

Indo-German Development Cooperation

Natural Resource Management

**A Preliminary Poverty Impact
Assessment**

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Abbreviations

| | |
|---------|---|
| ARWSP | Accelerated Rural Water Supply Programme |
| BMZ | German Ministry of Economic Cooperation and Development |
| CADA | Command Area Development Agency |
| CBP | Capacity Building Phase |
| CGO | Community Based Organisations |
| CRSP | Central Rural Sanitation Programme |
| DAC | Development Assistant Committee |
| DDP | Desert Development Programme |
| DPAP | Drought Prone Areas Programme |
| DPAP | Drought Prone Areas Development Programme |
| DPC | District Planning Committee |
| DPR | Department of Panchayati Raj |
| DWCRA | Development of Women and Children in Rural Areas |
| EAS | Employment Assurance Scheme |
| FC | Financial Cooperation |
| FIP | Full Implementation Phase |
| GDI | Gender Development Index |
| GKY | Ganga Kalyan Yojana |
| GoG | Government of Germany |
| GoI | Government of India |
| GTZ | German Technical Cooperation |
| HADP | Hill Area Development Programme |
| HDI | Human Development Index |
| HYVP | High Yielding Varieties Programme |
| IAADP | Intensive Agricultural Area Development Programme |
| IADP | Intensive Area Development Programme |
| IAY | Indira Awas Yojana |
| ICRISAT | International Centre for Agricultural Research in Semi-Arid Tropics |
| IGA | Income Generating Activities |
| IGWDP | Indo-German Watershed programme |
| INR | Indian Rupees |
| IRDP | Integrated Rural Development Programme |
| ITDP | Integrated Tribal Development Programme |
| IWDP | Integrated Wasteland Development Programme |
| IWDP | Integrated Wastelands Development Programme |
| JRY | Jawahar Rozgar Yojana |
| MDG | Millennium Development Goal |

| | |
|--------|--|
| MFAL | Marginal Farmer and Agricultural Labour Development Programme |
| MITTRA | Maharashtra Institute of Technology Transfer for Rural Areas (NGO) |
| MoEF | Ministry of Environment and Forest |
| MRD | Ministry of Rural Development |
| NABARD | National Bank for Agriculture and Rural Development |
| NGO | Non governmental organisation |
| NREP | National Rural Employment Programme |
| NRM | Natural Resource Management |
| NSAP | National Social Assistance Programme |
| NSFDC | National SC / ST Finance & Development Corporation |
| NWDPR | National Watershed Development Programme for Rainfed Areas |
| OECD | Organisation of Economic Cooperation and Development |
| PDS | Public Distribution Scheme |
| PIA | Programme Implementation Agencies |
| POVNET | Poverty Network |
| PPP | Public Private Partnership |
| PRI | Panchayati Raj Institutions |
| PSU | Programme Support Unit |
| RIDF | Rural Infrastructure Development Fund |
| RLEGP | Rural Landless Employment Guarantee Programme |
| SC/ST | Scheduled Castes and Scheduled Tribes |
| SFDA | Small Farmer Development Agency |
| SGSY | Swarnajayanti Gram Swarozgar Yojana |
| SHG | Self Help Groups |
| SITRA | Supply of Improved Toolkits to Rural Artisans |
| TC | Technical Cooperation |
| TDF | Tribal Development Fund (NABARD) |
| TRYSEM | Training of Rural Youth for Self Employment |
| TSP | Tribal Sub Plan |
| UP | Umbrella Programme |
| VWC | Village Watershed Committee |
| WASSAN | Watershed Support Services and Activity Network |
| WDF | Watershed Development Fund |
| WOTR | Watershed Organization Trust |
| WSD | Watershed Development |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Ratings |

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The opinions presented here are those of the consultants and do not necessarily reflect the opinion of the organisations they represent.

Executive Summary

The Background

The study has been commissioned by the India GTZ Natural Resource Management Sector in close cooperation with the responsible staff of Natural Resource Management Sector KfW, India. It focuses, among others, on the programmes of NABARD as the major FC/TC partner in the future. It assesses **poverty outcomes and impacts and how equity issues** are addressed within three Indo-German development projects in the field of **Natural Resource Management**:

1. the TC/ FC cooperation “Indo-German Watershed Development Programme” (IGWSP)
2. the KfW-supported “Comprehensive Tribal Development Programme (Wadi) Project”, and
3. the planned PPP on bio fuel (GTZ supported).

The poverty impact assessment is based on existing studies, monitoring data, and a nine-day field visit. Discussions were held with representatives of various institutions in India involved in the implementation of the above mentioned projects.

Germany’s development cooperation strives for a sustainable structural impact on poverty. This assessment therefore constitutes part of the continued efforts by the German Ministry of Economic Development and Cooperation to identify most efficient and effective ways of addressing equity issues and to reduce poverty reduction by means of innovative natural resource management in India.

The methodology used by the study is the **Poverty Impact Assessment Approach** as developed by a Working Group of the Poverty Network and recommended by **DAC/ OECD** in March 2006. The approach allows

1. an assessment of the importance and inter-relationship of individual transmission channels through which changes are transmitted to the stakeholders. Based on this,
2. the outcomes for the target population applying the concept of multi-dimensionality of poverty and the intervention’s broader implications in terms of the OECD/DAC capabilities framework are assessed.
3. Estimates on the impact on the MDGs, and other strategic goals (e.g. governance, security) are provided in a third step.
4. In addition, potential risks and monitoring needs are identified.

The Poverty Impact Assessment methodology as developed by DAC / OECD was originally designed as an ex ante approach. As the Watershed Development Programme and the Comprehensive Tribal Development Programme (Wadi) Project have been implemented for a number of years already, the approach was slightly modified and used for an ex post assessment.

Despite India’s economic growth of approx. 8% GDP/year, around 300 million Indians still live below the international poverty line of 1US\$ Purchasing Power Parity a day, constituting one third of the global poor. About 75% of the poor in India live in rural areas, depending

mostly on agriculture and natural resources. Recognizing this problem, GoI declared rural development a top national priority.

The Main Findings

Since independence, India has launched a number of programmes to combat rural poverty in all its dimensions. NABARD, a main partner in Indo-German development cooperation has launched a number of funds for addressing rural poverty. Two of the funds, the Tribal Development Fund and the Watershed Development Fund are based on the experience gained through Indo-German Development Cooperation.

The **Indo-German Integrated Watershed Development Programme** has been very effective in addressing environmental degradation of the targeted watersheds. Our assessment as well as other evaluations of similar ***watershed programmes*** shows that it is an extremely successful **area-based approach** and has a sound poverty reducing potential. Much emphasis has been put on physical works and less on productivity growth and livelihood development. The involvement of the landless is a less pronounced focus of the watershed approach. A “watershed plus” approach (watershed + agro-processing + livelihood development) is favoured by this study.

The main *transmission channel* through which impacts are attained is through the upgrading of “natural assets”. The soil and water conservation measures have been tremendously successful and the climatic risks reduced. The water table has risen, the area under cultivation has been enlarged and the drinking water availability improved tremendously. These investments have a strong positive impact on the economic, human and protective capabilities of the people living within the watershed area.

Economic benefits increase proportionally to the size of land holdings. In economic terms, poor and landless farmers benefit mostly during the implementing phase of the programme when they are employed for soil and water constructions. It was reported that employment opportunities in agriculture and wages for casual labour increased after completion of soil and water conservation measures. It is still to be seen, whether higher wages for casual labour and increased employment can be sustained after the programme phases out. It is recommended to further assess obvious changes in livestock production among the different socio-economic groups. Within the context of this study, this was not possible. Neither was there time to assess the benefit sharing in common resources.

The funding scheme for future similar interventions could be reconsidered in order to avoid a bias in favour of the economically better off land owners. One way of doing this could be integrating production components for the poor within the programme and providing fewer subsidies to the better-off landowners.

The participation of poor, landless and women in the Village Watershed Associations and Village Watershed Committees is expected to increase their say in decision making and create a social and political space for them. Equally, the SHGs created under the programme are said to provide a platform to the women and improve their economic and social status. To which extent this is has been achieved could not be fully answered within the short assessment period. Based on limited interviews and background literature, the impacts on the political and socio-cultural capabilities of the poor and landless, as well as women, seem to be substantial but still secondary to those achieved in general natural resource management.

The programme contributes to achieving MDG 1 (extreme poverty/hunger) and MDG 7 (environmental sustainability). Other MDGs (4 and 5) are marginally addressed.

The **Comprehensive Tribal Development Programme** is a very successful example of combining conservation and pro poor development – it follows a **people-based approach**. It

targets the disadvantaged and deprived members of the community and is explicitly gender sensitive. However, it is obvious that the Wadi programme's long term success will depend upon a general rehabilitation of degraded land extending beyond micro-schemes.

