended that evaluators make a (quantitative) assessment based on clear criteria.

4.3.2 Results of capacity development

The results of capacity development are rated as positive in 10 reports, as rather moderate in two reports and as poor in three reports. As the above table shows, a clear connection can be observed between project success and successful capacity development.

Although almost all projects and programmes act at the level of strengthening individual competencies, the greatest results are seen in the strengthening of the partners' institutional performance, as in SHP Tibet, PIEEP and REEE Pakistan. In **PVP Chile**, capacity development produced the greatest impact among the implementation partners UTA and CODING: 'The professionalism of these two (...) executing agencies has markedly increased' (para. 37). In **TERNA Ethiopia**, capacity development had indeed been directly worded as the programme objective⁴⁹. However, the evaluators criticised the fact that no other (private) organisations had been involved besides the partner EEPCo (para. 20). In **ENEP Thailand**, one of the main tasks was to help the partner DEDP evolve from a regulatory authority into a service provider. With the exception of changes at individual employee level, the evaluators saw no structural changes of any kind and rated the project as 'unsatisfactory'.

A strong focus on the (political) implementation partner does not necessarily lead to successful capacity development. Thus, in its second phase, **HEP Sahel** was completely integrated into its partner organisation CILSS at administrative level, but worked independently in terms of content. This meant that no skills could be built at CILSS (para. 49). Since contacts with other stakeholders were neglected in this phase, the impact of the programme was even less (see also Section 6.1). The **ProBEC** programme was also unable to strengthen the institutional capacities of the partner SADC⁵⁰. **PERACOD** was successful in closely involving and increasing the degree of responsibility assumed by the two authorities concerned (ASER and the Directorate of Forestry), but this was not the case for the formal partner, the Directorate of Energy. In the case of **PROFER**, the evaluators criticise the fact that the project did not gear its capacity development sufficiently to decision-makers (para. 45). In **RE China**, training and awareness building among counterparts and the population were accompanied by organisational development processes at relevant institutions, e.g. in order to improve planning processes. This went as far as the introduction of quality management measures (ISO 9000) for a partner institution. Such interventions can have very long-term results. Thus, the Objectives-oriented Project Planning method (ZOPP) applied in EE Brazil and PIEEP is still used by the former partners today.

⁴⁹ see also Annex 7

⁵⁰ Here, the evaluators were unable to reach any further assessment because the appointment with SADC was cancelled at short notice during the evaluation. This indicates the low ranking of the programme for the partner.

At some projects and programmes, the effect on the self-organisation of the target groups is also emphasised (SHP Tibet, SHPP Nepal, REEE, PERACOD).

PIEEP had a strong **networking effect** that resulted from the necessity of building a new partner structure after the political partner dropped out. Although this network of EE advisory institutions no longer works as intensively as at the time of implementation, it still exists at an informal level and creates synergies, e.g. through joint advisory approaches in which the various competencies (e.g. EE competence with sector knowledge) complement each other.

At **system development** level, essential framework conditions were redesigned by some projects and programmes, and generated positive momentum among stakeholders. In this context, mention should be made of the 'leaseholder concept' in SHP Tibet and the clarification of financing arrangements and feed-in compensation in SHPP Nepal⁵¹. In RE China, the design of the legal framework was also an important prerequisite for creating incentives and security for investment. German experience was also incorporated, for example the Electricity Feed Act (EEG) (RE China, para. 35). However, drawing up plans and strategies (in HEP Sahel and PROFER for instance) does not mean that the 'rules of the game' are really changed to provide fresh momentum.

4.3.3 Conclusions

Capacity development takes place at many levels and is crucial for the success of projects and programmes. However, the reports give the impression that this does not always take place in a systematic manner. Concentrating on one implementation partner is usually too short-sighted. Although capacity development shows the greatest results at institutional and system levels, most of the reviewed projects and programmes act primarily at the level of individual persons. Systematic analysis of the partners' strengths and weaknesses and a corresponding strategic procedure to effect capacity development might increase success rates and boost efficiency⁵².

⁵¹ see also Section 6.1.5

⁵² Capacity WORKS for instance offers instruments that can be used to draw up such analyses and strategies.

5. GTZ's concept of sustainable development

GTZ's concept of sustainable development (2006) states three criteria that should be borne in mind in GTZ projects and programmes:

- Our work is holistic: we combine the economic, social and ecological facets of sustainable development; sectoral, organisational and policy advice; the micro, meso and macro levels
- Our work is process-oriented: help towards self-help; creating transparency as regards the interests of different stakeholders; promoting interaction between the state, civil society and the private sector
- Our work is value-oriented: promoting democracy, the rule of law and human rights; gender equality; good governance; a social and ecological market economy

Not all of the reports contain clear assessments by the evaluators; often, the statements are nebulous and three of the reports do not gear the assessment to the criteria stated in GTZ's concept of sustainable development⁵³. Although the concept was only introduced after most of the projects and programmes had been planned, the assessment in this respect is positive on the whole. Eleven projects/programmes follow a holistic approach, eight (or with reservations, ten) follow a process-oriented approach and three (or with reservations, seven) are value-oriented.

If one compares these results with the overall rating of the projects and programmes, it is noticeable that two of those rated 'unsatisfactory' have not paid adequate attention to GTZ's concept of sustainable development (HEP Sahel and ENEP Thailand)⁵⁴. PROFER also is only rated 'satisfactory', since it only takes limited account of the concept. This indicates that there is a relationship between the criteria of the concept and project success in complex projects and programmes⁵⁵. In less complex and technology-oriented projects and programmes (TERNA Ethiopia, PVP Chile), this relationship does not exist. In these, good results were achieved even if little account was taken of the concept. The following table compares the consideration of the sustainability criteria of GTZ's concept of sustainable development with the overall rating of the projects and programmes:

⁵³ One example is the report on PVP Chile, where a rather one-sided assessment of the ecological results was made, but other examples are EE Brazil and REEE Pakistan.

⁵⁴ As explained elsewhere, the poor rating of the third 'unsatisfactory' project/programme (EE Turkey) is mainly due to its unplanned termination and the resulting lack of sustainability.

⁵⁵ It was with good reason that 'processes' were identified as one of the five success factors in Capacity WORKS.

Project/programme	Holistic approach	Process orientation	Value orientation	Overall rating
ENEP Thailand	-	(+)	-	4
SHP Tibet	+	+	+	2
EE Brazil*	+	+		2
HEP Sahel	-	-		4
TERNA Ethiopia	-			2
PVP Chile*	limited			2
ProBEC SADC	+	+	(+)	2
EAP Uganda	++		+	1
PIEEP Argentina	+	+	(+)	2
SHPP Nepal	+	+	+	2
RE China	+	+	(+)	3
EE Turkey	+	+	-	4
PERACOD Senegal	++	(+)	+	2
PROFER Dom. Rep.	+		(+)	3
REEE Pakistan*	+	+		2
Total	11	8 (2)	3 (4)	

++ particularly positive; + positive; (+) positive with restrictions; - explicitly not in place

*these projects/programmes were based on a different understanding of sustainable development

Table 14: Consideration of GTZ's concept of sustainable development

The holistic approach, especially the linkage of ecological, economic and social objectives, is usually obvious in relation to the theme of energy. Contradictions were not addressed in the reports but certainly exist. As Section 6 shows, almost all projects and programmes followed a multi-level approach and combined sectoral, organisational and policy advice. The evaluators also concede that most of the projects and programmes are process-oriented. The analysis of the cooperation structure of the projects and programmes (Section 7.3, Table 18) shows that most of them (10 out of 15) promote interaction between the state, civil society and the private sector. As regards value orientation, the focus of conceptual design is on the social and ecological market economy. In some projects and programmes, gender equality and empowerment of the target groups are further focal areas. In contrast, the promotion of

democracy, the rule of law and good governance are themes that play a subordinate role in the reviewed energy projects and programmes and were not actively included.

In **HEP Sahel**, the process orientation and holistic approach in the first phase were praised. In the second phase, the programme deviated from this approach because it only focused on governmental actors. In **SHPP Nepal**, empowerment increased the involvement of the population, according to the evaluators (para. 21), but the target groups were unable to benefit sufficiently from the project.

The evaluators see clear limits to consideration of GTZ's concept of sustainable development in **EE Turkey**, which shows no value orientation according to the report, but concentrates purely on technical and economic issues. The evaluators consider that 'no positive effects were generated as regards the promotion of democracy, the rule of law, human rights, gender equality, participation and good governance (...)' (para 23). On the other hand, the project did proceed in a process-oriented way and in particular promoted interaction between the state, civil society and the private sector.

Summary: Consideration of GTZ's concept of sustainable development is especially important for complex programmes and projects, but not all of them consider it to the same extent.

6. Sectoral assessment

6.1 Methodological approach and achievement of objectives

6.1.1 Assessment of the methodological approach

In most of the projects and programmes, the methodological approach or design was presented in detail by the evaluators, but not systematically assessed. The ratings are expressed in terms such as 'sophisticated' (HEP Sahel), 'proven' (PIEEP), 'exemplary' (EE Brazil), 'needs-driven' (EAP Uganda), 'appropriate' (EE Turkey) or 'extremely positive' (ProBEC). Some reports only address the objectives and indicators (SHP Tibet, PROFER). With the exception of PVP Chile, all the projects and programmes are assessed positively, though the reasons given are usually not very specific. It may be difficult to compare the concept pursued with other (hypothetical) alternatives.

In **PVP Chile**, the evaluators state that the concept is 'very narrow' and that the focus on swift and practical examples of applications for PVP technologies has subsequently proved to be a disadvantage. A less 'technocratic' procedure oriented more closely to sociocultural conditions would have been better from this point of view (para. 21).

In **HEP Sahel**, the concept is rated as consistent and appropriate, but too ambitious (para. 16)⁵⁶. The programme shows that too great an emphasis on meeting demand is made at the price of strategic orientation. HEP Sahel advised a number of other projects and programmes in response to demand, but was unable to reach its objectives in the context of its implementation structure.

The following table again compares the project and programme approaches and the goal achievement rating.

Project/programme	Methodological approach	Effectiveness rating
RE for rural electrification		
SHP Tibet	Safeguarding of the sustainable operation of SHP plants through productive use of power	2
TERNA Ethiopia	Dissemination of wind energy by preparing concrete investment measures with an energy provider	2
PVP Chile	Preparation of the dissemination of PV pumps by documented and successful pilot measures	2
SHPP Nepal	Introduction of models for the financing and cost-effective operation of SHP stations by private companies	2
RE China	Safeguarding of the sustainability of RE systems by training operators	3
PERACOD Senegal	Support for national authorities to implement HE concepts (supply and demand side) and rural electrification (concession model and village power plants)	2
PROFER Dom. Rep.	Policy advice to improve the general conditions for RE, strengthening of an RE fund and development of SHP models	3
REEE Pakistan	Strategy development with important implementation partners at national level and implementation with the private sector	2
Household energy		
HEP Sahel	Formerly technology development and mass distribution, in the last phase, mainstreaming of HE in national energy strategies	4
ProBEC SADC	Dissemination of efficient HE technologies via a commercial approach and awareness-raising measures among decision-makers and users	2
EAP Uganda	Energy policy advice combined with massive implementation in the HE (self-help approach), RE and EE sectors	1
Energy efficiency		
ENEP Thailand	Application of EE law by strengthening the responsible authority	4

⁵⁶ In the author's opinion, this is contradictory: a concept is only appropriate if it can also be implemented under realistic presumptions.

EE Brazil	Setting up advisory offers for EE	2
PIEEP Argentina	Setting up service offers for production efficiency	2
EE Turkey	Improving the general conditions for EE combined with implementation in one municipality	4

Table 15: Methodological approaches of the evaluated projects and programmes

In **PERACOD**, the evaluators established that the objectives and results chains were 'plausible and appropriate'. 'However, the actual procedure of PERACOD differs from the one described, which meant that a fundamental adjustment (...) was required for this evaluation (...) (para. 9). The reasons were the provision of additional cofinancing by Energising Development and the unexpected development of the programme's framework, especially with regard to the introduction of the concession model.

In **EE projects and programmes**, it is apparent that those which promote private advisory structures achieve better ratings than those that aim to achieve better application of the relevant laws by the authorities.

The evaluated projects and programmes follow very diverse approaches that are adjusted to the partners' needs and the specific situation in the given country at a certain point in time. No standard approaches can be deduced from the evaluations that could be used as ready-made blueprints for new projects and programmes. Altogether, though, comparison with the overall ratings shows that projects and programmes which promote concrete measures to implement sustainable energy systems are more successful than those that support the development of policies or strategies, without achieving their *implementation* (HEP Sahel, ENEP Thailand, EE Turkey). EAP Uganda is a good example of how policy advice combined with massive support for implementation shows very good results.

6.1.2 Intervention levels

Analysis of the intervention levels shows that all projects and programmes intervened or intervene at several levels. Typical interventions were:

- at **macro level**, advising political partners on formulating strategies to promote sustainable energy systems and shaping the relevant legal and regulatory framework, and to a lesser extent, building the required capacities;
- at **meso level**, strengthening the relevant governmental and non-governmental actors, e.g. implementing authorities, district and municipal governments, associations, providers of products and services for the sustainable use of energy, NGOs and scientific institutions, and supporting coordination processes between these;

- at **micro level**, planning, if necessary financing, implementing and assessing pilot measures and demonstration projects/programmes in the field of sustainable energy use, as well as strengthening local target group organisations.

The following table shows the main levels at which the projects and programmes intervened:

Project/programme	Micro	Meso	Macro	Supraregional
RE for rural electrification				
SHP Tibet	+	+	+	
TERNA Ethiopia		++		+
PVP Chile	++	+		+
SHPP Nepal	+	++	+	
RE China	+	+	+	
PERACOD Senegal	+	++	+	
PROFER Dom. Rep.	+	+	++	
REEE Pakistan	+	++	+	
Household energy				
HEP Sahel	(+)	(+)	++	+
ProBEC SADC	+	++	+	+
EAP Uganda	+	++	++	
		Energy		
ENEP Thailand	+	++		
PIEEP Argentina	+	++	+	
EE Brazil	+	++	+	
EE Turkey	+	+	+	

(+) = in former phases

Table 16: Intervention levels of the reviewed projects and programmes

All but four projects and programmes were active at all three levels (multi-level approach). In most cases, the focus is on the meso level.

The evaluators see the following added value in a multi-level approach:

- pilot projects make it possible to establish best practices at micro level and to introduce them to the meso and macro levels
- successful approaches at micro level contribute to credibility at policy level⁵⁷

⁵⁷ 'The experience made at micro level was crucial for the credibility of advisory services at meso level and intervention at macro level'. (EE Brazil)

- the multi-level approach minimises the risk of political crises because success does not depend on individual institutions (PROFER). However, there is a greater need for steering.
- The multi-level approach helps to institutionalise methods and processes.

The importance of the interventions at micro level is pointed out in several places. The multi-level approach is designed to strengthen the micro level in particular, in order to achieve results among the target groups. The lack of interventions at micro level restricts the profile of the German contribution.