The main transmission channels by which impacts are attained are through improving "physical and human assets" and "employment creation". The programme also invests considerably (mainly in terms of advisory services) in the "authority" channel by providing assistance to self-help groups and other wadi - related groups, e.g. cooperatives. By programme design land-rich farmers are excluded. Only those with small and partially marginalised land holdings are supported in planting an orchard on their wasteland or marginalised land. They are paid for constructing water and soil preservation measures on these lands. Economic capabilities are thus strengthened from the very start of the programme.

The Tribal Development Programme does not limit itself to the input-oriented support of these landed farmers. It also supports the processing of the orchard produce by organising cooperatives, supporting village based processing plants and creating a label to facilitate marketing. The programme's strong equity approach is apparent by, for example, the fact that landless farmers, both men and women, are given priority to find employment within the processing plants. In addition, individuals (mostly landless) are supported (by training and tool provision) to start a small enterprise (e.g. health worker, smiths, shop keeper). SHG are formed and supported in income generating activities. Women receive assistance to create kitchen gardens and improve kitchens. Interviews and monitoring reports revealed that migration has dropped dramatically in project areas. This has a positive impact on the school attendance of children. The economic, human, socio-cultural and protective capabilities of poor tribal population are generally improved.

The programme contributes to MDG 1 (extreme poverty/hunger), MDG 2 (universal primary education), MDG 3 (gender equality) and MDG 7 (environmental sustainability). Other MDGs (4 and 5) are marginally addressed.

Both programmes, the **Indo-German Integrated Watershed Development and the Comprehensive Tribal Development Programme** have been replicated within India and it can thus be safely assumed that they have had and still have a **structural impact**. The Watershed Development Fund (WDF) is now a large-scale nationwide programme financed jointly by Gol / Ministry of Agriculture and NABARD. The fund was set up to spread the message of participatory watershed development as developed by the Indo-German Watershed Development Programmes. The fund is replenished / augmented by returns from RIDF interest differentiation. Unfortunately, Gol has not contributed to the Tribal Development Fund (TDF). It is financed from NABARD profits only. It is therefore much smaller than the WDF and cannot be extended nationwide without additional resources. The extension of the Wadi programme and its nationwide replication is therefore impeded because of scarce funds.

The **Public Private Partnership (PPP) on Biofuel** is in the planning stage. It envisages that non edible oil crops will contribute to employment generation, environmental rehabilitation and energy security. All partners see an enormous longer term potential for biofuels in India and interpret it as win-win option for all major stakeholders: the farmers, the collectors, the processors, and the consumers. The project is a pilot and will have to test several ways how to best address equity issues and best outcomes for the poor. It could learn from other ongoing projects on biofuel in India but also of the other projects supported by Indo-German Development Cooperation (e.g. the formation of cooperative as promoted by the Wadi project).

The ex ante poverty impact assessment revealed that the current planned design of the PPP mainly works through the "physical asset" and "employment" channel. Farmers are supported to plant Jathropa and Pongamia on their wasteland and sell it to the Indian company

Southern Online Ltd. (one of the PPP partners). Landless or other willing rural population is encouraged to collect seeds from existing trees and sell them to the company. Physical assets can thus be improved.

It is envisaged to support capable and willing village youth or SHGs to purchase oil pressing machinery (with PPP support, grants or loans). Farmers can sell their seeds to runners of the oil pressing machinery where oil is extracted and then sold to the company. The oil cakes could be resold to the farmers as fertiliser.

The economic capabilities of poor landed farmers could be increased by supporting them to plant *Jathropa* or *Pongamia* on their wastelands. Protective capabilities could be strengthened when addressing price and risk insurance issues.

There are considerable economic and contractual risks for the participating farmers that need to be closely monitored by the PPP. Based on the experience to be gained during the implementation of the PPP, the interest of collectors and farmers should be protected even after phasing out of the project. This could be achieved, for example, through cooperative, rather than individual contracting.

The formation of SHGs or cooperatives to run oil pressing units would be more effective in addressing equity issues than supporting young village individuals (likely to be men). However, some parties involved in the setting up of the PPP fear that SHGs or cooperatives might not be an option to be supported by bank credit compared to a solid business plan of an entrepreneur.

The ex ante Poverty Impact Assessment shows that the biofuel PPP has a potential to reduce poverty if biofuels from non edible oils are produced and collected by resource poor farmers, landless farmers and poor women. Stakeholders should, however, be aware of the risks that poor farmers take when investing in the new biofuel industry and its raw material production. Transfers from the Government of Andhra Pradesh need to be closely monitored as they have a direct impact on the PPP.

NABARD is interested in **preparing a model scheme** to popularise *Jatropha* in wastelands and bio diesel production. By testing different models, monitoring rigorously their results and disseminating the lessons learned, this could be another opportunity for German Development Cooperation to have a structural impact in the field of NRM in India.

Lessons Learned

The **following general lessons** can be learned for shaping future programmes in the field of Natural Resource Management in India:

- ***Pro poor institutional development*** is critical for achieving structural impact. The formation of self-help groups or village committees which can grow into formalised co-operative societies taking up agro-progressing has proven to be a workable approach (e.g. Comprehensive Tribal Development Programme (Wadi) Project). However as Gram Panchayats have become statutorily local government with the mandate and responsibility of local planning, development and resources they will be the most important vehicle (public resources and mandate) for local development in the future. Therefore creating independent and parallel village committees may weaken good local governance. A viable balance needs to be found that existing and well functioning village committees are neither politically hijacked by local politics nor that they weaken local government. One important way is to give the poor and women more voice in the Gram Panchayat and make the Panchayats more responsive to equity issues, e.g. by means of statutory participation, training and access to information. However, the persistent social realities in most Indian villages show that it will be along way to make the voices of the poor really heard.

- **Capacity development** is a strategic component in any development programme which aims at a sustainable reduction of poverty and improved livelihoods of the poor and disadvantaged groups. The assessments show that on **target group level** the low educational level together with a lack of proper know-how transfer mechanisms, and poorly working or absent community-based organisations impede production enhancement, productivity growth, and livelihood opportunities. Future capacity development programmes on target group level shall therefore focus on individual skill developments, NRM related know how, improved cultivation and husbandry practices, introduction of agro-processing, and strengthening of community based organisations.
- **Strengthening the capacities of the local government institutions** is a further prerequisite for achieving structural impacts. Only then can they effectively function as institution for local decision making and development. In addition, it is important to improve the capacities of the service providers for delivering quality services to the rural people.
- **Funding mechanisms of the major NRM schemes** require careful considerations. The planned Umbrella Programme between NABARD and German Development Cooperation proposes to develop innovative loan based programmes as the grants provided by the GoI will be not enough to finance the necessary expansion of the various successful NRM programmes. It seems necessary to take a step by step approach, to develop a mix of financial instruments. Loans for conservation are hard to sell. However, loans for productive purpose (value chain) are taken and are already part of mixed mode investment schemes. Loan-based agricultural production could be matched with grant-based financing of conservation on public land. One might also consider combining loans with additional financial services like indexed insurance schemes. **Socially differentiated funding mechanisms** should be considered in order to avoid the exclusion of poor households but ensure at the same time that programme extensions can still be financed.
- **Past programme monitoring was inadequate** to measure poverty outcomes and impacts of the various programmes. Monitoring efforts of the major stakeholders centred on disbursements, physical outputs and economic outcomes but lacked a disaggregating by socio-economic groups. Future programme monitoring should include poverty outcomes and impacts of socio-economic groups, reflecting economic as well as non-economic dimensions of poverty. Only if we identify the most effective mechanisms that break up rigidities that perpetuate poverty we can expect to achieve a structural impact on poverty reduction.

It can be concluded that through the developing and testing of different approaches German Development Cooperation can have a structural impact on poverty in the field of Natural Resource Management Approaches. However, the extent to which German Development Cooperation can have a structural impact on poverty reduction and enhancing equity is much more difficult to assess. Inequity and inequality are – despite the advanced legal system – deeply rooted in Indian culture and civilisation. Changes towards more equity must develop from within Indian society. Considerable progress in this respect is widely acknowledged. German development cooperation can mainly contribute to these movements by strengthening institutions and structures that promote pro-poor approaches and equity issues and build capacity among these institutions and organisations – be it governmental or, in case this is not feasible, non-governmental.

1. Background and Rationale of the Study

India is emerging as a regional political and economic power. Despite its growth of approx. 8% GDP/year, around 300 million Indians still live below the international poverty line of 1 US \$ purchasing power parity a day, constituting one third of the global poor. About 75% of the poor in India live in rural areas, depending mostly on agriculture and natural resources. The income disparities between urban and rural areas are increasing.

Recognizing this problem, Gol declared rural development a top national priority. India aims at enhancing agricultural productivity and income generation with sustainable management of natural resources. It targets to cover 88.5 million ha under watershed management during 2002-2022 at an estimated cost of EURO 13.46 billion. At the same time Gol is introducing reforms to public schemes and decentralised service delivery.

The German government (BMZ) through GTZ and KfW has worked with Gol in the field of Natural Resource Management since 1992. A number of successful projects have been implemented over the years by both KfW and GTZ and their respective Indian partners.

Table 1: TC and FC NRM Projects

| Project / programme | FC/TC | Present GTZ - Phase | Partners | Location | Gaol and purpose of the intervention |
|--|----------|---------------------|---|------------------------------------|--|
| <i>Watershed Development Programme (IGWDP)</i> | FC | - | NABARD; State government; NGOs; WASSAN | Andhra Pradesh, Gujarat, Rajasthan | Government and non government agencies and self help groups apply core elements of an autonomous watershed management |
| <i>Watershed Self Help Programme – WOTR</i> | TC/FC | 01/05-12/07 | NABARD; State government; WOTR and other NGOs | Maharashtra | Government and non government agencies and self help groups apply core elements of an autonomous watershed management |
| <i>Comprehensive Tribal Development Programme (Wadi) Project</i> | FC | - | NABARD; BAIF | Gujarat, Maharashtra | Adivasi in project area are supported to establish a sustainable agricultural livelihood through construction of orchards and other income generating activities |
| <i>Bio fuel</i> | TC / PPP | Planning stage | ICRISAT; Lurgi AG; Southern Online Ltd. | Maharashtra | Farmers' activities in the value chain of biofuel are supported so that they, and in particular, the rural poor, benefit from the production of bio-diesel on a commercial basis |
| <i>Capacity Building and Training Maharashtra State</i> | TC | 04/03-03/06 | MoA Gol; Department of Agriculture Maharashtra; Directorate of Soil Conservation and Watershed Management | Maharashtra | Capacity development in improved watershed and agricultural extension management for employees of relevant ministries, NGOs, PRIs and community organisations |

| Project / programme | FC/ TC | Present GTZ - Phase | Partners | Location | Gaol and purpose of the intervention |
|--|--------|---------------------|---|---------------------------|--|
| Changar Eco-Development Project | TC | 06/99-12/06 | HPEDS; NGOs and local service providers | Himachal Pradesh | Village Groups in project area manage their resources in a sustainable and responsible way |
| WASH-strengthening local administration for rural water supply and minor irrigation | TC | 02/05-01/08 | Dept. of Rural Development; political institutes and NGOs | Himachal Pradesh | Sustainable use and management of water is secured for general water supply and small scale irrigation |
| Support to the centralisation process by consolidating Panchayati Raj Institutions (PRI) in HP | TC | 01/06 – 12/08 | Dept. of Rural Development; political institutes and NGO | Himachal Pradesh | Panchayats work as units of self- administration and contribute to planning and management of need-oriented local development process (pilot in three districts) |
| Capacity Building for Decentralised Watershed Management | TC | 01/06-12/08 | MoA; MoF; MoRD, on state level | Union and selected states | The capacities and networking of the central, regional and state organisations for decentralised watershed management are strengthened. |

Source : GTZ : NRM Portfolio Adaptation. Report. Final Draft. Delhi, October 2005

In addition, Indo-German development cooperation is preparing a new programme, the Natural Resource Management Umbrella Programme (UP) in partnership with the National Bank for Agriculture and Rural Development (NABARD). Within this programme, it is planned to combine financial and technical cooperation (KfW and GTZ) to strengthen structural impact in the field of NRM / WSM and poverty.

The recent international debate on how to reach the **MDGs** (Millennium Declaration 2000) and on Aid Delivery (**Paris Declaration on Aid Effectiveness**, 2005) has put more pressure on both partner countries and donors to assess their development agenda. In Germany, the recent discussions on “**anchor countries**”¹ have triggered a consultative process on poverty reduction in politically and economically emerging powers such for example India. German development cooperation is eager to understand how to most effectively and efficiently cooperate with so-called anchor countries.

Initially it was envisaged to conduct an ex ante poverty impact assessment of the planned Umbrella Programme (UP). However, as preliminary studies and agreements got delayed, this was not feasible. Therefore the objective of the study was changed at extremely short notice. The mission head was only informed about this change on the first day of the consultancy. This study now assesses the **poverty outcomes and impacts** of three Indo-German development projects in the Natural Resource Management Sector:

1. the TC/ FC cooperation programme “Watershed Development Programme (IGWDP)”
2. the KfW supported “Comprehensive Tribal Development Programme (Wadi) Project”, and
3. the planned PPP on bio fuel (GTZ)

¹ Anchor countries are large and quickly advancing developing countries which act as regional economic and political hubs. Typical anchor countries are Brasil, China, India, and South Africa

The study also sheds light on how **equity** issues are addressed within these three Indo-German interventions.

The study has been commissioned by the GTZ Natural Resource Management Sector in India. It was decided upon in close cooperation with the responsible KfW staff within the Natural Resource Management Sector. **It could be considered as the beginning of a discussion on how to identify best ways of addressing equity issues and most efficient and effective approaches to poverty reduction in the Indo-German development cooperation.**

The report is structured as follows:

Chapter 2 gives a short overview on the approach used during the assessment.

Chapter 3 provides an overview on the poverty situation in India, and particularly in the states of Andhra Pradesh and Maharashtra.

Chapter 4 briefly describes the main policies for poverty reduction in the field of Natural Resource Management in India.

Chapter 5 and *6* provide an ex post poverty assessment of the Watershed Development Programme and Comprehensive Tribal Development Programme (Wadi) Project.

Chapter 7 is an ex ante poverty impact assessment of the planned PPP on bio fuel.

Chapter 8 draws on the experiences gained from the poverty assessments in Chapter 5-7 and gives some general recommendations towards the new Umbrella Programme.

It is important to note that chapters 5-7 are separate studies that can be read independently.

2. Methodological Approach

The consultant team used the **Poverty Impact Assessment (PIA) methodology** as developed by a Working Group of the Poverty Network and adopted by DAC/ OECD in March 2006². This approach was initially developed for **ex ante** assessments. The Watershed Development Programme and the Comprehensive Tribal Development Programme (Wadi) Project are both large scale projects that have been implemented since a number of years. The DAC POVNET PIA approach still proved extremely useful in structuring the assessment. Only some minor modifications were made. The approach was well received by Indian partner organisations.

Steps taken:

- Analysis of existing literature: project reports, government of India papers (for references, refer to Annex 4)
- Discussion with stakeholders (open interviews) from projects, KfW, GTZ, NABARD, NGOs, private sector (for open questionnaire, refer to Annex 2)
- Field visits (observation, discussion with target groups, Gram Panchayat, Village level groups) (for list of interview partners, schedule and questionnaire, refer to Annex 1)
- Report writing

² **DAC/OECD:** Harmonising Ex Ante Poverty Impact Assessment. DCD/DAC (2006)24. March 2006

Using the Poverty Impact Assessment Approach developed by DAC POVNET, research questions targeted to render qualitative information on

- Outcomes for the target population based upon the concept of multi-dimensionality of poverty and an assessment of the intervention's broader implications for a range of stakeholders in terms of the OECD/DAC capabilities framework
- The potential impact on the MDGs, and other strategic goals (e.g. governance, security)
- The importance and inter-relationship of individual transmission channels through which changes are transmitted to the stakeholders
- Key assumptions and identification of potential risks; at the same time an assessment of the reliability of data/information used in the exercise and identification of key knowledge gaps
- The relation of the intervention to national development strategy / poverty reduction strategy
- How the intervention might be improved to increase the pro-poor impact and on appropriate monitoring procedures.

The **limitations** of the study are the following:

- The consultancy team could only access some monitoring reports. Therefore little quantification of observation and qualitative data obtained from interviews was possible.
- As the focus of the study changed at very short notice, logistic and conceptional preparatory time was very short. This had a negative impact on the selection of field visit locations and interview partners.
- Originally only one programme was to be assessed. Due to the sudden change, within the same amount of time available, three projects were to be assessed. Due to extreme time constraints, some the assessment therefore had to remain superficial.

3. General Poverty Situation in India

Poverty is usually measured by the Government of India by the amount of money required to buy sufficient food. Currently, the poverty line in rural India is set at around INR 250 per month per person. Thus, a family of five (the average family size) that does not have INR 1,250 per month (or INR 15,000 a year) to buy food is considered to live below the poverty line.