The trend among the reviewed projects and programmes often ranges from intensive activities at micro level in the initial phase to greater involvement at macro level in subsequent phases. **HEP Sahel** shows that it is important to remain grounded; here, the 'integrated, participatory approach' in the first phase was praised. However, after the programme was integrated into CILSS, this approach was largely abandoned. In the second phase, contacts were restricted 'almost exclusively to governmental actors': 'civil-society groups and networks that had been promoted during the first phase were no longer considered' (para. 47).

However, some reports suggest that priority should be shifted between the levels. The evaluators suggest to **SHPP Nepal** that it should concentrate on the micro level rather than the meso level to ensure, by strengthening the target groups (village population), that these (not only the operators)⁵⁸ also benefit from the SHP plants. Owing to limited resources, these interventions had been removed from the previous concept (para. 13). In the evaluators' opinion, demonstration measures and study trips might also have facilitated the introduction of innovative concepts such as split power purchase agreements at macro level⁵⁹.

Exceptions to the multi-level approach are ENEP Thailand, HEP Sahel, TERNA Ethiopia and PVP Chile.

In **ENEP Thailand**, the focus was exclusively on the meso level, which the evaluators consider to be one reason for the low success rate of the project: 'By setting the focus too much on DEDP and its capacity, other - probably more important - aspects were not mentioned (e.g. awareness raising and national energy plans)' (para. 21). Greater relevance to the micro level and the target groups would have been desirable: 'ENEP did not act beyond this institutional level and did not adapt its project concept to the changed framework conditions, especially to include activities on the target-group level'. The evaluators come to a similar conclusion in

⁵⁸ In the author's opinion, this could possibly have been achieved by interventions at macro level, e.g. by obliging operators to offer a certain proportion of the generated power to the local population.

⁵⁹ 'In those cases where the implementation of new concepts could be demonstrated, e.g. during a study trip to Switzerland (...), these were rapidly introduced at macro and micro level'. (SHPP Nepal, para. 19)

HEP Sahel. In their opinion, projects and programmes without a micro and meso level run a high, incalculable risk that the outputs will not be used.

In **PVP Chile**, evaluators see the low degree of influence on the general conditions for dissemination as a weak point. However, the initial purpose of this project was merely to implement pilot measures to clarify the possibilities of further dissemination. With a budget of only EUR 0.1 or 0.4 million (see footnote 8), a multi-level approach could not have been applied anyway. **TERNA Ethiopia** shows that if the objectives are narrowly defined (e.g. dissemination of one technology), even a project or programme that almost exclusively concentrates on the meso level can be successful (although these successes did not occur until after the evaluation).

Altogether, it is apparent that in projects and programmes with complex objectives, the multi-level approach is more promising than a single-level approach. The only two complex programmes (projects) that focus on a single level were rated 'unsatisfactory'⁶⁰. Where the objectives are more narrowly defined (as in TERNA and PVP Chile), single-level approaches can also be successful, as the evaluations show.

6.1.3 Implementing structure

Most projects and programmes work with the energy ministry as the major implementation partner, although concrete cooperation takes place with one or more authorities⁶¹. Water and trade authorities (in the case of SHP Tibet), national development commissions or special government bodies for developing sustainable energy systems (as in Pakistan) also act as partners. EE Brazil is an exception among the more comprehensive development measures, having an NGO (SEBRAE/RJ) as the partner. However, this did not prove to be a disadvantage because influence could also be exerted on the framework conditions via SEBRAE.

The two supraregional HE programmes (ProBEC and HEP Sahel) correspondingly have supraregional organisations as their partners, which link the programmes to the respective national ministries. This proved to be a disadvantage in the case of **HEP Sahel** (see Sections 3.2 and 4.3), in particular. Here, the greatest conceptual weakness was that the most important results were to be achieved at nation-state level, 'but at the same time, insufficient thought was given to who would achieve results at national level' (para. 27). The programme partner was the supraregional institution CILSS.

Exceptions to this are the country measures of the supraregional sector programmes. Here, a state-owned company (in the case of TERNA Ethiopia) and a university (PVP Chile) were

⁶⁰ The third 'unsatisfactory' project, EE Turkey, received a poor rating for quite different reasons.

⁶¹ see table in Annex 7

selected as the partner although these two projects were smaller measures (EUR 0.4 million) focusing on specific technologies.

According to the report, there were no grave problems with the implementation partner at any of the evaluated projects and programmes that had to be solved at a higher level, nor did a change in the lead executing agency take place during implementation.

In some projects and programmes, the multi-level approach with its multitude of interventions and implementation partners led to a lack of participation of the political partner, e.g. in PERACOD and EAP Uganda. However, this is not necessarily a problem, provided the link between the levels is maintained. This was no longer possible to a satisfactory degree in **EE Turkey**, between the micro/meso level on the one side and the macro level on the other. The central government receiving advice did not show sufficient interest in the local measures in Erzurum, and due to the failure of the project to set up a local advisory centre, no success was achieved at this level that could have been incorporated into the political process.

An interesting question arises as to whether synergies could be created in complex projects and programmes through the **interaction of several components**. In EAP Uganda, this is the case, because the advisory components of the energy ministry link up the other components. In PERACOD, though, this is not the case. Here, the methodological relationship and cooperation between the individual components receives a low rating from the evaluators (para. 89). Although the potential for synergies is restricted by the different themes, at least it could have been exploited by harmonising the target regions.

It is apparent that the methodological approach must be applied within a suitable implementation structure. If the target level is not reflected in the institutional setting, problems occur when it comes to achieving objectives.

6.1.4 Innovations

The evaluated projects and programmes have spawned a series of technical and organisational innovations which are not described in detail in the reports. Thus, the pilot use of PVPs in Chile can be termed a technical innovation, but so can an optimised solar home system in Pakistan, which is usually much more efficient than conventional units. It is noticeable that most innovations occur in RE projects and programmes.

SHP Tibet can be classed as very innovative. By promoting a leaseholder concept and the productive use of power through training and micro loans, it has applied two rural electrification concepts that are worth reproducing.

Productive use of electricity through training and micro loans (SHP Tibet)

SHP Tibet developed and applied an integrated approach to promote the productive use of electricity. Trainers were trained to run modified CEFE courses in the local language, to teach technical and business management basics for business start-ups to village inhabitants. The granting of small loans (e.g. for machines) also created jobs stimulating income and demand for electricity, both of which are prerequisites for sustainably operating the systems. With grants of only EUR 85,000, the productive use of 2.6 million kWh electricity was stimulated, at a very high repayment rate of 98% (para. 45). At the same time, 63% of the 375 people trained found employment in agriculture or crafts. However, the bank involved in the scheme stopped granting loans in the final phase of the programme because transaction costs were too high.

In SHPP Nepal, the focus is on **split power purchase agreements**. With these, the authorisation body only grants a licence for operating a plant or feeding electricity into the public grid if part of the generated electricity (e.g. at least 20%) is used for (local) rural electrification. This links the profitability of the plant with development-policy benefit.

PERACOD proved innovative above all in terms of technology, and managed to improve the efficiency of charcoal production processes and SHSs⁶².

One innovative approach in the **thematic area of EE** was the integration of energy efficiency into general production efficiency (PIEEP) (see 6.2.3). EE Brazil introduced an efficiency prize for SMEs (*Premio TOP Empresarial*) and an EE information system that is still in use today. The major innovation of ENEP Thailand was an information system (feedback reports, benchmarking, impact monitoring) that was to provide the responsible authority DEDP with a basis for implementing the EE law. Unfortunately, the project did not succeed in safeguarding the sustainability of this system.

Altogether, it is apparent that innovations are conducive to the success of projects and programmes. As shown by SHP Tibet and SHPP Nepal, the introduction of technical improvements or innovative operator and advisory models may help to remove major obstacles to the dissemination of sustainable energy systems.

6.1.5 Subsidies

First, it must be said that all projects and programmes in Africa were planned and implemented without any financial contribution from the partner, and were exclusively funded by international donors. Generally speaking, it cannot be expected that governments in these countries will provide adequate funds for extensive subsidy programmes.

⁶² By combining certain load controllers and energy-saving lamps, the light yield of systems was almost doubled compared with conventional solar systems.

However, the evaluators warn against establishing long-term subsidy models without an exit strategy even in countries with adequate resources. In **RE China**, for example, while the evaluators do consider initial subsidies to be necessary⁶³ for decentralised electrification in remote areas, cost coverage should be aimed at in the long term (para. 94). They suggest long-term loans as an alternative to subsidies, 'granted on a competitive basis to the rural and remote electrification projects, in combination with tax incentives (...) which serve to lower the start-up costs and attract private equity investment'. Another approach in their opinion is to introduce legislation that obliges energy supply companies to expand their services in rural areas. The costs of this would be recuperated via a tariff increase in the entire supply area, indirectly leading to cross-subsidisation by (wealthy) urban areas (para. 95). The report does not state to what extent this could actually be implemented in China.

The report on EAP Uganda states that the direct promotion of solar plants within a World Bank programme is not effective, is too bureaucratic and is therefore not suitable for market development. Moreover, this could lead to 'grey markets' where subsidised systems are sold again at a higher cost. If subsidised imports are involved, small local manufacturers and traders may have to quickly forfeit their market niches.

The companies involved in Uganda gave preference instead to specific support for launching new products, which was assisted by public-private partnership (PPP) measures implemented by the project. What carried more weight, however, was the increase of almost 100% in general electricity tariffs to US\$0.17/kWh (2006). This dramatically improved the competitiveness of RE systems. In PROFER, the undifferentiated subsidisation of electricity (the first 300 kWh per month) could not be changed by the project. The report says this was due to the lack of political will on the partners' side. If such unfavourable conditions cannot be changed, all efforts to achieve minor technical improvements or cost cuts in plants are in vain. Effective are measures like the abolition of taxes (including value-added tax), which Uganda introduced in 2002 and 2006 in the areas of solar and EE technologies respectively.

SHP projects and programmes were able to provide greater security for investors (Nepal) by standardising subsidisation concepts (clear rules for all) and applications.

One experience made by **HE projects and programmes** is that subsidies lead to a short-term rise in volume, but switching between periods with and without subsidies is harmful. 'If subsidies are discontinued, consumers are no longer willing to pay higher prices' (HEP Sahel). This is confirmed by experience from other projects and programmes - the mere announcement of subsidies can make weak markets collapse. PERACOD compares the chosen approach of establishing markets for improved stoves with a direct subsidy. Although

⁶³ The PV tariff in Qinghai Province is 2 RMB/kWh, which is very high even for wealthy households with a monthly income of 200 RMB. By comparison: in Beijing, one kWh only costs 0.5 RMB.

the latter would make it possible to rapidly disseminate large numbers of stoves⁶⁴, sustainability would not be ensured. The evaluators state that 'almost all programmes that tried to disseminate improved stoves via direct subsidies failed in their attempts' (para. 82).

The existing subsidy practice plays a negative role for **EE projects and programmes** that has to be overcome. Thus, in Argentina, energy consumption is still subsidised by about US\$3 billion a year. Changes in this sector, like the prices of fossil energy sources, play a major role in determining the success or failure of EE advisory approaches. Instead, subsidies may provide an important incentive for EE measures, if regulatory arrangements have no effect, as in Thailand.

The reports provide little information on subsidies during implementation, e.g. when the project stakeholders that benefit from the project (e.g. companies, energy users, participants in training measures) assume costs.

Overall, it is apparent that subsidies may play a positive role in the introduction of sustainable energy systems if they are used in a targeted and unbureaucratic way, without market distortion. This also includes indirect subsidies like tax cuts. But they can only be successful if clear rules apply to all actors and counter financing is secured in the long term. If only limited funds are available, a clearly regulated end of the subsidy after a pre-established period (exit strategy) is important. Reducing subsidies for non-sustainable (fossil) energy sources can have a similarly positive effect.

6.2 Sectoral issues

Due to their structure, the evaluation reports contain little information on the technical outputs and products of the projects and programmes because these sectoral issues are not among the criteria rated. Only one report, on PVP Chile, presents the pros and cons of the disseminated technology. Accordingly, this meta evaluation can only provide superficial information at this level. It is recommended to increase the wealth of experience that exists at the evaluated projects and programmes (and other energy projects and programmes) in the context of other instruments, e.g. sector projects and programmes, joint studies with other donors or an exchange of experience within sector and technology networks.

6.2.1 RE for rural electrification

The following section describes the specific experience gained by projects and programmes in the field of RE for rural electrification, particularly operator models and financing concepts.

⁶⁴ With maximum costs of EUR 7 per stove, the targeted 100,000 stoves could be disseminated for EUR 0.7 million, a fraction of the PERACOD budget.

In the **leaseholder concept (SHP Tibet)**, the SHP plant belongs to the village community, which leases it to an operator (who has received technical and business management training from the project/programme). While the village is responsible for the functioning of transformers, the distribution network and meters, the operator of the SHP plant takes care of the daily operation. The lease costs 30% of the income from power. Productive use is facilitated by a specially favourable tariff that costs only half as much as single-phase connection for consumptive use (three-phase connection).

In **SHP projects and programmes**, the link between energy provision and the promotion of productive use is an important factor for success. Business training and micro loans for machines lead to a higher demand for energy. This means better use is made of plant capacity and higher income is achieved through productive energy use, leading to more profitable and financially sustainable plant operation. Experience in Tibet shows that the micro loan system should be handled by private banks if possible, since, if the granting of loans is profitable, there will also be a long-term interest in extending this business model. However, this concept does not work for very poor population groups because even with loans, these do not have the funds to engage themselves in productive activity, nor are they in a position to purchase manufactured products.

At the same time, there must be incentives for private operators and investors to become active in this sector. The lack of feed-in regulations is seen by the evaluators of SHP Tibet as one of the greatest barriers to the broad-based use of SHP technology, also with regard to use of a subsequent grid connection.

The success of SHPP Nepal is based on the existence of such regulations. Here, small hydropower has become a business with which money can be made. The project has realised that the target groups (poor rural population) cannot be left out of the equation. Here, the evaluators recommend that more advice should be given to the municipalities (as the representatives of the target group). The newly introduced split power purchase agreements (see 6.1.5) may lead to a situation where at least part of the generated electricity benefits the population. According to EAP Uganda, projects and programmes should also promote the ability to assess the environmental impact of SHP, to enable investors to make a clear decision for or against the project. This includes negative environmental impacts as well as the possible use of CDM potential (avoiding CO₂ emissions).

According to the Tibet report, insurances or the pooling of risks between several plants may reduce risks in operating the SHP plants (e.g. technical problems or problems due to natural disasters) because they represent calculable costs. This should be examined in studies and implemented in a pilot project in one country. Generally, the evaluators of SHP projects and

programmes consider the rehabilitation of existing plants to be more efficient than planning new ones.

With sector programmes that are geared to a single technology, like **TERN**, it makes sense to introduce concrete investment projects by means of capacity development, sectoral advice and studies. To this end, a policy dialogue on the framework for RE should also be conducted, however. In order to employ wind energy to achieve poverty reduction, stronger emphasis should be placed on small applications for the decentralised supply of off-grid areas.