There are four primary reasons why people in rural India may find it difficult to earn enough to stay above the poverty line. These are:

- **Locational poverty:** the locations where the poor work for their livelihood are under-developed in terms of poor infrastructure like bad roads, poor electricity supply, and social services (lack of good education and health facilities)
- **Resource poverty:** Coupled with locational poverty; poverty is linked to degraded and scarce natural resources (deforestation, unfertile soil, lack of surface or ground water, lack of cultivable land)

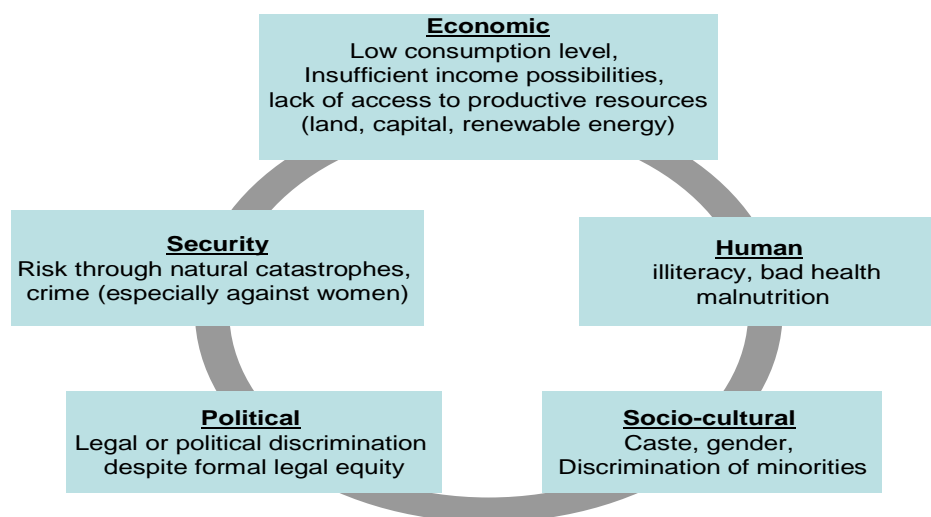
- **Human poverty:** Linked to the two above reasons; a high degree of illiteracy, a general lack of awareness, malnutrition, lack of hygiene and sanitation further aggravates the poverty situation
- **Socio-cultural and political poverty:** Compounding the above three reasons, the socio-historical inequality of gender, class, caste (Scheduled Castes, Scheduled Tribes) and ethnicity perpetuates poverty by unequal access to productive resources (land, water, credit, etc.) and by a lack of active political participation on part of the poor in spite of the democratic constitution. Decentralization policies and the strengthening of PRI could be a way to gradually change the situation.

Other reasons why people are caught in the poverty trap are:

- **Fragmentation of land holdings,** resulting in less than economical holdings for the later siblings.
- **Accidents and disabling diseases** of an active family member makes it impossible for them to carry out their productive activities.
- **Indebtedness** may result in poverty as heavy informal borrowing exceeds the repayment capacities of families. The number of reported suicides due to indebtedness is high.

In the words of Amartya Sen, poverty is the lack of fundamental economic, human, political and socio-cultural capabilities.

Graph 1: The multidimensionality of poverty



Source: adapted from DAC/OECD Poverty Guidelines (2001)

The latest estimates of poverty in India are based on the 55th round of the Indian National Sample Survey (1999-2000) using a 30-day recall period. Using the data, the adjusted poverty headcount ratios for the major states of India have been calculated (Deaton 2003)³.

³ It needs to be kept in mind, however, that the quoted poverty data here, have led to controversial discussions among poverty specialists, especially as the 55th round was a one week recall period extrapolated to 30 days. Therefore the results are not comparable to the earlier rounds. An expert group has recently discussed poverty measurement in India. Results are expected soon.

Considering the pace and direction of **rural poverty reduction** in India, the recent developments are rather sobering. The tables below provide estimates of rural poverty in Andhra Pradesh and Maharashtra and its sub regions. (For more information on other Indian States please refer to Annex 3). A closer look at the data of the states of Andhra Pradesh and Maharashtra and their respective sub regions show a differentiated picture and reveal an uneven pace of poverty reduction. In some sub regions poverty is even increasing.

Table 2: Poverty Headcount ratio by sub region in Andhra Pradesh

| Name of Sub Region | Headcount ratios: 50 th Round (1993-1994) | Headcount ratios: 55 th Round (1999-2000) |
|-----------------------|--|--|
| Andhra Pradesh | 29.2 | 26.2 |
| Coastal | 31.3 | 23.1 |
| Northern | 26.1 | 26.1 |
| Western | 38.6 | 34.9 |
| Southern | 21.9 | 35.3 |

Table 3: Poverty headcount ratio by sub region in Maharashtra

| Name of Sub Region | Headcount ratios: 50 th Round (1994-1994) | Headcount ratios: 55 th Round (1999-2000) |
|--------------------|--|--|
| Maharashtra | 42.9 | 32.0 |
| Coastal | 19.1 | 25.6 |
| Western | 29.7 | 19.3 |
| Northern | 53.3 | 43.1 |
| Central | 53.4 | 39.5 |
| Inland Eastern | 55.6 | 33.7 |
| Eastern | 55.2 | 46.1 |

Alternately, the **Human Development Index (HDI)** captures more than just economic aspects of poverty. Three critical dimensions of well-being are captured. These are related to:

1. **Longevity** — the ability to live a long and healthy life
2. **Education** — the ability to read, write and acquire knowledge
3. **Command over resources** — the ability to enjoy a decent standard of living and have a socially meaningful life⁴

The Human Development Index (HDI)⁵ and the Gender Disparity Index (GDI)⁶ of Indian States were calculated in the National Human Development Report 2001 (GoI, 2002).

Table 4: HDI and GDI of India and the states of Andhra Pradesh and Maharashtra

| States / Union Territories | HDI Rural | | HDI Urban | | HDI Combined | | GDI | |
|----------------------------|------------|------------|------------|------------|--------------|------------|------------|------------|
| | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 |
| Andhra Pradesh | 0.262 | 0.344 | 0.425 | 0.473 | 0.298 | 0.377 | 0.744 | 0.801 |
| Maharashtra | 0.306 | 0.403 | 0.489 | 0.548 | 0.363 | 0.452 | 0.740 | 0.793 |

⁴ The exact measurement of these dimensions in terms of the specific indicators which are used cannot be value-neutral, and need to reflect the specific socio-cultural conditions that prevail in a particular country at a specific period of time.

⁵ The HDI is a composite of variables capturing attainments in three dimensions of human development viz, economic, educational and health. These have been captured by per capita monthly expenditure adjusted for inequality; a combination of literacy rate and intensity of formal education; and a combination of life expectancy at age 1 and infant mortality rate.

⁶ The Gender Disparity Index is estimated as proportion of female attainments to that of male for a common set of variables. The variable used to capture economic attainment is worker population ratio which is different from the variable used to capture economic attainment in the HDI.

| States / Union Territories | HDI Rural | | HDI Urban | | HDI Combined | | GDI | |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 |
| All India | 0.263 | 0.340 | 0.442 | 0.511 | 0.302 | 0.381 | 0.620 | 0.676 |

Note: The HDI and GDI values for India in the Human Development Report 2005 (UNDP, 2005) are 0.602 and 0.586, respectively. For state level information please refer to Annex 3.

Between 1980 and 2001, human development in India has improved significantly. At the national level, during the eighties, the index has risen by nearly 26% and by another 24% during the nineties. There has been an improvement both in rural and in urban areas. Though the rural-urban gap in the level of human development continues to be significant, it has declined during the period. Inequalities across States on the HDI are less than the income inequality as reflected in the per capita State Domestic Product. At the State level, there are wide disparities in the level of human development. In the early eighties, States like Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan and Orissa had HDIs close to just half that of Kerala's. The situation has improved since then. Besides Kerala, among the major States, Punjab, Tamil Nadu, Maharashtra and Haryana have done well on the HDI.

In general, HDI is better in smaller States and Union Territories. In terms of the pace of development, Tamil Nadu, Rajasthan, Madhya Pradesh, West Bengal and Bihar improved their HDI significantly in the eighties. However, in the nineties the momentum was maintained, from among these States, only in Rajasthan, Madhya Pradesh and Uttar Pradesh. The economically less developed states are also the states with low HDI. Similarly, the economically better off states are also the ones with relatively better performance on HDI. However, the relation between the HDI and the level of development does not show any correlation among the middle-income states in the country. In this category of states, some states like Kerala have high attainments on HDI. Other states, like Andhra Pradesh or even West Bengal have a lower HDI. Allocation of adequate public resources for furthering human development alone is not enough. It is equally important to use these human achievements efficiently and effectively. Human attainments appear to be better and more sustained in those parts of the country where there is social mobilization for human development, and where female literacy and empowerment encourages women to have a say in the decision making process at the household level.

The **index of gender disparity** measuring the attainments in human development indicators for females as a proportion of that of males has improved, but only marginally, during the eighties. At the national level, GDI increased from 62 per cent in the early eighties to 67.6 per cent in the early nineties. This implies that on an average the attainments of women on human development indicators were only two-thirds of those of men. At the State level, gender equality was the highest for Kerala followed by Manipur, Meghalaya, Himachal Pradesh and Nagaland in the eighties. Goa and the Union Territories had gender equality higher than the national level. In the nineties, Himachal Pradesh had the highest equality, whereas Bihar was at the bottom and witnessed a decline in absolute terms over the earlier period.