To disseminate solar energy, **RE China** pursues a commercial approach that combines the training of energy supply companies in rural areas with a range of financing concepts. However, the success of this approach is questionable due to the lack of sustainability of the first part (see Section 3.5) and the failure of the second component (lack of interest on the part of banks, para. 91). A planned RE fund from the Chinese Government would be a clear shift of this approach towards state subsidies, which would only ensure the sustainable dissemination of SHSs if adequate funds were available in the long term to operate and maintain the systems.

Sustainability is a problem with SHSs if ownership issues and responsibilities for exchanging batteries, maintenance and other costs are not clarified.

PERACOD trains operators who handle everything from installing the connections to maintenance and billing. The report points out that poor target groups can be included by using less comfortable or less powerful energy services (e.g. that require battery loading, solar lamps), because these are still superior to traditional energy forms. Too high tariffs for PV not only exclude poor population groups but, as shown by RE China, also lead to the manipulation of electricity meters or the refusal to pay tariffs (para. 124).

An important success factor according to **EAP Uganda's** experience is a well-positioned network of actors with direct access to the target groups, whose capacities are built by the project. Close networking of business sector development, PR, training and microfinancing also play a role. When new technologies are introduced, local experts should be involved at an early stage to avoid dependence on external knowledge.

6.2.2 Household energy

The four reports contain no concrete information on the HE technologies used, or on the **dissemination approach**. The report on ProBEC speaks of a 'commercial' approach. The PERACOD report does not clearly indicate the type of dissemination in the field of HE, but it does present the establishment of private-sector activities as one advantage of commercial approaches. In EAP Uganda, on the other hand, there is mention of a 'snowball effect', where

the technical expertise imparted by NGOs is passed on to the user level. This dearth of information is lamentable because there are significant differences in the results of the projects and programmes. Whereas in Senegal, 14,000 stoves and in Malawi (ProBEC) roughly 10,000 stoves have been disseminated since 1995 using the commercial approach, in Uganda the snowball effect has meant that 300,000 stoves have been distributed since 1999, according to monitoring statements. The reports do not say how many of these stoves are actually used and how long they last. But it is known from experience with GTZ stove dissemination projects in Kenya that the self-help approach quickly leads to high numbers of disseminated stoves, though long-term sustainability can only be achieved if significant quality control measures are implemented (HEP Sahel, Annex 9). The sustainability of EAP Uganda was nevertheless rated 'good' because the project obviously established an excellent quality control system, involving many regional NGOs. Moreover, the project developed a strategy for passing on experience to other districts. The involvement of district governments in planning and implementation is considered very important because the central government offers no guarantee of solving energy problems in rural areas. The report identifies an additional need for training in the area of stoves for use in urban areas.

6.2.3 Energy efficiency

The main starting point of all evaluated projects and programmes was the development of a market for EE services. For this, advisory facilities were established or supported and the positive results of EE were effectively demonstrated to the public by pilot measures. In line with PIEEP's experience, these advisory services should be offered with maximum cost coverage and be needs-driven. Capacity development should convey not just technical knowledge but also foster entrepreneurial thinking among providers.

PIEEP disseminated EE in the context of production efficiency, which creates better access to companies and enhances the results, because the amount of water, (potentially) harmful raw materials⁶⁵ and energy is reduced. Particularly in sectors with only average energy costs (<5% of total costs), or in countries with low (subsidised) energy prices, advisory approaches that include the rational use of (expensive) raw materials are more attractive for SMEs. Argentina's experience shows that it is expedient to introduce sectoral knowledge as well as methodological and technical expertise, e.g. by working together with the existing advisory institutions in the sector. As shown by ENEP Thailand, training courses should be practical rather than theoretical and be delegated by the partner authorities to specialised institutions (outsourcing).

⁶⁵ In many sectors (e.g. galvanisation, chemicals or leather processing), the greatest environmental problem is not energy consumption but the pollution of water and soil with contaminants. Here, production efficiency approaches can combine cost savings with environmental improvements.

EE Brazil underlines the importance of networking between the various advisory facilities, e.g. by holding monthly monitoring meetings with an 'advisory council' character. ENEP Thailand also recommends establishing such meetings. However, this should be preceded by developing coordination mechanisms and sustainability strategies (so that these structures are perpetuated beyond the end of the project or programme).

In all EE projects and programmes, the dissemination of approaches to improve EE via **demonstration measures** was successful, both in projects and programmes to advise SMEs and also with regard to EE in buildings (EE Turkey). The measures were planned and implemented together with the implementation partners. This not only showed and documented the feasibility and actual results, but also, as described in PIEEP, connected and trained the respective implementation partners.

The selection of sectors for SME advisory services mainly depends on the savings potential in the specific industries, but also on the average company size in the relative sector, the number of SMEs and the willingness to cooperate on the part of industrial associations. In the evaluators' opinion gender aspects do not play a role, but should be considered in future,. A further criterion should be German experience with EE in the corresponding sectors and the range of EE technologies offered as part of potential PPP measures. The sectors actually selected were:

- in **EE Brazil**: brickworks, bakeries, tyre recycling, the textile industry, woodworking, the dairy industry, candle manufacture, the food industry and service companies
- in **PIEEP Argentina**: the sugar industry, citrus fruit processing, the dairy industry, meat processing, fruit and vegetable processing, metallurgy, irrigation, and various companies from other sectors

In some of these sectors, substantial increases in EE were achieved, at least in the estimation of the evaluators, e.g. in the sugar sector and the dairy industry in Argentina. This was due to cooperation with special advisory institutions with excellent access to and standing in the relevant sector⁶⁶. EE advice was provided as part of 'standard' advisory services by these sector institutes. It was not necessary to build up trust beforehand as would have been the case if purely 'EE specialists' had offered their services. This correlates with a report on EE Turkey, which recommends involving local expertise (e.g. universities). Continuing training of the advisors must be ensured, e.g. by a national institution as in Uganda.

The major barriers to disseminating energy-efficient measures were unfavourable conditions, particularly subsidised energy prices (as in Argentina) or the failure to adequately enforce

⁶⁶ Thus, in Argentina, 300 dairy companies (25% of the sector) were reached via the state dairy institute INTI Lacteos. Similar results were achieved at Estación Experimental (EEAOC), which works with all sugar refineries in Tucumán Province (60% of the sector).

regulatory directives (as in Thailand and Turkey, where many buildings are built without building permits). Both types of risk were recognisable beforehand. In the case of Argentina, stronger orientation of the project to regulatory incentives (e.g. the obligation to perform energy audits) could have remedied the situation. In the other case, financial incentive mechanisms (subsidies or loans for energy advice or investments in EE) would have been the solution. The evaluators believe that PR and best practices are not enough to apply EE laws in Thailand, where a regulatory approach was lacking. This is also underlined in EAP Uganda: the evaluators believe that the political system must initiate incentives to create a solid foundation for disseminating EE measures.

Furthermore, according to EE Brazil and EE Turkey, the strategic involvement of financial institutions or additional financial cooperation would have enabled greater results. However, this either requires additional funds on the partner side or a financial cooperation component (also possible via other donors). The Clean Development Mechanism (CDM) has so far not played a role as a financial incentive for the evaluated projects and programmes. A purely advisory approach could be complemented in an expedient manner by setting up energy service companies (ESCOs) that also offer funding for EE investments.

The budgets for pilot measures of the evaluated companies were low. Usually the partners provided the software, while the German contribution was restricted to planning, coordination and assessment of the measures.

6.3 Results

Some of the experience gained at the evaluated projects and programmes has already been explained when presenting the rating of direct results (effectiveness) and indirect results (impact). In the following section, some of this experience will be highlighted again and summarised.

6.3.1 Specific results at energy policy level

The approach involving purely policy advice, as pursued in HEP Sahel, entails a high risk. The programme shows that even good sectoral strategies are not easy to implement at political level. This only succeeds if a project or programme acts on the basis of a systematic analysis of power bases, if institutional change processes are supported in addition to sectoral advice, and a project or programme has at least a certain amount of 'political clout'. Advice cannot be

provided to partners purely from a line function (partners too closely involved), but presupposes a certain distance and neutrality⁶⁷.

Altogether, technical cooperation cannot presume that the laws it supports will in fact be applied during the project or programme term. A project or programme has only limited influence on this factor. For this and other reasons, support should be given not just for shaping laws and regulations, but also for their implementation and application. REEE Pakistan follows this principle. It supports its partners not just in formulating strategies for RE and EE, but also promotes concrete dissemination measures for these themes.

In most projects and programmes that place emphasis on the meso level, results that affect the general framework are 'incidental effects', such as participation in shaping the RE law in China or the drafting of an EE law for Brazil and Argentina.

6.3.2 Cross-sectoral results constellations

The relationships between energy projects and programmes and the MDGs have already been touched upon in Section 4. The individual reports also point out synergies with other sectors as regards direct results.

HEP Sahel was one of the first energy programmes that recognised the close relationship with other sectors and advised a number of other projects/programmes on household energy issues. This realisation is also reflected in the design of more recent projects and programmes. Within PERACOD for example, cooperation with the Directorate of Forestry made it possible to attack the problem of biomass energy from the supply side as well as the demand side (energy-saving stoves). In the forestry measures, the focus was to be on energy aspects however, such as promoting fast-growing trees. In EAP Uganda, the failure to involve forestry programmes is criticised (para. 179) in this context. In stove projects, the evaluators underline the need for flanking measures in reforestation and forest management. An unintended positive result is worth mentioning here: ProBEC reports that because they require less fuel, women are no longer at such risk of having to offer themselves to forest officials or be raped by them in order to gain access to wood resources. This also reduces the risk of HIV infection.

In RE projects and programmes, there are links with the promotion of the economy and employment, and with microfinance. SHP Tibet is a good example of how energy projects and programmes can be linked with economic activities and vocational training. Here, the provision of energy is the starting point for setting up and strengthening SMEs and for enhancing the

⁶⁷ In the case of HEP Sahel, the supranational institution CILSS was not able to prompt the national ministries of the member states to implement the devised strategies. HEP Sahel was not able to effectively advise CILSS in this situation because it was integrated into the latter's operative structure.

technical qualification of the target groups. SHP can also be complemented in an expedient manner by financial services (Nepal, Tibet). An unexpected result is reported in RE China, where a user survey revealed that the building of roads for electrification measures was seen as more important than the productive use of electricity: 'Now the villagers need less time to visit places downhill and could save time for productive purposes' (para. 57).

EE projects and programmes can achieve important results in the field of SME promotion (PIEEP, EE Brazil). Here, PIEEP's production efficiency approach should be mentioned, which not only advises SMEs on the rational use of energy, but intends to boost their general competitiveness. EE Brazil recommends also involving EE in SMEs in vocational training, in order to anchor this concept as a sectoral skill in the long term.

6.3.3 Specific results with regard to investments

In view of the enormous challenges in the areas of EE and rural electrification⁶⁸, private investments are the major source of funding for most developing countries. Here, some projects and programmes have tried to mobilise resources.

SHPP Nepal, which was explicitly geared to mobilising investments, raised around US\$58 million for the construction of SHP plants, according to the evaluation report. Further projects are in the pipeline. Compared with the total project costs of EUR 7.1 million, this is a substantial sum. 'The project succeeded in convincing Nepalese business banks, pension funds and financing institutions to commit themselves in the long-term to financingSHP' (para. 42). The key element was to establish *trust* in a technology that was previously unfamiliar to the financial institutions, for which the project acts as a neutral quality control body. However, so far no credit lines or investors have been found for rural electrification. The author raises the question whether the success experienced so far will be able to provide prospects for this area in the long term. If not, the project will remain insignificant from a development policy viewpoint.

In Ethiopia, TERNA was initially unable to acquire any private investors for the planned wind parks, despite the use of comprehensive incentives. However, this changed after the evaluation, when extensive investment projects were planned⁶⁹.

Particularly in Asian partner countries, some projects and programmes had substantial funds at their disposal right at the start for **public investments** in RE or EE, most of all in China. However, the projects and programmes were not able to mobilise additional funds. In the

⁶⁸ In sub-Saharan Africa, for example, a substantial rise in the very low electrification rate by state programmes is unrealistic in view of the funds required. This is only possible in countries that already have a high electrification rate and adequate state funding, like China.

⁶⁹ The country measure in Ethiopia is not an individual case. Indirect results in the form of investments occurred in four other countries; in two more countries, competitive bidding processes are underway. The effect lies in the typical decision-making dynamics of this kind of investment project.

Dominican Republic, it was therefore not possible to set up a planned RE fund because the relevant partner institutions were unable to come to an agreement.

The most important instrument for mobilising **funds from other donors** was and is the German-Dutch energy partnership Energising Development which provided an additional EUR 10.6 million to enable access to modern energy at three of the projects/programmes. In addition, EU funds were acquired to scale up activities in the field of HE (but this was linked with the problems already mentioned in HEP Sahel). A smaller amount (EUR 100,000) was contributed by the Austrian Development Agency (ADA) for wind energy development in Ethiopia. SHPP Nepal was originally intended to complement a World Bank credit line. When this failed, the project searched for ways to fund SHP on its own.

However, one should not forget the influence projects and programmes have on planning and shaping other donor programmes. Thus, PIEEP was able to help to prepare an extensive World Bank project for EE in Argentina, by integrating an advisory component among other things. This ensured that providers of advisory services continue to be supported together with the financing of EE measures.

6.3.4 PPP measures

HEP Sahel recognised long before PPP was introduced how important it was to cooperate with the private sector for HE measures (para. 39). For RE and EE projects and programmes that use a considerable share of sophisticated technologies, in which German companies are in many cases the market leaders, this could be expected at least to the same extent. On the other hand, the evaluation reports make little or no mention of PPP measures, and where they do, it is more or less in passing. They also neglect to describe the individual measures in detail. Information on budgets is only given in one case.

Examples:

- PROFER: measure to use plant oil as a substitute for diesel (scope: EUR 12,000)
- ProBEC: measure with a tea company to equip the contract planters' house with improved stoves
- EAP Uganda: measure with solar power companies
- REEE Pakistan: measure in the field of solar water heating

In RE China, the evaluators established 'that GTZ was too optimistic with regard to the PPP potential of the programme'. Nevertheless, a PPP measure was conducted there too with a German solar power company in the training sector.

The impediment to PPP measures frequently lies in the small size of the markets and the unwillingness to invest in quality. In SHPP Nepal, there was no point of entry for German turbine manufacturers⁷⁰. In the case of ProBEC too, no comparative advantages can be identified for Germany. With local medium-sized companies, though, points of entry can be seen, but according to the report, they 'have not been discussed so far'.

Generally speaking, higher potentials for PPP measures are expected at EE projects and programmes, though this is not reflected in the implemented measures. Although EE Brazil established contacts with German suppliers of EE technologies, these would have been too technically advanced and too expensive for Brazilian SMEs. In ENEP Thailand, the efforts to set up PPP measures failed due to the economic crisis at that time. PIEEP was designed to conduct PPP measures, according to the indicators. These were not implemented due to the project employees' lack of contact with German companies (the employees were not based in Germany).

6.3.5 Partner inputs

The evaluation reports only mention one case where partner inputs were not provided. In the initial phase, **PIEEP** had to manage entirely without implementing partners and the promised infrastructure (office space etc.). This was achieved by involving other, non-governmental actors that gradually assumed the inputs of the lead executing agency (Secretaría de Energía) as the 'sectoral group' until the agency could reassume this role following a change in government. However, it should be pointed out here that no partner inputs were agreed in almost half of all projects and programmes, including all the ones in Africa.

6.3.6 Changes in the overall framework

Changes in the political framework include not only changes in the partner countries but also, in view of the experience of the evaluated projects and programmes, the development-policy **decisions of BMZ**. The regional and thematic priority areas selected by German development cooperation spelled a premature end for three of the fifteen projects and programmes, which in one case had disastrous consequences in terms of impact and sustainability (EE Turkey). The cash crisis should also be mentioned in this context, which is seen as a cause for the failure to achieve objectives, at least in HEP Sahel (para. 40).

Political and economic crises in the partner countries also influenced implementation of the projects and programmes. Right at the start, PIEEP had to cope with a severe economic and political crisis that countered many of the assumptions on which project planning had been

⁷⁰ Although German parts (especially turbines) are often considered, German distributors cannot usually compete with the prices of Chinese suppliers. The argument that the quality of the parts is higher (...) is recognised by most investors but the quality aspect has so far been neglected due to price considerations' (SHPP Nepal, para. 24)

based. During the financial crisis (drastic devaluation, collapse of the banking sector), EE only played a secondary role for the competitiveness of Argentine SMEs.

Due to the unrest in Nepal and the related postponement of elections from 2002 onwards, important partners at district and municipal level (e.g. water and village development committees) were frequently inactive or access to the project area was blocked. The project therefore concentrated on greater cooperation with SHP operators, consulting firms and banks. This severely weakened the relevance to the target group.

Crucial changes in the general environment for EE projects and programmes in particular have to do with the **price development** for crude oil and the **shortage of energy offers** in the country. Energy supply crises were therefore a key motivation for political partners in Argentina and Brazil to become active in the field of EE.

6.3.7 Climate protection

Climate protection is addressed more and more frequently in the discussion on how to design energy projects and programmes, not only within the development cooperation institutions, but also with partners. All three thematic areas (RE, EE, HE) have the potential to help prevent the formation of gases that are harmful to the climate. It is therefore all the more surprising how little information on this theme can be found in the projects and programmes. Eleven evaluation reports point out climate impacts, but concrete figures are only mentioned in a few places although this was one of the issues specified in the ToRs. One example is ProBEC, which is credited with saving 1,781 ha of forest, 82,000 t CO₂ and 220,000 kg CH₄ (ProBEC, para. 57). Another example is EE Brazil, where CO₂ reduction potentials were determined in individual sectors of industry by means of demonstration measures⁷¹. PROFER estimates that 2.8 million t CO₂ could be saved if the Dominican Republic implemented the national energy plan that the National Energy Commission drew up with support from the project. The reports on TERNA Ethiopia, RE China, SHP Tibet and PERACOD contain no statements at all on the climate impacts, although there is no doubt that these projects and programmes do contribute to cutting greenhouse gases⁷².

6.4 Monitoring

Since most projects and programmes were planned before AURA was introduced, there were generally no detailed results chains. Instead, the evaluators had to trace back the results chains themselves.

⁷¹ e.g. in brickworks: 8-30%; entire set of new tyres: 21-100% or dairy processing: 27%

⁷² At TERNA, the feasibility studies calculate the potential reduction in greenhouse gases.

One of the most frequent criticisms of the projects and programmes was the lack or insufficient results orientation of the monitoring system. The table below shows that only six projects and programmes (40%) so far have or had a results-based monitoring system. Indirect results are only measured at two projects/programmes. Even activities and outputs were or are not regularly monitored at all projects and programmes. Monitoring of **SHPP Nepal** is exclusively based on PPR and progress reports. The reasons given were 'shortfalls in information and communication with regard to GTZ rules and regulations'⁷³. The evaluators view these as 'limitations in the assessment process within the project, especially as regards the achievement of objectives and other results'. Here, results-based monitoring might have prevented the project from only partially achieving its objectives, especially the overarching results⁷⁴. Particularly in consulting projects and programmes, it should be ensured that monitoring is performed in line with GTZ requirements and that the GTZ departments responsible enforce these requirements during project or programme management.

Project/programme	Activities	Direct	Impact
ENEP Thailand	+	+	+
SHP Tibet	+	+	+
EE Brazil	+	+ ⁷⁵	
HEP Sahel	?	---	---
TERNA Ethiopia	?	---	---
PVP Chile	?	--- ⁷⁶	---
ProBEC SADC	+	(+)	(+)
EAP Uganda	+	+	?
PIEEP Argentina	+	---	---
SHPP Nepal	?	---	---
RE China	+	?	---
EE Turkey	+	---	---
PERACOD Senegal	+	+	---
PROFER Dom. Rep.	?	?	---
REEE Pakistan	+	+	?
All projects and programmes	10	6	2

(+) = still being set up

⁷³ SHPP Nepal, para. 23. This is a consulting project.

⁷⁴ Both ratings were in fact only 'satisfactory', although the author believes the impact of this project could also have been rated 'inadequate'.

⁷⁵ Results monitoring was only introduced in the final phase of the project

⁷⁶ PVP Chile comprehensively documented the technical and economic performance of PVPs, but the report says nothing about the effects on users.

Table 17: Monitoring profiles of the evaluated projects and programmes

SHP Tibet is one example of how exemplary work can be performed also within consulting projects/programmes. Right from the start, it set up a comprehensive M&E system founded on a baseline study with more than 50 socioeconomic indicators (para. 30). For this, 60 households are interviewed each year in three representative villages. However, the report states that data collection costs about EUR 100,000 over three years, i.e. around 4% of the overall budget. The evaluators suggest a less intensive but more widespread survey concentrating on a few important indicators, especially with regard to the use of electricity.

All EE projects and programmes lacked monitoring of the multiplier function, i.e. the momentum generated by the supported demonstration projects cannot be traced. This means that in PIEEP and EE Brazil, and EE Turkey, the broad-based effectiveness could only be estimated. In this case, a comprehensive information system needs to be installed together with the partners, which provides statements on all the (indirect) results generated due to the advisory services provided.

However, monitoring is not only designed to ensure accountability and project steering, it also helps with learning. This area is insufficiently used by many projects and programmes, so that the collected information is not adequately provided to the relevant actors. Thus, HEP Sahel failed 'to reflect on and present with the partners the results and good practices achieved' (para. 37). The learning and dissemination effect was therefore small, and no statements could be made on concrete results. With regard to the documented pilot measures, although the programme did set up a website, it is mainly used by non-relevant sectors⁷⁷. Similar facts are reported in PIEEP, which did achieve significant results, but these were inadequately documented. It is interesting to note that some of the implementation partners documented detailed results that could have been assessed during the ex-post evaluation. The evaluators also suggest to EAP Uganda that it should document results better and make them more accessible, beyond the direct project environment.

The opposite was true of ENEP Thailand: here, the project established a comprehensive monitoring system as one of its four results, but failed to introduce this at the partner institution⁷⁸. That meant the project's extensive experience was no longer available after its termination, and no further experience was documented.

Lessons on monitoring can also be learned from other donors. Thus, the projects and programmes cofinanced by the Directorate General for International Cooperation (DGIS,

⁷⁷ The evaluators establish that only 6% of all hits were from the partner countries, and 80% from the USA.

⁷⁸ 'While the project progress was well documented, the trial for establishing an impact monitoring and evaluation system in DEDP failed'. Also, 'In 2007, no advanced M&E system exists and there are no regular evaluations of projects conducted by DEDP'. It was therefore impossible to obtain information on the results of ENEP even during the ex-post evaluation.

Netherlands) are instructed to perform intensive monitoring not only of the outputs and direct results (outcomes), but also to establish indicators for the impact and sustainability (see M&E system). These experiences can serve as a good example for other projects in the energy sector, especially in view of the weakness of many projects and programmes as regards these two criteria.

If monitoring is deficient, project staff still act as important knowledge bearers. Thus, HEP Sahel received a positive assessment for the fact that former employees were assigned to a new sector programme (HERA) after the end of HEP Sahel, and that important knowledge was transferred in this way. But this is not always possible, e.g. with consulting projects/programmes.

7. Contract and cooperation management

Whereas we have so far reviewed the projects and programmes with regard to their design and results, in this section the focus is on how projects and programmes are shaped by contract and cooperation management. However, this is not a key focus of independent evaluations, as it is for example the case in a PPR.

7.1 Modes of delivery

In most cases, the evaluators found the modes of delivery to be appropriate. At any rate, there is no criticism of the chosen modes of delivery in any of the reports.

The reports present the inputs of long-term experts, independent and sectoral experts and local personnel, but do not discuss them in detail. This was a problem in only one project: EE Turkey warns against rotating project staff between two sites. If there are not sufficient funds for two experts, the pilot region and government advisory service should be within close reach of each other.

One programme was a cooperative programme with KfW (RE China). However, the report makes no mention of the pros and cons of this type of structure, nor of cofinancing within the German-Dutch energy partnership Energising Development (ProBEC, EAP Uganda, PERACOD).

Overall, the flexibility, speed and low level of bureaucracy is stated as an explicit advantage of German technical cooperation, particularly from experience with the instruments of other donors⁷⁹.

In the case of PERACOD, the partners wished for greater involvement of the German side in terms of financial cooperation, and felt technical cooperation to be a burden. The report explains this by the deficient provision of resources to the partners (para. 119). However, the evaluators point out that the delay in implementing the concession model is not due to a lack of donor funds, but to the partner's capacity shortfalls (paras. 41 and 84). They believe the advisory concept used by technical cooperation to be the right approach (para. 85).

Particularly in connection with EE projects and programmes, though, it is pointed out that interaction with a financial cooperation measure could have greatly increased the results (see for example EE Turkey). More attention should be paid to synergies when making future plans. Using a joint programme proposal offers a favourable starting point.

7.2 Steering structure

The reports do not mention any cases where inadequate steering led to a poor rating of the project or programme.

However, problems in this area are also described, e.g. where several implementation partners were involved. In PROFER, ongoing tension between two competing partners hindered implementation. According to the evaluators, this could have been remedied by means of structural changes if the issue had been raised by GTZ towards the partners' higher management levels (para. 45). In RE China, the fact that two partner organisations are involved (NDRC and MOFCOM) is seen as a hindrance by the GTZ staff and the other implementing organisation (IEE). In one case, the spatial separation of the micro and the macro level is cited as a problem.

Inadequate **involvement of the partners** in steering is critically noted in other projects and programmes (EAP Uganda, PERACOD). The partner government should assume more responsibility (and inject more funds): German development cooperation should not fill any gaps that exist among partners or other donors. Critical monitoring of the implementation steps and reminders about achieving objectives are called for. Greater partner involvement institutionalises experience and safeguards it on a sustainable basis.

The rather inflexible planning entailed by EU **cofinancing** had a negative effect on steering in HEP Sahel and led to activity-oriented implementation (para. 47).

⁷⁹ This contradicts the frequently expressed view of project staff that conceptual changes are time-consuming.

Several reports criticise the failure to bear in mind **evaluation results**. According to one report, GTZ Head Office should examine the quality of PPR results and their implementation. In all projects and programmes, including consulting projects, GTZ workflows and GTZ-compliant reporting should be observed and a results-based monitoring system should be maintained.

Long-standing institutions outside the government, e.g. established networks or experienced NGOs, can be used for **knowledge management** and for communicating experiences (e.g. newsletters or internet platforms).

Many projects and programmes have no relevance to **poverty reduction** or **gender**. But there are a few isolated examples of how this relevance could be established. Here, best practices and simple guidelines on drawing up poverty and gender analyses and the formulation of suitable indicators can help to overcome the knowledge deficit that obviously exists with regard to contract and cooperation management.

7.3 Cooperation with partner institutions

In the increasingly complex environment of technical cooperation projects and programmes, cooperation with other actors plays a crucial role for project success⁸⁰. It is important not just to take incidental opportunities to cooperate with some institution or other, but to specifically integrate those cooperation partners into the project or programme who are the key actors for achieving objectives.

The following table shows that most projects and programmes cooperate with a large number of partners:

⁸⁰ It was for good reason that cooperation was identified as one of the five success factors in GTZ's new management model Capacity WORKS.

Project/programme	Central government	Province/ municipality	Private sector	NGO	Other donors
ENEP Thailand	X		X		
SHP Tibet		X	X		
EE Brazil			X	X	
HEP Sahel	X	X	(X)	(X)	X
TERNA Ethiopia			X		X
PVP Chile				X	
ProBEC SADC	X		X	X	X
EAP Uganda	X		X	X	X
PIEEP Argentina	X	X	X	X	X
SHPP Nepal	X		X	X	X
RE China	X	X	X	X	X
EE Turkey	X	X			X
PERACOD Senegal	X	X	X	X	X
PROFER Dom. Rep.	X		X	X	X
REEE Pakistan	X		X	X	X

Table 18: Cooperation profiles of the reviewed projects and programmes⁸¹

This shows that private and civil-society stakeholders are involved in most projects and programmes, as well as state actors. Although the private sector is somehow involved in all projects and programmes, several evaluation reports recommend that this cooperation should be expanded (PROFER, REEE Pakistan). It is advantageous for the efficiency of the project or programme to establish clearly which partner is to assume which costs.

In 14 projects and programmes, contacts with **other donors** are mentioned, including mainly multilateral institutions like the World Bank and UNDP/GEF, but also bilateral donors (Denmark, Japan, Austria, Norway, UK, USA). Cofinancing only exists in the case of the Netherlands (EnDev) and one measure with ADA (TERNA Ethiopia). There is a formalised circle of donors in the electricity sector in PERACOD and the parties involved fit into the concession model system drafted by the government and into the local rural electrification initiative ERIL. This is not the case with regard to household fuels, though. In RE China, there was no formal cooperation with other donors (UNDP, the World Bank, DFID), but regular consultations did take place (para. 11), as was indeed necessary given the 23 stakeholders

⁸¹ This table is based on the presentations in the evaluation reports and does not claim to be exhaustive. Crosses indicate an explicit reference to cooperation arrangements: crosses in brackets (X) indicate that only vague references were made.

involved⁸². Only in Uganda the energy sector is embedded in a joint assistance strategy, within which eight donors contribute to implementing the Poverty Eradication Action Plan. Here, an energy sector working group was set up in 2007, with GTZ as the co-chair. In the case of ProBEC, Norway has led the donor group since 2007. The German programme provides concepts that are taken up by the other donors.