In general, women were better off in Southern India than in the Indo-Gangetic plains comprising mainly the States of Bihar and Uttar Pradesh. States like Tamil Nadu and Andhra Pradesh in the south and Haryana and Jammu & Kashmir in the north have made considerable progress in improving the status of women vis-à-vis men on the human development indicators. The States that have succeeded in improving female literacy levels are also the ones that have substantially improved gender equality. On the whole, gender disparities across the States have declined over the period.

4. Past and Present Poverty Reduction and Natural Resources Management Programmes in India

In the two decades of 1950 and 1960 the primary policy focus of Government of India on poverty reduction was on **land reforms**. However, the process was impeded by immense administrative and legal procedures. With the advent of the Green Revolution in mid 1960s the focus moved on improving agricultural production with programmes such as the *Intensive Area Development Programme* (IADP), the *Intensive Agricultural Area Development Programme* (IAADP) and the *High Yielding Varieties Programme* (HYVP). The rationale was that agricultural productivity increase would effectively decrease rural poverty.

In the 1970s, this thinking led to the initiation of **area development programmes** like the *Drought Prone Areas Development Programme* (DPAP), the *Desert Development Programme* (DDP), the *Hill Area Development Programme* (HADP) and the *Command Area Development Agency* (CADA). Although these programmes emphasized land development, they all had a distinct objective to generate wage employment for the poor, as did other initiatives starting during this period to support special groups, like the *Small Farmer Development Agency* (SFDA) and the *Marginal Farmer and Agricultural Labour Development Programme* (MFAL).

A significant **departure from the land based poverty reduction programmes** was initiated in the late 1970s with the introduction of the *Integrated Rural Development Programme* (IRDP) in 1979 which, for the first time, sought to focus on target groups within the poor, and enable them to obtain self-employment. There were two sub-schemes to this programme: *Training of Rural Youth for Self Employment* (TRYSEM) and the *Development of Women and Children in Rural Areas* (DWCRA), both focusing on developing productive skills in rural youths. Two other sub-programmes, the *Supply of Improved Toolkits to Rural Artisans* (SITRA) and the *Ganga Kalyan Yojana* (GKY) were added in the 1980s and 1990s respectively. All these programmes have been replaced in late 1990s by a single programme, the *Swarnajayanti Gram Swarozgar Yojana* (SGSY), which supports self employment among the rural youth through Self Help Groups (thrift and credit groups).

Along with the IRDP, two major wage employment generation programmes were also introduced in 1980s with focus on constructing rural infrastructure. These were the *National Rural Employment Programme* (NREP) and the *Rural Landless Employment Guarantee Programme* (RLEGP). In the late 1989 they were replaced by the *Jawahar Rozgar Yojana* (JRY), the *Million Wells Scheme* and the *Employment Assurance Scheme* (EAS). The 1980s and 1990s also saw the formulation of initiatives like the *Accelerated Rural Water Supply Programme* (ARWSP), the *Central Rural Sanitation Programme* (CRSP), the *Indira Awas Yojana* (housing for the poor), *National Health Policy* and the *Tribal Sub Plan* (TSP), all of which were designed to assist the poor more directly.

However, **agricultural growth during the 1970s and 1980s failed to make a sizeable dent in rural poverty** because of declining public investment in agriculture, a consequent reduction in the rate of growth of agriculture, and the limited impact of technology-driven agricultural growth on poverty reduction, especially in the rainfed agricultural areas. This resulted in a call for more concerted and direct policies on poverty alleviation.

The realization that unequal distribution of irrigation facilities has increased the relative deprivation of rain fed agricultural areas led to a renewed focus on an area development approach, but now within a geo-hydrological unit. The Ministry of Rural Development scaled up the DPAP, the DDP, the HADP and the *Integrated Wasteland Development Programme* (IWDP). It now implemented them with a watershed development approach (micro catchment area of approximately 500 ha). Earlier, in early 1990s, the Ministry of Agriculture and the Ministry of Environment and Forest (MoEF) introduced their own programmes with a watershed development approach. The MoAs *National Watershed Development Programme*

for *Rainfed Areas* (NWDPR) had a focus on increasing agricultural productivity under rainfed conditions and the MoEFs Joint Forestry Programme had a focus on increasing the green cover in the country through participation of forest dwelling communities in the management of degraded forests. All these programmes continued to have a clear objective of generating wage employment in rural areas, but now through development of the productive natural resources.

Very recently, the Government of India has again reintroduced the Guaranteed Employment Programme EGP through an Act of Parliament – the National Rural Employment Guarantee Act, 2005. The Act provides for the enhancement of livelihood security of the rural households by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work. However, differently from earlier, this time the emphasis is not on constructing rural infrastructure but on developing productive natural resources. The Schedule 1 of the Act lists the following works as the order of priority:

- Water conservation and water harvesting
- Drought proofing, including afforestation and tree plantation
- Irrigation canals, including micro and minor irrigation works
- Provision of irrigation facility to land owned by households belonging to the Scheduled Caste / Scheduled Tribe, or to land of the beneficiaries of land reforms, or to land of the beneficiaries under the Indira Awas Yojana (Rural Housing Scheme)
- Renovation of traditional water bodies, including de-silting of tanks
- Land development
- Flood-control and protection works, including drainage in waterlogged areas

To sum up, the poverty reduction programmes of the Government of India can be grouped into two broad categories:

- **Direct poverty reduction programmes**
 - **Creating self-employment**
 - **Stimulating wage employment** opportunities for casual rural workers
 - **Programmes and initiatives for Scheduled Castes and Scheduled Tribes:** The Integrated Tribal Development Programme (ITDP), the Tribal Sub Plan (TSP), the Special Component Plan for SCs and the National SC / ST Finance & Development Corporation (NSFDC)
 - **Programmes to ensure access to basic amenities:** Like water and sanitation, health, education and housing, including the Accelerated Rural Water Supply Programme (ASRWSP), the Central Rural Sanitation Programme (CRSP) and Indira Awas Yojana (IAY)
 - **Social welfare programmes:** To compensate the poor for their inadequate access to growth, including the National Social Assistance Programme (NSAP) and the Public Distribution Scheme (PDS)
- **Indirect poverty reduction programmes**
 - **Programmes for increasing agricultural production:** These include the Green Revolution Programmes like the IADP, IAADP and the HYVP, as well as special area development programmes, to counter endemic poverty caused by hostile agro-climatic conditions and degeneration of ecosystems, which include the Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP), Hill Area

Development Programme (HADP), and the Integrated Wastelands Development Programme (IWDP)

Complementing the tax financed rural poverty reduction schemes of the Ministries of Rural Development, Agriculture, Health and Family Welfare and Tribal Affairs, the **National Bank for Agriculture and Rural Development (NABARD)** plays an important role in financing efforts to combat rural poverty. As it is an important partner in Indo-German development cooperation, its objective and main programmes are briefly discussed.

NABARD is set up by the government of India (GoI) as a development bank with the mandate for facilitating credit flow for promotion and development of agriculture, small-scale industries, cottage and village industries, handicrafts and other rural crafts⁷. It also has the mandate to support all other allied economic activities in rural areas, promote integrated and sustainable rural development and secure prosperity of rural areas, as also for matters connected therewith and incidental thereto. Its mission is to promote sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives. Its role is to

- Facilitate credit flow for agriculture, rural infrastructure and rural development
- Promoting and supporting policies, practices and innovations conducive to rural development
- Strengthening rural credit delivery system through institutional development

One of the important NABARD interventions is the *Rural Infrastructure Development Fund*. The RIDF was established in NABARD by the Government of India in 1995-96 with contributions by way of deposits received from Commercial Banks with the objective of assisting State Governments in the completion of ongoing rural infrastructure projects. The shortfall in agriculture / priority sector lending deposited by Commercial Banks with NABARD forms the corpus of RIDF. Initially, RIDF was used to finance completion of incomplete rural infrastructure projects such as irrigation schemes, rural roads and bridges. Subsequently, coverage of RIDF was broad-based to a wide range of activities such as primary and secondary school buildings, primary health centre buildings, village markets, JFM, terminal and rural market yards, rainwater harvesting, watershed development, flood protection, drainage, cold storage, riverine fisheries, fish jetties, mini hydro projects and rural drinking water supply scheme.

NABARD has also created a *Watershed Development Fund (WDF)* and a *Tribal Development Fund (TDF)*. These funds build upon the experience gained by the Indo-German co-operation programmes which are assessed in the following two chapters.

⁷ NABARD operates through its Head Office at Mumbai, 28 Regional Offices located in the State Capitals, a Sub Office at Port Blair and 360 District Offices. Nearly 3000 professionals are employed by NABARD (Source: Profile NABARD 2004).

5. Poverty Impact assessment of Indo-German Watershed Development Project (IGWDP)

5.1 Background

Rain fed areas account for around 70% of India's arable land. Its continued degradation is considered a serious environmental and social hazard.