In HEP Sahel, no synergies could be established with the activities of other donors. This meant that the national HE strategies were not considered by other donors who worked in the relevant countries. Parallel to the second phase of HEP Sahel, an extensive HE programme was planned by the World Bank without any coordination (para. 86). In SHPP Nepal, there are reports of occasional duplication of activities with those of other donors. The evaluators also believe coordination with other GTZ projects and programmes could be improved (in the fields of private sector development and poverty reduction in rural regions) (para. 60).

ENEP Thailand criticises the low profile of German technical cooperation as compared to other donors (para. 31), and EE Turkey states the 'dominance' of the EU as a problem.

No report mentions the effect of the projects and programmes on future sector approaches or improvements in line with the Paris Declaration on Aid Effectiveness.

8. Summary of conclusions and lessons learned

8.1 Methodological considerations

The present study shows that independent evaluations make an important contribution to complying with GTZ's accountability obligations towards its clients and the public, and to a limited extent, also provide important indications for steering and learning. It presents the successes and failures of selected projects and programmes and draws conclusions and makes recommendations on this basis. Although the selection of projects and programmes is not representative and their analysis and rating depends on many subjective assessments, the results do cover a broad range of the energy portfolio and can largely be transferred to other projects and programmes in this sector in the author's opinion⁸³. This provides BMZ, GTZ, other development cooperation organisations and the public with a portfolio analysis drawn up according to international criteria which helps to further develop the long-term involvement of German development cooperation in the energy sector.

⁸² The evaluators see this donor coordination as 'successful' (para. 29).

⁸³ The evaluated projects and programmes represent about 17% in terms of numbers, and about one quarter of the overall volume of funds expended (information from P+D).

Compared with BMZ's new sector strategy and other policy documents, it has transpired that there is still a need for action when it comes to implementing some of these BMZ principles and guidelines⁸⁴. For example, it is clear that the projects and programmes need to be more strongly geared to poverty and gender criteria, despite all existing quality assurance instruments. The consideration given to the sustainable development concept also leaves a lot to be desired in some projects and programmes.

General conclusions can be drawn especially as regards the choice of methodological approach, the intervention levels and cooperation structure, the preparation of PPP measures and the establishment of a results-based monitoring system, as well as some specific procedures in thematic areas like rural electrification, energy efficiency or household energy. However, the evaluation reports contain little information on concrete project/programme experience in terms of modes of delivery. In the author's opinion, little can be contributed that has not already been documented in other GTZ knowledge management instruments (e.g. the Document Management System (DMS), products, and the Knowledge Base). If detailed insights are to be gained into specific approaches and concrete technical cooperation outputs, the requirements for independent evaluations would have to be changed or other instruments found.

8.2 Cross-sectoral conclusions

The evaluation results show a portfolio consisting of mainly successful projects and programmes, with relevance receiving a particularly positive rating.

The most important conclusion in the author's view is the need for greater emphasis on **indirect results** (impact) and **sustainability**. This applies both to the planning and the implementation of ongoing and future energy projects and programmes. Sustainability strategies should be taken into consideration right at the planning stage, and both criteria should be systematically pursued by additional steering indicators, as is the case with the projects of the German-Dutch energy partnership Energising Development. As one report proposes, long-term expectations of impact and sustainability could also be formulated at the end of a project or programme, which enable an ex-post evaluation, e.g. the formulation of corresponding indicators.

The **multi-level approach** that is pursued by the majority of projects and programmes has proved more successful and expedient than more narrowly defined approaches, although TERNA Ethiopia shows that projects and programmes with more restricted objectives (e.g. the

⁸⁴ This is not a criticism of the evaluated projects and programmes, which were all planned and implemented before the sector strategy was adopted.

dissemination of a specific technology) can also be successful when they concentrate on the meso level. In this context, however, the provision of sufficient resources is important to adequately serve all levels and be able to maintain an appropriate steering structure and results-based monitoring.

The lack of such a **results-based monitoring system** proved to be a major drawback in many projects and programmes, although one of the duties of the officer responsible for contracts and cooperation is to set up a system of this kind. This begins with conducting a baseline study, a quality check of the objectives indicators and their systematic monitoring, and the formulation of additional steering indicators, e.g. to measure the impact and sustainability. A good example is SHP Tibet.

8.3 Important lessons learned from the individual projects and programmes

Overarching conclusions were drawn at the end of all the evaluation reports (Section 6) and summarise their key points. Although some of them relate very specifically to the evaluated project or programme, they may provide valuable indications for designing ongoing and future projects and programmes. Many of these recommendations have already been integrated into the sections on specific sectors (Sections 6.2.1 to 6.2.3). In the following sections, an attempt is made to summarise the most important overarching lessons learned, categorised according to the DAC criteria.

Relevance

- Even if the projects and programmes are generally planned without much participation by the target groups, the latter's needs to play an important role when it comes to assessing the relevance.
- Next to their *formal* importance (convergent objectives in national policies and strategies), it is important for projects and programmes to enjoy *actual* priority, particularly in the partner institution. Otherwise, for example, the political will to enforce changes in the framework related to sustainable energy supply will be lacking.
- Relevance to poverty reduction is BMZ's foremost objective, yet it is not plausibly established in all projects and programmes. The poorest population groups are not the ones who primarily benefit from RE projects and programmes, especially EE projects and programmes; the groups deriving most benefit are rural households with a certain income level or urban households that receive regular income (in SMEs). This is not made clear in most projects and programmes.

- Grid-connected RE technologies usually have no direct poverty impact, but may contribute to supply security in the long run and afford entry into climate-neutral energy provision.

Effectiveness

- Capacity development (particularly at the level of organisational and system development) has proved to be an important factor of success. Nevertheless, most projects and programmes do not proceed in a strategic manner and tend instead to build individual competencies.
- Even if most project partners are located at government level, more cooperation with the private sector ensures better representation of the interests of all stakeholders and mobilises additional resources. Moreover, it anchors the transferred knowledge in institutions or companies which are less dependent on political changes.
- It has proved advantageous for energy projects and programmes to intervene at political level too and to ensure a conducive environment and financing opportunities. In RE projects and programmes, this means for example introducing clear, generally applicable concession, subsidy or feed-in models as well as tax cuts. In the case of EE projects and programmes, this concerns regulatory approaches (obligation to perform audits) as well as prices and tariffs that promote efficiency.
- Linkage with regional programmes promotes an exchange of experience (best practices), motivates national partners to form networks and gives them access to such networks.

Impact

- The indirect results of energy projects and programmes have been insufficiently examined. There are many assumptions but hardly any concrete data. The lack of poverty-related and gender-related indicators and of a timely target group analysis prevents systematic observation of the results at higher aggregated levels.
- If indirect results have been monitored, their publication has proved to be important to achieve changes at policy level.
- The evaluated projects and programmes have shown that the ones that involve other sectors such as education, business development and infrastructure are particularly successful. Electrification alone is not enough to reduce poverty. In the field of HE, involvement of the forestry sector can substantially increase results.
- Institutional, sectoral and regional diversification of the interventions can sow the seeds for results once a project/programme has finished.

- The final and ex-post evaluations show that indirect results often occur only after the project or programme has been completed, and that these results are not recorded by the monitoring system.

Efficiency

- Using experience from other projects and programmes saves high development costs. Systematic donor coordination helps to identify synergies and avoid duplication. Some technical cooperation concepts can have a broad-based effect when measures are scaled up by other donors.
- The evaluations show that emerging economies have great PPP potential in the EE and RE sectors, but that there are considerable (unknown) barriers to using this potential.
- A lack of planning security for grid extension has proved to be one of the greatest risks for efficiency, effectiveness and sustainability of the reviewed RE projects and programmes.
- Financing options are needed to achieve wide-reaching success in EE projects and programmes, otherwise no measures can be implemented that pay off in the long term. But these frequently offer greater savings potential than 'low-hanging fruit'. If these mechanisms are not provided by local institutions, financial cooperation can make important contributions that enable scaling up.

Sustainability

- Commercial approaches for disseminating stoves prove to be successful, whereas governmental executing agencies often tend to be more of an impediment. The use of outputs by the private sector can be calculated. -+.
- Participation in and, if possible the exertion of influence by the projects and programmes on the relevant energy planning for the target region is important so that RE systems are not soon replaced by other electricity offers. If no feed-in options exist, the systems can no longer be used after connection to the grid.
- Subsidies help in the initial dissemination phase, but in the long term, they have to be financed by cross-subsidies (electricity sector) or national budgets, or gradually reduced via a clear exit strategy. Successful operator models ensure that the costs of operation, maintenance and repairs are covered.
- A group of varied implementing organisations with ownership (e.g. NGOs and other intermediaries) and direct access to the target groups has a positive influence on sustainability and may help to bridge the gap left when the lead executing agency drops

out. CIM promotion may serve to follow up technical cooperation measures (particularly when assistance to countries draws to a close), as long as there are clear objectives within the overall German development cooperation programme.

9 Recommendations

This final section makes recommendations based on the findings of the independent evaluations that are summarised in this meta evaluation. These recommendations are used for steering and further developing GTZ's energy portfolio. In this context, it is important that BMZ is not the only donor presently making numerous new pledges, but that substantial funds from other donors are also being provided to this sector (prominent among them Energising Development and the Climate Initiative of BMU).

9.1 Recommendations for planning and implementing energy projects and programmes

This section contains general recommendations based on the experience of the evaluations for steering and implementing energy projects and programmes.

Planning

Before the start of a project or programme, not only should the objectives be examined to see if they match those of the partner country and the German Government, but the local and regional needs of the target groups should also be studied. Partner analysis before the project starts can help the partner to identify with the objectives (beyond the official documents), become involved and continue the measures after support has been terminated. At the very least, this makes it possible to highlight risks. In countries at high risk of political crisis, cooperation should be based right from the start on a diversified executing agency structure that includes other important stakeholders as implementation partners, especially non-governmental actors. The implementation partners should be seen as stakeholders, not sub-contractors, and view themselves accordingly. Particularly in RE projects and programmes, the actors involved in planning the grid extension should be included (see also the 'Sustainability' section further down). Systematic capacity development should address the actual weak points and not be geared to just building individual competencies; instead, it should focus on institutional bottlenecks and impediments in the overall system.

Multi-level approach and mass dissemination

A multi-level approach should always be considered for projects and programmes with complex objectives. It is important that the policy level is not advised separately from the implementation level. Technical cooperation measures are an important link between these levels and, given a functioning monitoring system, provide political partners with valuable information on the needs of the target groups and the opportunities and problems with implementing the policies.

Measures that are too narrowly designed are not recommended from a results point of view. Technological diversification should be aimed at rather than a narrow focus on one technology, but without fragmenting the resources of the project or programme. With pilot or demonstration projects, a spatial or technical focus should be chosen. It makes more sense to closely monitor, document and disseminate the results of just a few measures than to continually begin new measures. Strategies must be developed right at the start of projects and programmes to use PPP potentials, especially in EE projects and programmes, if necessary resorting to the mediation of contacts with European manufacturers by P+D. The

pilot measures must be followed by dissemination measures that are embedded in the strategies of the partner countries. If necessary, new, innovative financing concepts should be used for these (see Tibet and Nepal).

Assessment of ongoing projects and programmes

When evaluating ongoing projects and programmes, the evaluators should take care to assess the actual implementation status of the project or programme, not the presumed results. If there are signs of critical developments (not only with regard to the achievement of objectives, but especially to deficient sustainability), this should be pointed out at an early stage. Milestones may help the officers responsible for contracts and cooperation to continuously monitor the achievement of objectives and results, and to take corrective action where required. Linkage of the various monitoring systems, similar to the procedure at EnDev, would ensure a more rapid exchange of important lessons learned and motivate the responsible officers to better perform their monitoring tasks.

Closer impact orientation of the projects and programmes

The management of projects and programmes should be more strongly geared to impact. That may be achieved by formulating corresponding indicators, for instance. If this is still rather difficult at a new project or programme, it should be specified when formulating subsequent phases. Since it is obviously difficult for the projects and programmes to monitor these indicators, a collection of best practices could provide incentives. The officers responsible for quality assurance (writers of offers, approval for the offer design (ZAK), PPR evaluators) should insist that this criterion be observed. To ensure that cross-cutting themes are taken into greater consideration, the projects and programmes should be instructed to conduct poverty and gender analyses. This can also be done with partners from universities. P+D should systematise knowledge about indirect results and promote an exchange on this theme. More systematic ex-post evaluation might ensure that long-term results that only occur after the end of the project/programme are better recorded, enabling statements to be made on the plausibility of the indirect results.

The source of electricity is irrelevant to its poverty impact. The productive use of energy should therefore not only be aimed for when disseminating individual RE technologies, but should be generally targeted. Synergies with other projects and programmes, e.g. in the priority areas 'sustainable economic principles' or 'rural development' should be used in this context. Ecological impacts (e.g. climate protection) should only be cited as a reason for promoting individual technologies where they are really significant.

Improved sustainability

The evaluation shows that some of the projects and programmes forfeit their results after completion due to inadequate sustainability. This must be prevented at all cost. To do this, greater attention needs to be paid to this criterion during implementation. The projects and programmes should develop a concrete phasing-out and exit strategy for the end of support, especially if subsidies are used. In RE projects and programmes, it must be ensured that the costs of operating and maintaining the systems are covered even without the projects/programmes. With regard to supplies of materials and equipment, the ownership status should be clarified early on in pilot measures, but at least before the end of the project/programme, with the additional development of a sustainable concept for use.

It is essential that RE projects and programmes consult the stakeholders involved in grid extension to ensure that the grid is not extended in areas with decentralised RE supply, not in the medium term either. The possibility of grid connection at a later date should be taken into account during the project/programme, e.g. by establishing feed-in tariffs.

Greater relevance to poverty reduction

Projects and programmes should move away from their focus on success with certain technologies and concentrate more on success with specific target groups.

The selected technology should be of secondary importance, and should satisfy the sustainability criteria as far as possible. Poor households should not be subsidised in the short term without an exit strategy, nor should energy systems be introduced whose operating costs clearly exceed the population's previous expenditure on energy. In this case, it may be necessary to fall back on lower-quality energy systems if they are affordable to the people concerned. Vis-à-vis partners and other donors, energy projects/programmes should identify the contribution made by electrification within the context of the basic provision of education, health and food. They should point out the costs savings for households, but also the fact that the poorest population groups cannot be reached.

No forced attempts should be made to construct relevance to poverty reduction if it is clear that involvement of the poor does not lead to a sustainable improvement of their situation. In this case, the project or programme should first establish functioning mechanisms for the use of sustainable energy under favourable conditions (sufficient willingness to pay by the population, financing options, energy requirement for productive purposes). Then regions and sectors can be addressed that do not have the above prerequisites. The same applies to gender.

Results-based monitoring

Results-based monitoring includes baseline studies, impact assessments and contrafactual studies as well as measurable indicators that are systematically recorded and interpreted (i.e. also at different points in time, but at least at the beginning and end of the measure). e-VAL data can also be used for this purpose. The officers responsible for steering the projects and programmes (especially consulting projects and programmes) must ensure that this obligation of contract and cooperation management is consistently met by projects and programmes. Highly diversified projects and programmes need an adequate budget to do so. With private-sector dissemination approaches, it must be ensured that results at company and target-group level are monitored right from the start, with the involvement of other institutions (intermediaries). Monitoring should not just apply to individual measures that are being specifically supported, but should also observe the multiplication effect so as to plausibly present the relationship with indirect results. It is expedient to organise monitoring beyond the term of the project/programme (ideally, involving the partners who integrated monitoring into their steering structures).

Improved knowledge management

This meta evaluation has provided valuable insights into GTZ's energy projects and programmes, for the first time also with a greater regard for completed projects and programmes (ex-post evaluations). This brought back into focus concepts dating from the predigital era, which are only partially documented. This applies especially to EE projects and programmes that were successfully implemented in the past (EE Brazil, PIEEP) and can now provide important information for implementing a number of new projects and programmes.

Since independent evaluations only examine a maximum of two sectors per year, it will take quite some time before such evaluations are performed again in the energy sector. Evaluation questions in ongoing projects/programmes can be covered quite well via PPRs, unlike questions in ex-post evaluations, which might generate additional findings on impact and sustainability in particular. The responsible division in GTZ's Planning and Development Department should therefore examine together with the country departments how funds can be provided for this in future. One option is via the new sector programmes.

However, the evaluation results must also be made available to the officers responsible for planning and implementing the projects and programmes and an exchange must be initiated. This can be done at sector network conferences or virtual chat rooms. EnDev has developed a knowledge management system based on Wikipedia this year. Something similar, as a supplement to the Document Management System (DMS), would also be conceivable for bilateral projects and programmes in the three thematic areas. Involvement in (supraregional)

networks offers the opportunity to exchange and pass on important experience and should therefore be actively promoted by projects and programmes.

9.2 Recommendations for the strategic orientation of the energy portfolio⁸⁵

Selection of priorities/Profile building in Africa

The theme of energy is growing in importance for Africa too. Senegal and Uganda are two priority countries that were examined during the independent evaluations and rated as successful (in the case of EAP Uganda, very successful). The priority area remains the basic supply of energy, especially the efficient use of biomass. Here, GTZ has many years of experience through HEP Sahel and ProBEC, as well as successful dissemination approaches in Uganda and Ethiopia that were combined in the HERA sector programme. At regional level, GTZ is anchored in West Africa (CILSS) and in the SADC region via ProBEC. EAP Uganda shows that a comprehensive approach (stoves, rural electrification, EE in SMEs) that is firmly anchored at political level can generate substantial results.

GTZ is well positioned at institutional level with the regional energy platform REAP and initial contacts with the East African Community (EAC), and funds are available for scaling up via EnDev and the EU's Project Development Facility⁸⁶. Within EAP Uganda, GTZ also supports energy-policy harmonisation in Africa in the framework of the African Union and the Forum of the Energy Ministers of Africa. Based on this situation, it might be possible to generate substantial successes with the dissemination of sustainable energy systems in Africa. But this calls for stronger networking of the successful approaches, the exchange of best practices and cooperation with other donors in the individual countries. Isolated projects and programmes with limited impact⁸⁷ should be avoided. Measures like TERNA show, however, that there is potential for grid-connected RE technologies also in poor countries, and technical cooperation projects and programmes could prepare the ground for such technologies.

New projects and programmes outside the priority areas

When planning new projects and programmes, it should be ensured that GTZ can remain active in the energy sector for a sufficiently long period. Terminating measures for political reasons poses a great risk for the sustainability of the results achieved (see EE Turkey and PROFER, which were terminated after one phase and only received ratings of '4' and '3' respectively). It is therefore urgently advised not to get involved in the energy sector in

⁸⁵ In this chapter, the author also considers the experience and knowledge of other projects and programmes.

⁸⁶ which were put to expedient use in EAP Uganda, PERACOD and ProBEC

⁸⁷ like the RE project in Tanzania that was not evaluated here

countries where German support is due to be discontinued in the medium term (less than six years).

Climate protection

The evaluations show that little is known about the concrete climate impact of the energy projects and programmes. It is not acceptable for all projects/programmes to speak of a reduction in greenhouse gases, but only give specific figures in just one example. This undermines the credibility of development cooperation, which invests substantial funds in this area. GTZ should examine its portfolio with regard to these results and provide its clients with better information for steering. That would reduce the risk of funds being used for isolated 'flash in the pan' measures, especially by clients other than BMZ. Instead, they would be planned to complement existing, successful technical cooperation projects and programmes. Since the focus here is on climate protection, these might be supplementary measures to harness CDM potential or the mass dissemination of climate-relevant technologies (e.g. solar water heating systems, alternative fuels for decentralised use or energy-saving stoves). Since BMU pursues different objectives to BMZ, relevance to poverty reduction can take a back seat here.

Promoted technologies

So far, GTZ has concentrated on the three thematic areas named in this meta evaluation, and should not divide its attention in future by adding further themes. In two places, the reports call for caution in supporting bio fuels, particularly in countries with competing use of land resources. Here, only pilot measures should be supported, if at all.

It is noticeable that no support is given for the use of biogas, although promising approaches exist in some of the partner countries and GTZ did generate a number of experiences in this area in the 1980s and 1990s. It would be interesting to find out in an ex-post analysis what has become of these approaches, what long-term results were obtained and how this knowledge could be used in future.

In poor countries, there should be a clear orientation to access rather than to specific technologies. EnDev shows that support for better use of existing electricity grids (grid concentration, productive use) can be very successful at target-group level, often at much lower costs than decentralised electrification via RE. GTZ should keep an open mind in this respect and attempt to convince BMZ. There should be a clear distinction between the access theme and the climate protection theme. It is not credible to disseminate SHSs under the aspect of savings in greenhouse gases. Grid-connected technologies, on the other hand, should only be promoted if they promise growth and supply security and therefore have indirect poverty impact or special climate relevance.

Tripartite cooperation with anchor countries

The ex-post evaluations show that there has been successful cooperation in the energy sector in countries like Argentina and Brazil. In future, these countries will play an increasingly important role as donors, which is also true for China and other partner countries that may possibly cease to be supported by BMZ in the medium term⁸⁸. Mexico, for example, would like support from the German Government to set up its own development agency. It would be both desirable and strategically expedient to introduce GTZ's experience here, which is probably unique in the field of promoting sustainable energy systems. This experience could also be passed on to other countries.

⁸⁸ GTZ is active in the energy sector in India and China, Mexico, Brazil and South Africa, with substantial funds in the first two of these.

Annex 1:

Terms of reference for the meta evaluation Renewable Energies and Energy Efficiency

(as at 26 September 2008)

I. Background and object of evaluation

GTZ extended and optimised its evaluation system in 2005, the major innovation being the introduction of independent evaluations on behalf of GTZ. The Evaluation Unit commissions independent research institutes and consulting firms to conduct these evaluations in order to review GTZ's work from an external perspective. These institutes and firms in turn contract the services of one international and one national evaluator from the partner country in each case. Each year, GTZ commissions a total of 30 independent evaluations (interim, final and ex-post evaluations) in two thematic priority areas. In 2007, the priority areas were 'private sector development (PSD)' and 'renewable energies and energy efficiency'. Uniform evaluation criteria and a uniform assessment grid enable comparison of the evaluations.

After the Evaluation Unit has examined and accepted the evaluation reports submitted by the evaluators, each year it arranges for meta evaluations to be performed in each priority area. These serve to promote institutional learning at GTZ and to report to the German Federal Ministry for Economic Cooperation and Development (BMZ). The results contribute to knowledge management at GTZ and can also be used for PR activities.

The object of the cross-section evaluation is:

15 evaluation reports from 2007 on the thematic priority area **renewable energies and energy efficiency**:

- six interim evaluations (Nepal, Pakistan, SADC, Senegal, Uganda, supraregional (TERNA))
- three final evaluations (two in China, one in the Dominican Republic)
- six ex-post evaluations (Africa supraregional, Argentina, Brazil, Thailand, Turkey, supraregional (pump systems))

II. Objectives of the meta evaluation

The evaluation is intended to:

- summarise the results of the 15 individual evaluations
- identify recurring strengths and weaknesses and factors determining success and failure
- identify cross-project lessons learned and recommendations

III. Tasks

To evaluate and process the 15 evaluation reports from 2007 in the thematic priority area energy, and compare them from a quantitative and qualitative viewpoint.

The questions to be answered result from the following **report structure**:

Contents

1. Introduction

- 1.1 Background, objective and object of the cross-section evaluation
- 1.2 For the reader's guidance

2. Objectives and activity areas

- The three types of evaluated projects and programmes (RE for rural electrification, household energy, energy efficiency) are first to be presented separately in their own sub-sections and then summarised, wherever possible and expedient.
- Key questions:
 - Which are the main objectives pursued by the projects/programmes (MDGs, poverty reduction, access by different social groups to energy, economic efficiency, environmental protection, climate protection)?
 - Over the course of time, can trends be established in the objectives systems of the evaluated projects and programmes?

3. Rating according to DAC criteria

- 3.1 Relevance
- 3.2 Effectiveness
- 3.3 Impact
- 3.4 Efficiency
- 3.5 Sustainability

In each of these areas:

- Rating (average and distribution) and weighting (average and distribution) of the criterion in the reports
- Reasons for weightings that deviate from the standard (factor 2)? Were the reasons convincing?
- Reasons for good and poor ratings (frequency)? Can 'patterns' be identified from them, i.e. factors determining success or failure?
- Conclusions
- The three types of evaluated projects and programmes (RE for rural electrification, household energy, energy efficiency) are first to be presented separately in their own sub-sections and finally summarised, wherever possible and expedient.

3.6 Synopsis of 3.1 to 3.5

- Overall rating (average and distribution) in the reports
- In how many cases did (poor) ratings of individual criteria lead to a downgrading of the overall rating?

4. Rating of cross-cutting development-policy themes

4.1 Poverty reduction and MDGs

- 4.1.1 Conceptual problems
- 4.1.2 Mainstreaming in development strategies (in the field)
- 4.1.3 Poverty marker in the offers and its distribution
- 4.1.4 Target-group differentiation and poverty analysis

- Poverty marker of the development measures (distribution)?

- To what extent do/did the development measures comply with these markers?
 - Was the project design differentiated according to target groups, and was a poverty analysis performed? Were poverty analyses used for the project design?
- In how many development measures is/was 'adequate' poverty impact achieved?
 - Did the project promote the participation of poor people in economic and political processes?
 - Does the project have positive results in term of poverty reduction?
 - Does the project help to remedy structural problems identified by the national poverty reduction strategy?
 - Were questions of equitable distribution (e.g. access to land?) addressed, and if so, how? (Was not part of the ToRs)
 - What is the ratio of direct to indirect results?
 - How many people have benefited from the poverty impact and/or will do so in future?
- What are the reasons for achieving and not achieving poverty impacts? Can 'patterns' be identified, i.e. factors determining success or failure? Are there findings that are specific to given regions?
- Conclusions

4.2 Gender equality

- What is the distribution of gender markers for the development measures?
- To what extent do/did the development measures comply with these markers?
 - G-1 and G-2: was the project design gender-responsive and was a gender analysis (gender-based analysis of the initial situation) available?
 - Was the G-0 marker awarded on the basis of a gender analysis? (Note: This was obligatory for development measures as of the end of 2005).
 - Are there conclusive examples of the mainstreaming of the gender aspect in EE projects and programmes?
- How many development measures achieved 'adequate' gender impact?
 - Do men and women make an equal contribution to shaping the project?
 - Do men and women derive equal benefit from the project?
 - Does the project/programme help to reduce structural gender discrimination and thus to achieve a positive change in the gender ratio?
 - Was one gender discriminated against, or was this made up for by positive measures?
 - What is the ratio of direct to indirect results?
- What are the reasons for achieving or not achieving gender impact? Can 'patterns' be identified, i.e. factors determining success or failure? Are there findings that are specific to given regions?
- Conclusions (also in terms of how gender-responsive aspects can be mainstreamed in energy measures)?

4.3 Effects on the partner's capacity to act (capacity development) (See Chapter 3 of the evaluation reports)

- In how many development measures are/were (very) good/satisfactory/inadequate successes achieved in terms of capacity development, and at which levels (individual, institutional, societal)?
 - Did the advisory services have an effect on the partner's capacity to act?
 - Did it prove possible for pilot approaches to be successfully multiplied or adjusted by the partner structures?
 - Did the development measures have an effect on the design of national policies and laws, and the stakeholders' ability to shape such policies and laws? And on interaction between the state, the economy and civil society?

- What are the reasons for successful/unsuccessful capacity development? Can 'patterns' be identified, i.e. factors determining success or failure? Are there findings that are specific to given regions?
- Conclusions

5. Concept of sustainable development

- To what extent and how frequently did/do the development measures, i.e. GTZ's work method, reflect the concept of sustainable development (holistic, process-oriented and value-oriented approach)?
 - Holistic approach: linkage of economic, social and ecological target dimensions; of sectoral, organisational and policy advice; of the micro, meso and macro levels
 - Process-oriented approach: help for self-help; establishing transparency of actors' interests; promoting the interaction of state, civil society and the private sector
 - Value-oriented approach: promoting democracy, the rule of law, human rights; gender equality; good governance; social and ecological market economy
- Conclusions

6. Sectoral assessment

Preliminary note: As regards the information provided in Sections 6.1 - 6.4, the three types of evaluated projects and programmes (RE for rural electrification, household energy, energy efficiency) are first to be presented separately in their own sub-sections and finally summarised, wherever possible and expedient.

6.1 Methodological approach and achievement of objectives

- RE for rural electrification
- Household energy
- Energy efficiency
- Summary

Key questions on sub-sections a-c:

- In how many development measures was the methodological approach judged to be **adequate** (and purposeful)? In how many was this not the case, and why? In how many projects and programmes were conceptual changes agreed with BMZ during ongoing phases?
- What were the overall **strengths** and **success factors** of the methodological approaches? What were the **weaknesses**?
- How many projects and programmes were implemented according to a **multi-level approach**? Did the interventions interact well at micro, meso and macro level? What was the added value of the multi-level approach?
- To what extent do the advisory approaches take into account the contradictions between local and traditional institutions, our market-economy approaches, and global economic structures?
- Interventions at **macro level**:
 - Which typical interventions were implemented? (Which advisory services? At which institutions?)
 - Were these purposeful for achieving the project objectives (e.g. by creating a suitable framework, institution building, safeguarding the sustainability of change processes)
 - What were the success factors for work at macro level? Which forms of cooperation were especially successful? Which factors impeded successful cooperation, and why?