The Indo-German Watershed programme was initiated by NGOs in Maharashtra. The guiding spirit behind the programme has been Fr Hermann Bacher of the Social Centre, Ahmednagar. The programme was formally launched in 1992. The IGWDP is proclaimed as the torch bearer of participatory watershed development. Using the lessons learned of IGWDP, NABARD constituted the Watershed Development Fund and participatory watershed projects are now being implemented in 11 states covering 86 districts of the country. The IGWDP has been replicated with FC funding in the States of Andhra Pradesh, and Gujarat and is now in the process of being expanded into Rajasthan (also with the support of KfW).

The IGWDP's main goal is to rehabilitate watersheds for the regeneration of natural resources. It aims at

1. developing micro-watersheds in a comprehensive manner so as to create adequate and sustainable livelihood opportunities for the inhabitants of the area,
2. catalysing the formation of village groups for mobilizing their degraded environment through participatory self-help initiatives and
3. facilitating the arising and unfolding of a people's movement for sustainable economic development along watershed lines (NABARD, no date).

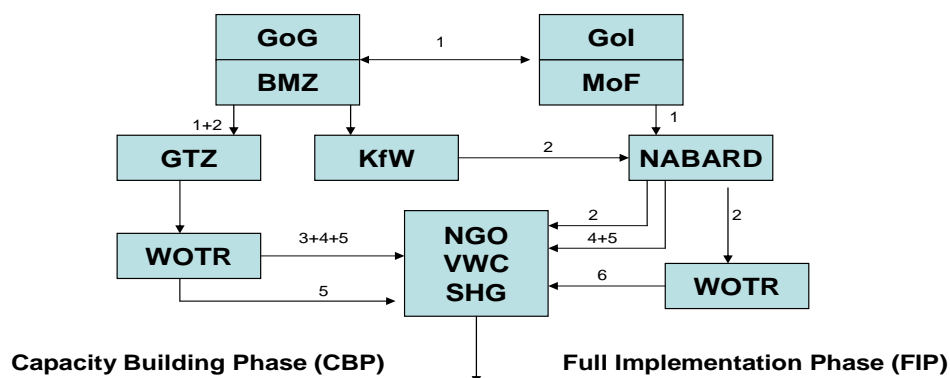
As the programme has already been in place for a number of years and numerous publications are available, that describe the structure, activities and some of the impacts of the programme, the description provided here, will try to only filter the poverty related aspects. The question that this chapter tries to draw some light on, is whose livelihoods improved most through the programme. Can equity related issues be addressed through an area based approach?

5.2 Activities, Stakeholders, Intermediaries and Target Groups

The programme is implemented by Village Watershed Committees (VWC – a body nominated by the villagers. The programme guidelines insist that 30% of the members are women and SC/ST). The programme is administered and managed by NABARD and WOTR with the support of the GoMaharashtra. GTZ supports the Capacity Building Phase (CBP) in Maharashtra. KfW supports the Full Implementation Phase (FIP)⁸.

⁸ The programme in Andhra Pradesh is supported only by KfW, not GTZ.

Graph 2: Organisational structure IGWDP, Maharashtra



Key:
 1 Administrative approval and support
 2 Finance / Funds
 3 Management Costs to the NGO
 4 Project Funds to VWC
 5 Mobilisation, technical, administrative, management support
 6 Service

Source: adapted from NABARD
 Indo-German Watershed
 Development Programme in
 Maharashtra, no date

The table below shows that most stakeholders have a strong interest in poverty reduction. However, equity issues are not part of the programme design and implementation.

Table 5: IGWDP – overview on stakeholders’ interest in a pro-poor agenda

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|-------------------------------|---|---|--------|
| Gram Sabha | Acceptance and ratification of plan | Interest in implementing the project in a successful way, mostly concerned with physical structures of watershed management, poverty reduction is seen as the impact of watershed development | + |
| Village Watershed Committees | Planning, supervision and implementation of project | Interest in implementing the project in a successful way, mostly concerned with physical structures of watershed management; possibly dominated by richer and more influential farmers that primarily target to increase the productivity of their own fields | + |
| SHG | Activities on individual and group level | Interest in alleviating their own poverty and that of their group members | ++ |
| Implementing NGOs | Motivation and mobilization of communities, facilitator and guidance to the VWC | Interest in implementing the programme activities; main emphasis on physical structures and organisation of VWC and SHG; poverty reduction is seen as the impact of watershed development, however, equity is hardly a concern | + |
| WOTR | Capacity development, development of approaches, M&E | Poverty reduction is seen as the impact of watershed development, however, equity is not the focus of work | + |

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|---|--|--|---------------|
| NABARD | Securing fund flows, coordination and M&E | Has proven interest in rural development and some interest in equity issues | + |
| Government of India / State Governments | Programme approval / Fund flow / monitoring | Poverty reduction / equity is primary development objective. | + |
| BMZ/KfW/GTZ | Provision of funds, feasibility studies, M&E, Coordination | Overarching goal is poverty reduction and achieving MDGs | + |

| KEY | Strength/direction impact | ++ | + | 0 | - | -- |
|-----|---------------------------|---------------|----------|-----------------|----------|---------------|
| | | very positive | Positive | not significant | negative | very negative |

The selection criteria for watersheds, components and basic principles of the IGWDP are the following:

Selection criteria:

- Only those villages are selected where land ownership is not too skewed.
- Villagers must agree to bring down the animal population within the carrying capacity of the land, ban free grazing and tree felling and eschew crops which require more amount of irrigation
- People are asked to demonstrate their eagerness to undertake the watershed project by visiting nearby watersheds for exposure and agreeing to contribute 4 days of “shramdam” (voluntary labour) without any support from the programme

Basic principles:

- The watershed treatment measures follow a strict “ridge to valley approach”.
- The “net planning approach” demands a survey of each of the plots in the watershed and suggests appropriate technical measures for conservation and improvement in consultation with the farmer and his family
- Efforts are made to encourage VWC to think of ways and means to involve the landless in project activities and design appropriate systems of benefits arising from common property resources.

Activities within the programme:

- Soil and land management in private and common land (involvement e.g. of forest department in some areas): participants are paid for the labour
- Water management
- Crop management
- Afforestation
- Pasture, fodder development
- Livestock management
- Creation of a maintenance fund out of people’s contributions, ploughing back 50% of voluntary labour (one day a week of free labour needs to be contributed by villagers) and also an end-of the project incentive for future repairs and maintenance of structures.
- Women promotion: 5% of project funds are earmarked for forming SHG and promoting savings and lending activities. The activities so far taken up by the women

include: drinking water schemes, drainage repair, soak pits, kitchen gardens, community halls, flour mill on group basis, dairy, poultry, stall fed goat rearing, health camps, exposure visits.

- Other farm and non-farm activities and development of community skills and resources.

5.3 Transmission Channels, Output/Outcome/Impacts for Target Groups

In the following the transmission channels are described through which the programme works.

Assets:

Natural assets: The programme targets areas rather than people and their livelihoods. It invests mostly in watershed management: physical structures, both on private as well as common lands in order to increase productivity of land and raise water levels. Various monitoring reports show the tremendous success of the project in terms of natural resource management. Those who benefit most are landowners. Landless farmers benefit only as long as they have secured usufruct rights of common pool resources.

Drinking water that was often scarce or not available at all during some times of the year is now accessible at all times during the whole year.

Financial assets: During implementation of the programme labour is needed and paid to build the soil and water protection constructions. This provides most welcome income earning opportunities within the village mainly for landless farmers but also for landed farmers. Most workers use this income to repay debts and not for investing in productive assets. Those who have land will achieve higher yields once the project is implemented and thus increase their income from farm produce. With higher fodder availability both landless and landholding farmers can increase milk yields and raise higher quality breeds.

Physical assets: A prerequisite of the programme is that the number of goats and sheep need to be reduced according to the (often disputed) carrying capacity. This mostly affects poorer households as the rearing of goats is mainly done by poorer landless or landholding farmers. Monitoring results show that the number of goats decreased tremendously in the beginning of the project but has increased again during or after implementation. There is no study available nor was there time to investigate in the issue during this assessment, on distribution of animal ownership along different socio-economic strata after project implementation.

Wasteland, formerly too degraded for cultivation is being brought back into production after soil and water treatment. Over time this extends the arable land.

Members of SHG accumulate physical assets (tools, equipments, etc.) as individuals or as a group by means of credit.

There are risks with respect to the sustainability of the watershed improvement. Once the project has ended, the ban on irrigation and deep water wells might be lifted (or rather no pressure as such exists not to do it), which might render the water and soil preservation measures futile while the benefits are reaped off by a few who have the means to construct a deep well.

Social assets are created by networking farmers into SHGs and VWCs, as well as exposing the beneficiaries to other watersheds, linking them to other projects and schemes.