- To what extent was use made of specific German experience (e.g. sector reforms, involvement of the private sector, laws to promote RE)?
- Interventions at **meso level**:
 - Which typical interventions were implemented? (Which advisory services? At which institutions?)
 - Were these purposeful for achieving the project objectives (e.g. broad-based effect/scaling up, institution building, boosting private sector participation?)
 - What were the success factors for work at meso level? Which forms of cooperation were especially successful? Which factors impeded successful cooperation, and why?
 - What role did the private sector (private companies, associations) play?
- Interventions at **micro level**:
 - Which typical interventions were implemented? (Which advisory services? At which institutions?)
 - Were these purposeful for achieving the project objectives (e.g. enhancing credibility at macro level, scaling up of pilot or demonstration measures?)
 - What were the success factors for work at micro level? Which forms of cooperation were especially successful?
 - What role did the private sector (private operators, companies) play?
- Did the project have a institution-building effect (e.g. by strengthening institutions, networking)? How did the institution-building effect contribute to the project's success?
- Did the projects/programmes introduce and implement **innovations** (e.g. technical innovations, organisational innovations, institutional innovations)?
- What role did subsidies provided by the project/programme or other donors play in achieving the project objectives (e.g. for services in private companies, pilot stations etc.)? Did the project stakeholders that benefited from the project/programme (e.g. companies, energy users, participants in training measures, especially in the private sector) pay a commensurate share of the cost of the measures?

6.2 Sectoral issues

a. RE for rural electrification

Successful operator models and dissemination concepts: key questions:

- Which **operator models** were successful? (e.g. public supply companies, private operators, community-based approaches)
- Which dissemination concepts were successful in terms of **scaling up**? (e.g. market-oriented dissemination approaches, public supply companies, owner and operator concepts)?
- Were there examples of successful cooperation with industry (local or German companies)? Did German companies benefit from this cooperation? If yes, in what form?

Financing model of energy provision; key questions:

- How were the costs of providing energy/services distributed among users? (e.g. cost coverage/subsidies, tariff models with/without social tariffs)? In the case of subsidies: which costs were subsidised? Were there reduction mechanisms for the subsidies?

b. Household energy

Dissemination concepts; key questions:

- Which **dissemination concepts** were used and how successful were they in terms of scaling up? What role did **subsidies** play? How were they implemented? How did users finance the new technologies?
- How did the dissemination of the technology affect the **socioeconomic situation** of the users? (social status, household budget, health aspects?)
- Were the measures flanked by **awareness-raising and marketing activities**? Has any experience been gained as regards their effectiveness?

Establishment of private-sector activities; key questions

- To what extent does the promotion of technologies for the efficient use of biomass help to establish **private-sector activities**?
- Who was able to benefit from these? (poor population groups, women, men?)

c. Energy efficiency

Strategic approaches; key questions:

- Which strategic approaches were used to enhance energy efficiency (awareness-raising/information/pilot projects/technology transfer/development of a services market/monetary or non-monetary incentive systems, CDM projects etc. or combinations of these)? Which institution bore overall responsibility for implementation?
- What role did pilot measures play at target-group level, and subsidies of services or hardware play in achieving the project objectives? What was the financial scope of these measures in relation to the overall budget of the project/programme?

Sectors; key questions:

- In which sectors were the EE concepts implemented (households, buildings, municipal institutions, industry, agriculture, trade, power generation, transmission, transport and traffic)? According to which criteria were these selected?
- Did the measures lead to a verifiable increase (beyond the project activities) in energy efficiency in the relevant sector? What were the success factors?
- If the desired dissemination of energy-efficient measures beyond the project/programme did not occur, what were the reasons? Could the project/programme have recognised them in advance, and would counter-measures have been possible?

6.3 Results

- a. RE for rural electrification
- b. Household energy
- c. Energy efficiency
- d. Summary

Key questions on sub-sections a-c:

- What was it possible to achieve in concrete terms with regard to the strategic approach in the context of **energy policy advice** (see also Section 4.3)
- Which **cross-sectoral** results constellations (e.g. energy provision, vocational training, financial services etc.) led to intended (unintended) poverty-relevant and gender-relevant results?
- Did the project outputs trigger or accelerate **investments**? For example, by:

- mobilising local private-sector investments (e.g. investments by private companies in rural energy supply, business investments in energy-efficient technologies or buildings)
- mobilising public investments (e.g. expansion of rural electrification by state budgets, subsidies for energy efficiency measures)
- mobilising private investments or user contributions (e.g. introduction of tariffs, purchase of energy-saving appliances)
- mobilising funding by other donors

What were the success factors for promoting such investments?

- Were the projects' expectations met in terms of **involving the private sector via PPP measures**? Which success factors or barriers existed or still exist with regard to preparing and conducting PPP measures?
- Were there examples of successful cooperation with industry (local or German companies)? Did German companies benefit from the cooperation? If so, in what way?
- Did the partner provide the pledged inputs? Which (positive or negative) influence did this have on achieving the project objectives and the achieved results?
- Which outward conditions that could have been influenced by the project (political, economic, social, cultural conditions etc.) had a major influence on the course of the project and the achievement or non-achievement of objectives? Could these influences be recognised before the start of the project?

6.4 Monitoring

Key questions:

- Which **types of monitoring** were applied (e.g. activities monitoring, results monitoring)?
- Were **traceable cause-and-effect hypotheses** elaborated and monitored, also with regard to poverty reduction and gender equality, and can the results constellations be plausibly proved?
- How well were the monitoring approaches **integrated into the project design**?
- What are **good examples** of monitoring systems? How are resources used (cost/time) rated for a monitoring system in relation to the overall project/programme budget?
- What typical **methodological problems** were encountered during monitoring? How could these be overcome?
- Which 'core indicators' are suitable for general use (e.g. in the form of an 'indicator database')?

7. Contract and cooperation management

- In how many development measures were the modes of delivery and the assigned staff appropriate, and why? In how many was this not the case, and why? Was technical cooperation the suitable instrument? (Differences in anchor and poor countries?)
Were the prerequisites created for programme-based approaches (e.g. sector-wide approaches (SwAPs))?
- What special strengths and weaknesses (frequently) occurred in project steering? What conclusions can be drawn?
- How was cooperation with the partner institutions rated? What special strengths and weaknesses (frequently) occurred? Can recommendations be made?

- How were the cooperation relationships and their quality rated within development cooperation/international cooperation? (Cooperation and distinction between financial cooperation/technical cooperation, joined-up development cooperation, donor coordination and GTZ's role, requirements resulting from the Paris Declaration)? What special strengths and weaknesses (frequently) occurred? Do you have any recommendations for how the weaknesses can be remedied?

8. Summary of conclusions and lessons learned

8.1 Cross-sectoral conclusions (how is the development of the overall portfolio managed in the sector?)

8.2 for any sub-sector(s)

8.3 any recommendations for contract and cooperation management

8.4 Give good examples, if possible also with regard to modes of delivery

9. Recommendations

9.1 Cross-sectoral recommendations (including those for the profile-building process, i.e. how could the theme of energy and energy efficiency be better mainstreamed in Africa: recommendations on ensuring coherence with projects/programmes that are financed from BMU's international climate protection fund)

9.2 for sub-sector(s) X, if applicable

Annex 2: Guidelines on evaluating the success of projects/programmes

1. Preliminary remarks

This document is a guide to evaluating the success of projects/programmes implemented by GTZ. It contains the central evaluation criteria, the key questions devised to examine the criteria, and an assessment grid devised to obtain an overall rating.

The evaluation criteria, which were developed in a working group operating under the name “Evaluierung aus einem Guss”⁸⁹ and are binding for its members, are based on the five criteria agreed within the OECD-DAC⁹⁰: relevance, effectiveness, efficiency, overarching development-policy results (impact) und sustainability.

Furthermore, key questions were devised which represent important points of reference for assessment of the evaluation criteria.

The rating of a project/programme according to the individual evaluation criteria is given on the basis of a six-point scale (exception: a four-point scale is used for the sustainability criterion).

Explanation of terms:

Development measure:

The term “development measure” used in this document encompasses the following terms: project, programme, program-based approaches, and development intervention.

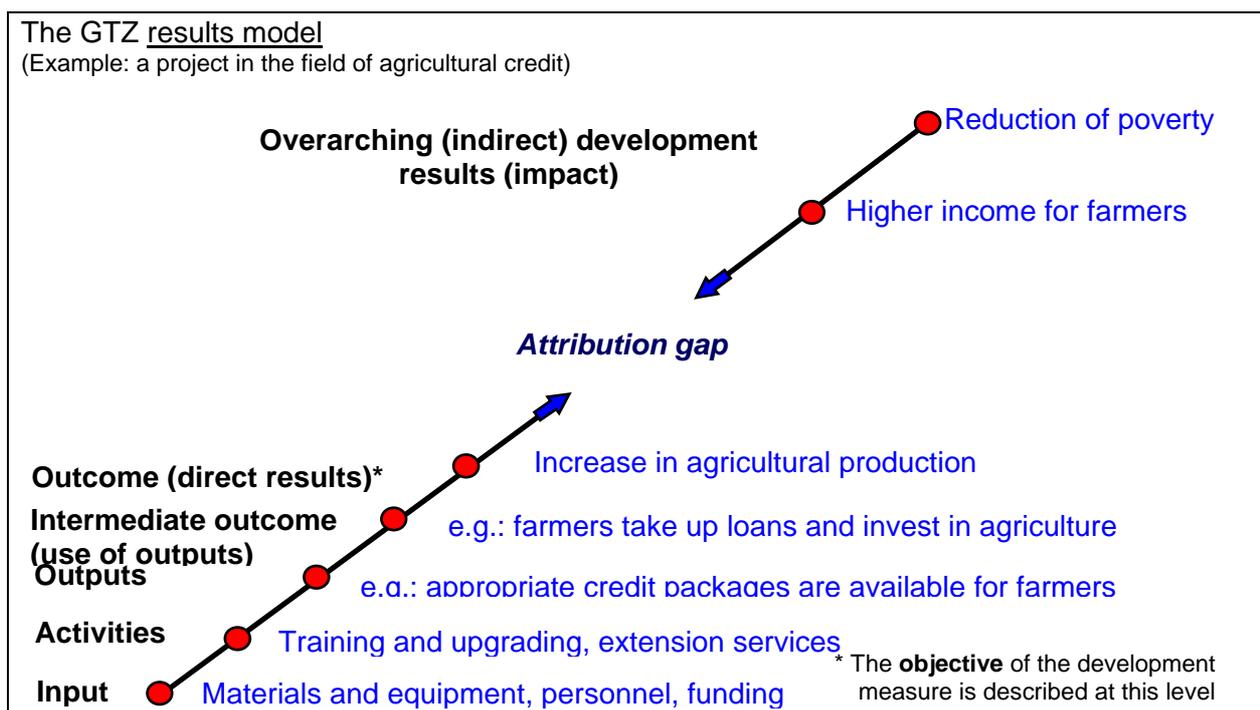
Results:

The term “results” used in international debate and in this document includes the outputs, the use of outputs, the direct and indirect results and the highly aggregated results.

⁸⁹ A group of the Evaluation Departments of BMZ (lead), GTZ, KfW, DED and InWEnt created to harmonise and coordinate evaluation activities.

⁹⁰ OECD-DAC: Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD), Paris

These guidelines are also based on the rationale and concepts of the GTZ results model.⁹¹



Basis of the assessment

The evaluation of a development measure requires systematic examination of the underlying cause / effect-hypotheses. This examination is carried out in the following stages:

- The quality of the results chain of the development measure is investigated and assessed (including rationale for the assessment).⁹² This includes, for example, examining the plausibility of the cause / effect-hypotheses and the level to which the objectives are to be achieved (formulation of objectives and indicators).
- If the cause / effect-hypotheses and the objectives of the development measure are judged to be consistent, they are taken as the basis for the evaluation of the project/programme.
- If the cause / effect-hypotheses and the objectives of the development measure are judged not to be consistent, the evaluators develop their own hypotheses, objectives and indicators which appear to them to be more appropriate. These then form the basis for evaluating the success of the project/programme.

⁹¹ See also "Guidelines on Offers", GTZ November 2006

⁹² The objectives and indicators defined in the offers are binding and are applicable here, not the information given in any other project documentation.

General remarks on assessment

All that is assessed is the development-policy effectiveness of the project/programme as defined in the evaluation criteria.⁹³

What is assessed is primarily the situation as it can be measured or established at the time of the evaluation. Exceptions are explained in Section 2 in the descriptions of the relevant evaluation criteria.

Results that are difficult to estimate at the time of the evaluation must be plausibly inferred and described using proxy indicators or by verifying central assumptions about the results chain.

⁹³ The overall success of the development measure is not to be equated with the quality of the work performed by GTZ and its implementation partners. For example, good management on its own does not necessarily lead to overall success.

2. The five evaluation criteria

2.1 Relevance

Are we doing the right thing?

The extent to which the objectives of the development measure match the needs of the target groups, the policies of the partner country and partner institutions, the global development goals and the German Government's basic development-policy orientation.

Key questions for assessing relevance⁹⁴

- To what extent is the development measure suitable for addressing central development issues for the partner country and target groups (differentiated according to gender, ethnic group, parties to a conflict), and specifically poor population groups?
- To what extent is the development measure in compliance with the (sector) policies and strategies of the partner country (national plans, PRSP etc.) and the partner institutions?
- To what extent is the development measure in compliance with international themes, standards, conventions?
- Does the project or programme have a high or low priority for the responsible institutions in the partner country or for civil society? How is this apparent?
- Does the development measure comply with the client's basic development-policy orientation? ⁹⁵
 - Which of the cross-cutting issues are relevant? How far are these taken into consideration in the design of the project or programme?
 - To what extent is the development measure targeted at poverty reduction and the MDGs?
 - To what extent does the project or programme fit into the country strategy, priority area and programme definition, and the sector strategies?
- To what extent is the project or programme in line with GTZ's concept of sustainable development, i.e. to what extent does it contribute – through a holistic project approach, through process orientation and through value orientation – to ensuring that the results of the project/programme and the developments in the partner country can be sustainable? ⁹⁶

⁹⁴ The relevance of the project/programme is assessed as of the time at which the conceptual approach was formulated or adjusted. A concept adjustment that was not carried out, despite being necessary, is also relevant to the assessment, however.

⁹⁵ Currently these are: poverty reduction, fostering gender equality, participatory development and good governance, environmental protection and conservation of natural resources, crisis prevention, combating drug abuse, rural development, and conservation of tropical forests. See also BMZ homepage:

<http://www.bmz.de/en/index.html>

⁹⁶ See also GTZ homepage: <http://www.gtz.de/en/top-themen/15534.htm>

2.2 Effectiveness

Are we achieving the objectives of the development measure?

The extent to which the intended direct results (objectives) of the development measure are being achieved (comparison of actual situation with targets).

Key questions for assessing effectiveness⁹⁷

- To what extent are the objectives of the development measure being achieved (comparison of actual situation with targets on the basis of the defined indicators)?⁹⁸
Are any limits critical to success for achieving the objectives being undershot or overshot?
- What are the decisive reasons why the objectives are or are not being achieved?
- To what extent do the political partners (lead executing agency in the partner country and BMZ) and the implementing organisations (national implementation partners and GTZ) have a positive or negative influence on the achievement of objectives?
- What unintended positive and negative direct results have occurred? How should these be assessed in the overall context? What is the response to these?

⁹⁷ When evaluating ongoing projects or programmes, the appraisers assess the effectiveness in terms of the degree to which the objectives have been achieved at the time of evaluation, i.e. whether the project/programme is within the objectives corridor. In final and ex-post evaluations, the effectiveness is assessed on the basis of the degree to which the objectives were achieved at the end of the project or programme.

⁹⁸ The assessment is made on the basis of the objectives and indicators that are considered appropriate; see also the explanations on the "Basis of the assessment" on Page 2 of this document.

2.3 Overarching development results (impact)

Are we contributing to the achievement of overarching development results?

The extent to which the project or programme is contributing to achieving the intended overarching results and producing other indirect results.

Key questions for assessing overarching development results (impact)

- What (positive and negative) changes at the level of indirect results can be observed in the wider sectoral and regional environment of the development measure?
- Which of these changes can be plausibly attributed to the project/programme at various levels (population, sector, institutions and regulations)?
For example: ⁹⁹
 - How far are important barriers to development being structurally eliminated or reduced through the project/programme?
 - How are the living conditions or development opportunities changing?
 - How is the project/programme strengthening the ability to solve problems of the target groups (of the project/programme and others), intermediaries and institutions?
 - What contributions is the project/programme making towards achieving overarching development goals (e.g. Millennium Development Goals and implementing the Millennium Declaration, structural reduction of poverty - e.g. promotion of pro-poor growth, pro-poor governance)?
 - What results are being achieved in terms of other cross-cutting issues: gender, environmental protection and conservation of natural resources, participation and governance, crisis prevention and conflict sensitivity?
- What contributions can the development measure realistically make to the achievement of these indirect results (expected level to be achieved by the project/programme)?
- How is the actual contribution of the development measure to the achievement of these indirect results assessed?
- What are the decisive reasons why indirect results are or are not being achieved?
- To what extent is the effectiveness of the development measure positively or negatively affected by other policy fields, strategies or interests (German ministries, bilateral and multilateral development partners)? What consequences has the project/programme drawn from this?
- What broad impact is being achieved: e.g. suitable as a model, structural changes, replication of approaches and scaling-up?

⁹⁹ Depending on the individual circumstances, the examples listed here for indirect results may also be direct results, in which case they have to be taken into account under the “effectiveness” criterion. In order to decide whether a result is direct (“effectiveness” criterion) or indirect (“impact” criterion), the question has to be answered whether achievement of the result can be attributed causally to the development measure (direct result) or whether the development measure is making plausibly explicable contributions to the achievement of the result (indirect result).

2.4 Efficiency

Are the objectives being achieved cost-effectively?

A measure of the degree to which the resources invested in a development measure are appropriate compared to the outputs and results achieved.

Key questions for assessing efficiency

- What resources is the development measure using for the various forms of modes of delivery (long-term experts, short-term experts, procurements, operating and administration costs, training courses, local subsidies and financing contracts, other contributions)?
- To what extent is the structure of the development measure (e.g. project, programme structure, program-based approaches) appropriate for achieving the outputs and results cost-effectively? What structure might make it possible to do this more efficiently?
- To what extent are the objectives and outputs/activities of the project or programme coordinated with or complementary to those of others, or designed for task-sharing (joined-up German Development Cooperation, program-based approaches such as SWAp, basket funding or budget support)?
- To what extent is there adequate coordination between donors? In what ways is this encouraged or hindered?
- To what extent is the composition of the modes of delivery - personnel concept and personnel assignment, provision of materials and equipment, training, funding - cost-effective, i.e. how far are internal resources being used efficiently?
What alternatives are there to the modes of delivery employed, and which (if any) would be more efficient?
- To what extent have the outputs been produced cost-efficiently (cost-benefit ratio)? What alternatives are there, and which (if any) would be more efficient?
- To what extent are the direct and indirect results achieved efficiently in terms of microeconomic, macroeconomic and sector-specific standards?
- Are the outputs and results achieved at the correct time and within a reasonable period?

2.5 Sustainability

Are the positive results durable?

A measure of the probability that the positive results of the development measure will continue beyond the end of assistance.

Key questions for assessing sustainability

- What period is appropriate/realistic for the continuation of the results, and which critical minimum requirements for success in this period (expectations of sustainability) are appropriate for the project or programme?
- What approaches, instruments, methods or concepts are lastingly used, institutionalised or further developed by the target groups, partner institutions or other actors? How is this done?
- How will the results for the target groups, partner institutions and partner country continue beyond the end of assistance?
How far can the (direct and indirect) results of the project/programme be maintained, or is an improvement or deterioration to be expected?
- To what extent are the requirements for sustainability met?
 - To what extent are (organisational, personnel, financial, economic) resources and capacities available in the partner country (in the longer term) for maintaining the results achieved? To what extent is the required ability in place to adapt to changing framework conditions and solve associated problems?
 - How should the four dimensions of sustainability¹⁰⁰ (economic, political, social and ecological) and their risks and opportunities be assessed?
 - How do these dimensions of sustainability interact? Under the specific conditions, to what extent is the result balanced, stable and capable of modification in the longer term?
- What are the key risk factors for longer-term sustainability of the results? How is the evolution of these factors assessed?
- Operationalisation of the four dimensions of sustainable development to assess sustainability:
 - Economic: how are the achieved outputs and results secured at the microeconomic or macroeconomic level? How stable or capable of modification are they in terms of the pace of economic growth (local, regional, national, global)?
 - Political: how is the project or programme contributing to a fair and peaceful balance of interests? To what extent are changes in the political culture and changes in behaviour, attitudes and awareness apparent in the target groups and partner institutions? To what extent and in what way is ownership on the part of target groups and institutions necessary and existent? To what extent is the legal framework in place that is necessary for changes? To what extent is the political will for change identifiable?
 - Social: how is the project or programme contributing to greater equality of opportunity, social justice, improved access to social services and resources?

¹⁰⁰ In specialist debate it is common to distinguish between three dimensions: economic, social and ecological sustainability. To provide a more differentiated description, in this document social sustainability is broken down into political sustainability (societal level) and social sustainability in the narrower sense (individual level).

- Ecological: in what way is long-term ecological viability ensured? What risks are there of lasting negative environmental effects emerging in the long term?

3. Assessment grid

3.1 Assessment of the individual evaluation criteria

A six-point scale is used to rate the project or programme according to four of the criteria, namely “relevance”, “effectiveness”, “overarching development results” (impact) and “efficiency”. The scale is as follows:

- | | |
|---|--|
| 1 | very good rating, significantly better than expected |
| 2 | good rating, fully in line with expectations, no significant defects |
| 3 | satisfactory rating, falling short of expectations but with positive results dominant |
| 4 | unsatisfactory rating, significantly below expectations, and negative results dominate despite identifiable positive results |
| 5 | clearly inadequate rating: despite several positive partial results, the negative results clearly dominate |
| 6 | the project/programme is useless, or the situation has deteriorated on balance |

A rating of 1-3 indicates a positive assessment, a rating of 4-6 an assessment that is not positive.

The “sustainability” criterion is rated on the following four-point scale:

- 1 (very good sustainability)
The overall success of the project/programme (positive to date) will continue unchanged or even increase with a high degree of probability.
- 2 (good sustainability)
With a high degree of probability, the overall success of the project/programme (positive to date) will only minimally decrease but will overall remain significantly positive (normal situation – to be expected).
- 3 (satisfactory sustainability)
The overall success of the project/programme (positive to date) will decrease significantly but remain positive with a high degree of probability.
This also applies if the sustainability of a project/programme is assessed as inadequate up to the point of evaluation, but will evolve positively with a high degree of probability, so that the project/programme will achieve positive overall success.

4 (inadequate sustainability)

The overall success of the project/programme is inadequate at the time of evaluation and there is a high degree of probability that it will not improve.

This also applies where the sustainability has previously been rated positively but there is a high degree of probability that it will decline seriously and no longer meet the requirements for level 3.

3.2 Overall rating

The overall rating is calculated from the assessment and a weighting of the five individual criteria which is determined for each specific project. The rating is given on a six-point scale:

1	very good rating, significantly better than expected
2	good rating, fully in line with expectations, no significant defects
3	satisfactory rating, falling short of expectations but with positive results dominant
4	unsatisfactory rating, significantly below expectations, and negative results dominate despite identifiable positive results
5	clearly inadequate rating: despite several positive partial results, the negative results clearly dominate
6	the project/programme is useless, or the situation has deteriorated on balance

An overall rating of 1-3 shows that a project or programme was successful, a rating of 4-6 shows it was unsuccessful. However, projects/programmes can only be rated as “successful” if the direct results (effectiveness), indirect results (impact) and sustainability are rated at least “satisfactory” (3).¹⁰¹

A decision is made and justified for each criterion whether it is “particularly important” (weighting 3), “important” (weighting 2) or “less important” (weighting 1) in the specific context of the project/programme. In the absence of a special reason which makes it more or less important, a criterion is held to be “important” (weighting 2).

Ratings and weightings are always expressed in whole numbers, rounded up or down in accordance with the usual rules of mathematics.¹⁰²

¹⁰¹ In exceptional cases a rating of 4 for sustainability is acceptable for a “successful” project/programme if this has been planned from the start and was inevitable for the project/programme and still appears acceptable at the time of evaluation because of the great development significance of the project/programme. In such instances the weighting for the “sustainability” criterion must be “1”.

¹⁰² The Evaluation Unit has developed an Excel macro for calculating the overall rating; only the values for the rating and weighting of the individual criteria need to be entered in the macro, which then calculates the overall rating.

Example of an overall rating for a project/programme:

(1) Criterion	(2) Rating for criterion	(3) Weighting for criterion	(4) = (2) x (3)
Relevance	3	2	6
Effectiveness	2	2	4
Overarching development results (impact)	3	3	9
Efficiency	4	1	4
Sustainability	3	3	9
Total		11	32
<p>Overall rating: total (4) / total (3) Example: 32 / 11 = 2.9 => overall rating 3</p>			

Annex 3: Rating of individual criteria and overall rating of 15 projects and programmes in the energy sector

Project/programme	Overall rating	Relevance		Effectiveness		Impact		Efficiency		Sustainability	
		Weighting	Rating	Weighting	Rating	Weighting	Rating	Weighting	Rating	Weighting	Rating
SHP Tibet	2	2	2	2	3	2	2	2	2	2	2
TERNA Ethiopia	2	2	2	2	2	2	3	2	2	3	3
PVP Chile	2	1	3	3	2	1	3	3	2	3	1
EAP Uganda	1	3	1	2	1	2	2	2	1	3	2
SHPP Nepal	2	2	2	2	3	2	3	2	2	2	2
RE China	3	2	1	2	3	2	3	2	3	2	3
PERACOD Senegal	2	2	1	2	2	3	2	1	3	3	3
PROFER Dom. Rep.	3	3	2	2	3	2	2	2	3	3	3
REEE Pakistan	2	3	1	2	2	3	2	2	2	3	2
RE overall	2.11	2.22	1.67	2.11	2.33	2.11	2.44	2.00	2.22	2.67	2.33
HEP Sahel	4	2	2	2	5	2	5	2	4	2	4
ProBEC SADC	2	2	1	2	2	2	2	2	2	2	3
PERACOD Senegal	2	2	1	2	2	3	2	1	3	3	3
EAP Uganda	1	3	1	2	1	2	2	2	1	3	2
HE overall	2.25	2.25	1.25	2.00	2.50	2.25	2.75	1.75	2.50	2.50	3.00
ENEP Thailand	4	2	1	1	2	3	4	1	3	3	2
PIEEP Argentina	2	3	2	1	3	2	2	1	1	3	1
EAP Uganda	1	3	1	2	1	2	2	2	1	3	2
EE Brazil	2	3	2	2	2	2	3	1	2	3	2
EE Turkey	4	3	1	2	3	2	3	2	3	3	4
REEE Pakistan	2	3	1	2	2	3	2	2	2	3	2
EE overall	2.50	2.83	1.33	1.67	2.17	2.33	2.67	1.50	2.00	3.00	2.17
All 15 projects/	2.47	2.33	1.60	1.93	2.53	2.13	2.73	1.80	2.33	2.67	2.47

* Projects and programmes with several thematic areas are only counted once.

Annex 4: Objectives and implementation partners of the evaluated projects and programmes

Project/programme	Objectives ¹⁰³	Lead executing agency/ implementation partner
ENEP Thailand	EE measures in industry and buildings are implemented.	Two authorities in the Ministry of Energy
SHP Tibet	Local population and public administration operate power plants sustainably.	Water Resources Bureau/Tibet, trade authority DOFCOM
REEE Pakistan	Capacities of managers and staff in private/public sector for RE and EE are improved.	RE Board (directly under the Prime Minister), authority in Ministry of Environment
PERACOD Senegal	Local population's access to energy services is improved.	Energy ministry, Directorate of Energy (ASER) and Directorate of Forestry
PVP Chile	Users and operators of pilot stations and intermediaries can perform assessments and disseminate experience.	State university (CER), NGO (CODING)
TERNA Ethiopia	Experts and managers can perform assessments, plan and improve framework conditions.	EEPCo (state energy supply company)
SHPP Nepal	The dissemination of SHP to safeguard energy supply in rural areas is ensured.	Ministry of water management, various implementing organisations, also NGOs/private sector
RE China	Living conditions of the rural population in off-grid areas are improved in an environmentally compatible manner.	National Development and Reform Commission, Ministry of Commerce (MOFCOM)
HEP Sahel	Governmental, non-governmental and private actors in the HE sector promote technologies and measures to save energy.	Permanent Interstate Committee for Drought Control in the Sahel (CILSS)
ProBEC	Governmental and private actors apply concepts for disseminating Biomass Energy Conservation (BEC) at pilot projects and incorporate framework conditions into political processes.	Southern African Development Community (SADC)
EE Brazil	SMEs are empowered to make rational use of energy and implement corresponding measures.	SEBRAE/RJ (NGO), INT (state scientific institution)
PIEEP Argentina	Conditions for implementation measures in SMEs are improved and selected sectors apply them and act as multipliers.	Directorate within the Ministry of Energy, various implementing organisations (private sector, NGOs, governmental)
EE Turkey	Municipal governments, state and private users of buildings implement measures.	Dept. in Ministry of Energy, Erzurum city
EAP Uganda	End users use energy services of state and non-state institutions, especially the offer of environmentally friendly forms of energy and RE.	Dept. in the Ministry of Energy
PROFER Dom. Rep.	Political decision-makers have created the prerequisites for using RE.	Ministry of Trade and Commerce, National Energy Commission

¹⁰³ Objectives abridged by the author for better legibility. Some of the objectives are listed in complete form in Section 2.1 and in the executive summaries of the evaluation reports.

Annex 5: Additional literature

BMZ (2007): Sector strategy 'Sustainable Energy for Development'

GTZ (2007): GTZ's Understanding of Capacity Development – A Guiding Framework for Corporate Action.

GTZ (2005) : GTZ's Concept of 'Sustainable Development'.

IEG (2008): The Welfare Impact of Rural Electrification: A Reassessment of the Costs and the benefits - an IEG Impact Evaluation. Independent Evaluation Group. The World Bank Group.

UN (2005): The Energy Challenge for Achieving the Millennium Development Goals. United Nations.