Human assets: VWCs are assisted to develop their watershed management skills and activities. SHG also acquire skills in group formation and IGA.

Authority:

Formal organisations: VWC and SHGs are established and support active participation of the members. They will gain social and also political status in the village. On the other hand, there is no clearly defined link to the Gram Panchayat. Detailed information on the distribution of tasks and decision making powers would be useful in order to improve the institutional design of future programmes.

Access:

Formation of VWCs and SHGs provide access to know how, formal support and credit facilities.

Transfers:

Initial investment in watershed improvement and its organisation is financed through grants and subsidies channelled from donors to implementing NGOs or via NABARD to implementing NGOs.

Employment:

Wage employment is created in the beginning of the programme for construction soil and water conservation measures. After implementation of the project more land might be brought under cultivation and bigger farms might employ additional farm labourers.

As happened in some cases former wasteland can be brought back under cultivation, which stimulates the growth of self employment.

Prices:

Wages: It is frequently reported that wages have increased due to a lack of casual labour, as more households can cultivate more land (land that was formerly not under cultivation). Further, as households in the watershed areas have now other forms of credit facilities and might have been able to pay back their debts, influential land owning money lenders cannot exploit workers by paying excessively low wages when employed as casual labour.

Credits: Money lenders seem to have lost their influence on poor households and now tend to engage in bigger investment lending. Whether this process is permanent needs to be monitored.

Table 6: IGWDP project - transmission channels

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|------------------|---|--|-------------------|--|---|
| | | | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| Prices | Production | On farm production increases; production diversifies, dairy production is stimulated | 0 | ++ | Significant marketable surplus might have price effects | |
| | Consumption | Demand for food and non-food items increase with rising incomes during the implementation (through wage labour) and after the implementation (when additional farm work is created) | 0 | 0 | Price effects are expected to be minimal | |
| | Wages | Wages for casual labour increase due to expanded volume of labour in local agriculture | + | + | Casual labour is getting relatively scarce. Exploitative wages as result of indebtedness are less likely | |
| Employment | Public formal | | 0 | 0 | | |
| | Private formal | Wage employment during initial investment phases | ++ | + | Local employment opportunities of landless improve | Choice of technology determines labour volume. Only if resource management is sustainable, employment opportunities within the village will remain stable |
| | Informal | Higher level of self-employment | + | ++ | More households cultivate more land reduced farm level underemployment | |
| Transfers | Taxes | | 0 | 0 | | |
| | Public welfare / | Initial investment is financed through grants and | ++ | + | The cost of soil and water conservation measures of eligible | Only strict adherence of selection and |

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|------------------------|--|--|-------------------|---|---|
| | | Details | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| | subsidy | subsidised credits | | | villages are significant and cannot be borne by eligible villages | promotion criteria avoid unjust social bias |
| Access | Public services | VWCs and SHGs provide access to know-how, financial support and credit facilities | + | ++ | | Proper management of VWC and SHGs prerequisite for a success |
| Authority | Formal organizations | Active participation by beneficiaries through SHGs and VWCs | ++ | ++ | Watershed rehabilitation needs a common and cooperative approach supported by the whole village. | Social and public control in order to avoid exploitative practices (deep wells, excessive irrigation) by powerful individuals |
| | Informal organizations | Networking of watershed projects | + | ++ | | |
| Assets | Natural | Land productivity increases considerably | + | ++ | Soil and land management on private and common land (involvement e.g. of forest department in some areas); participants are paid for the labour | |
| | Physical | Number of goats and sheep are reduced to match the (often disputed) carrying capacity. No free grazing | - | ? | On farm fodder production shall substitute for free grazing. The cost are to be borne by landless and other poor households as they are dependent upon small ruminants and common property | Monitoring results show that the number of goats tremendously decreased in the beginning of the project but increases again during or after |

| Transmission Channels & Details | Transmission Channel Used | | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|---------------------------|--|--|-------------------|----------------------------------|--|
| | Details | | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| | | | | | resources for their livelihoods | implementation. Which strata of the society can invest in animals after rehabilitation of grazing land? Who has got access to common resources? |
| | Financial | | | | | |
| | Social | Networking farmers and exposing beneficiaries to other watersheds projects | + | + | Formation of VWCs and SHGs | VWC and SHG might be hijacked by influential personalities. The effective functioning of VWC and SHG might diminish after project completion No clear link to Gram Panchayat is established |
| | Human | Capacity building of VWCs Out migration is lowered | + | + | Management skills are developed. | |

5.4 Output/Outcomes/Impact by All Stakeholders and their Capabilities

Economic

The watershed development efforts improve local *agriculture* through

- an increase of the cropped area (additional area which was formerly wasteland)
- the adoption of better varieties of crop
- improvements of crop yields
- an increased area under irrigation, and the
- diversification of cropping (e.g. horticulture)

Watershed treatment measures may thus benefit disproportionately the better off households in the villages, especially those who own land. However, if development projects are being focussed on poor areas, even the better off households in such areas still face vulnerable livelihoods owing to degraded resources and climatic vagaries.

Those who have uncultivable land are often to bring such lands under cultivation for the first time because of watershed development. The farmers who increase production because of watershed treatment measures may give rise to more local employment opportunities for the landless.

Livestock production is primarily affected by the ban on free grazing of goats and sheep before implementation. This might harm poorer farmers and landless farmers' livelihood much more than richer farmers'.

On the other hand, monitoring data has shown that dairy activities (based on cross-breeds and improved cows) have been adopted on a large scale after the implementation of water and soil treatment due to improved fodder availability.

No detailed study could be found that examines the socio-economic mechanisms in place when goats and sheep number decrease drastically at the beginning of the programme (whose shoats are removed) and growing numbers after implementation (especially in higher yield milk cattle, but also goats).

Security

One of the most important impacts of watershed approaches is that they reduce vulnerability of a broad range of people living in the area. Those who are landless may benefit through self-help group membership and micro-credits. Benefits are unequally distributed. Benefits grow proportionally with the size of land holdings and the quality of land.

Human:

Out migration can be lowered if the livelihood situation improves after the treatment of the watersheds. Drinking water is available throughout the year, income generation opportunities in the village increase. This will have a positive impact on the schooling of children.

Socio-cultural and political:

The programme does not explicitly address women and caste although there is a membership quota for women in VWCs (minimum 30%) and the formation of SHGs has been supported. The participation of poor, landless and women in the village watershed association and Village Watershed Committees is expected to increase their say in decision making and create a social and political space for them. This may result in longer term improvement of the political role of poorer segments in the villages. This may also influence the PRIs.

Equally, the SHGs created under the programme are said to provide a platform to the women and improve their social status. To which extent this is has been achieved could not be fully answered within the extremely short assessment period. Based on limited interviews and background literature, the impacts on the political and socio-cultural capabilities of the poor and landless, as well as women, seem to be secondary to those achieved in general natural resource management. However, individual women stressed that their social and political space has improved.

Table 7: IGWDP - impact on capabilities of target group

| Capabilities | Economic | | Security | | Human | | Socio-cultural | | Political | |
|----------------------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|
| | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) |
| Beneficiary groups | | | | | | | | | | |
| Target Group: | | | | | | | | | | |
| Land owning poor households | + | + | + | + | 0 | + | 0 | 0 | 0 | + |
| Landless poor | + | 0+ | + | 0+ | 0 | 0+ | 0 | 0 | 0 | +0 |
| Women | 0 | + | 0 | + | 0 | + | 0 | + | 0 | 0 |
| Other Stakeholders | | | | | | | | | | |
| Land owning wealthier households | + | ++ | + | + | 0 | + | 0 | 0 | 0 | + |

| | | | | | |
|---------------------------|---------------|----------|-----------------|----------|---------------|
| KEY Matrix 2: | ++ | + | 0 | - | -- |
| Strength/direction impact | very positive | positive | not significant | negative | very negative |

5.5 Outputs/Outcome/Impact by MDG++

The programme contributes to achieving MDG 1 (extreme poverty/hunger) and MDG 7 (environmental sustainability). Other MDGs (3, 4 and 5) are marginally addressed.

Table 8: IGWD – outputs / outcome / impact by MDG++

| MDGs "Plus" "Plus" | Outputs/Outcomes/Impacts | | Details & Risks |
|--|--------------------------|-------------------|--|
| | Short Term (+/-) | Medium Term (+/-) | |
| MDG 1: eradicate extreme poverty/hunger | + | + | The watershed approach is potentially poverty reducing. Positive short and mid-term effects can be significant: increase of cultivated area, yields, and employment. As an area based approach which requires comprising a whole watershed and all households living in it, it cannot be specifically targeted to the needy households alone. Therefore funding |

| MDGs "Plus" "Plus" | Outputs/Outcomes/Impacts | | Details & Risks |
|--|--------------------------|-------------------|---|
| | Short Term (+/-) | Medium Term (+/-) | |
| | | | mechanisms need to reflect the social differences. |
| MDG 2: universal primary education | 0 | + | Due to reduced migration, school enrolment in project areas seems to increase - needs to be monitored |
| MDG 3: gender equality empower women | 0 | 0 | Although the formation of SHGs might have some positive impact, it is not considered as relevant compared to other outcomes and impacts |
| MDG 4: reduce child mortality | 0 | 0 | Through the improvement of MDG1 mortality might be reduced but it is not considered as significant |
| MDG 5: improve maternal health | 0 | 0 | |
| MDG 6: combat HIV/AIDS, malaria, etc. | 0 | 0 | |
| MDG 7: environmental sustainability | 0 | ++ | Watershed development contributes to a more sustainable land use system if properly managed over time. |
| Pro-poor growth | 0 | + | Individual village level watershed schemes might be too small to trigger local economic growth. But with increasing area coverage and networking of watershed schemes, the pro-poor growth potential evolves. |
| Protecting the vulnerable | 0 | 0 | |
| Peace, security and disarmament | 0 | 0 | |
| Human rights, democracy and good governance | 0 | 0 | Although participation in local decision making is strengthened through VWCs, there is not a significant impact yet on improved governance |
| Protecting the common environment | 0 | 0 | Compare to MDG 7 |

| KEY Matrix 3: | ++ | + | 0 | - |
|---------------------------|---------------|----------|-----------------|----------|
| Strength/direction impact | very positive | Positive | not significant | negative |

5.6 Additional Monitoring Needs

A rather elaborate monitoring system is already in place. However, economic benefits could be monitored taking into account different socio-economic strata of the watershed community in order to evaluate the impacts on the poorer parts of society. This does not necessarily require more data collection, but more elaborate data analysis. For example, the livestock developments require close monitoring in order to avoid negative impacts on the poorer participants of the watersheds. Change in ownership could be recorded. Who are the livestock owners before intervention and after completion? Who benefits from the developing dairy sector?

It would also be of interest how wage labour and education of children is influenced in long term.

What are the exact mechanisms in the use of common resources?

5.7. Summary and Recommendations

The programme is very successful and has achieved a lot in terms of water and soil conservation. Through this area approach the general wellbeing of all people living within the watershed has significantly improved.

The programme is particularly successful in terms of

- Water management (rise of water table) and soil conservation
- Rehabilitation of degraded land
- Availability of drinking water
- Extension of arable land
- Increase and diversification of production
- Increase of employment opportunities for casual workers
- Reduction of out migration

The programme has certainly a positive impact on poverty. However, equity issues have not been addressed. The better off farmers owning land have benefited disproportionately of the programme. Those with little assets in the beginning have benefited much less. Hierarchical structures within the watershed community might have been perpetuated.

The weaker points of the programme in terms of their social impacts are:

The social targeting of an area based approach is a rather blurred targeting. Targeting mechanisms could be improved. Financial support could be dependent upon the real need of the potential beneficiaries. For example, grants should only be given to households living below the poverty line, while land owners should be eligible for subsidised credits. In addition, special programmes for landless farmers could be added which improves their employability either as wage labour or a self employed micro entrepreneurs.

A women quota (30%) for membership in VWCs doesn't really rectify the prevailing gender bias. The DFID supported Andhra Pradesh Livelihood Programme takes a more courageous approach. The Village Watershed Committee consists for example of women alone. This is not "Indian reality". However, it can be a signal in a society that is dominated by men. Such an approach might really strengthen women's bargaining position within the village, much more than the token 30% participation could possibly do.

No convincing mechanisms are in place to prevent powerful individuals to drill deep wells when the water table has risen and the project has ended. Social and public control is required in order to avoid such an exploitive behaviour of well-to-do farmers. The PRI might need to play an active role to ensure the sustainability of the watershed improvements

Given the findings of this preliminary poverty impact assessment and the experience of DFID's livelihood approach in watershed development, the so called "watershed plus" approach seems better suited to contribute to the solution of poverty problems. "Watershed plus" goes beyond a purely technical watershed approach and has very strong livelihood components, i.e. components that strengthen the production side.

6. Preliminary impact assessment Comprehensive Tribal Development Programme (Wadi⁹) Project

6.1 Background

In India, the tribal population (Adivasi) consists of approx. 80 million people. There are 250 tribal communities living in 94,000 villages across a number of states, mainly Andhra Pradesh, Madhya Pradesh, Gujarat, Rajasthan, Maharashtra, West Bengal, North-Eastern States and North Western Himalayas. These tribal populations are mainly dependant on agriculture, forests and livestock. As a result of severe denudation of forest resources on which they were dependent, many have been deprived of opportunities for their livelihood. The dwindling forest resources have jeopardized agriculture and livestock productivity due to shrinking water resources and poor fuel and fodder supply. The small, marginal, fragmented, unirrigated and mono-crop agriculture holdings and low productive livestock population do not offer adequate opportunities for their livelihood.

The agricultural income of these families is decreasing steadily due to degradation of farm lands. As a result, more and more Adivasi are migrating to nearby towns or cities. This out migration contributes to an erosion of their traditional language, culture and customs and often to perpetuating poverty. For those who stay behind, a lack of capital combined with poor educational opportunities reinforces the pervasive critical socio-economic situation of these tribes. High level of indebtedness and dependency on money lenders as well as malnutrition, bad health and often alcoholism are the results. Rehabilitation of these tribal groups is a major challenge.

There are a number of efforts by the Government and NGOs to provide financial and technical assistance to the tribal groups through various schemes and development programmes in the country since independence. These existing development schemes offer some relief to the tribal groups but there is a recurrent relapse to poverty due to various reasons. As a result, more than half of the tribal population is still below the poverty line (NABARD, no date).

The **Comprehensive Tribal Development Project Approach** was introduced in 1982 in Vansda, Gujarat by an NGO called BAIF - Development Research Foundation, Pune. BAIF has so far reached 50,000 families spread over Gujarat, Maharashtra, Karnataka, Rajasthan and Uttar Pradesh. The project is nationally and internationally considered as highly successful in reducing poverty among Adivasi. NABARD has established a Tribal Development Fund which is based on the experience by BAIF, and has been tested on a large scale with the assistance of KfW.

KfW has supported the Wadi approach in two states. In *Gujarat* since 1995: Valsad (Dharampur & Kaproda blocks) and Dangs, and in *Maharashtra* since 2000: Nasik (Peint, Triambak, Surguna blocks) and Thane (Mokhada block). NABARD is the main agency responsible for channelling funds, coordination and M&E.

In Gujarat DHRUVA, and in Maharashtra, the Maharashtra Institute of Technology Transfer for Rural Areas (MITTRA) are the principle implementing agencies. These implementing NGOs are conceptionally supported by BAIF Development Research Foundation, Pune.

On village level village organisations are formed to execute the project.

In the following a qualitative and descriptive assessment¹⁰ of the approach taken in Maharashtra will be provided.

⁹ "Wadi" means "orchard" in Gujarati.

6.2 Activities, Stakeholders, Intermediaries and Target Groups

The projects in Maharashtra and Gujarat centre around the establishment of orchards (wadis) on wasteland owned by Adivasi. The holistic approach also addresses production, processing and the marketing of the orchard produce. Landless farmers and women are supported. The programme approach is **clearly people focused and self help oriented**.

The components of the Wadi project in **Maharashtra** are the following:

- **Setting up orchards on wastelands (mostly hilly land)** for families having less than 5 acres of land. Beneficiaries of the projects must be willing to stay in the villages and to contribute family labour for the orchard development (40% of the funds are scheduled for this purpose): between 0.5 and 1.5 acres per households are supported by the project (provision of seedling and extension service). The interspace can be used to cultivate crops. Per acre around 60 fruit plants suitable to the local conditions.
- **Provision of seedlings of forest trees** to be planted around the wadi (for fodder, fuel, timber and herbal medicine) (each orchard owner received around 600 forestry plants on the boundary).
- **Soil conservation measures for planting the trees** (e.g. bunding, tree platforms): the participants are paid for the soil conservation and plantation work done by them in their own fields.
- **Water resources development for nurturing fruit trees:** Although the project area receives an annual rainfall of 2,500 mm, because of steep slopes and rocky terrain, water retention is poor resulting in severe soil erosion and nutrient loss. As existing water resources are not sufficient to irrigate Wadi plots, run off water is harvested through construction of temporary check bunds across river streams and development of perennial springs. The spring water is used for drinking water as well as for irrigation purposes. Pot drip irrigation is provided for the fruit plants in the initial 3 years of plantation as protective irrigation.
- **Creating processing facilities and a cooperative to ensure appropriate prices for the orchard related produce** (mostly cashew and mango): establishment of decentralised processing facilities under a cooperative. Landless tribal families are given priority employment opportunities in these processing units. A cooperative (founded in Gujarat) has even its own label (Vasundhara).
- **Chlorination of wells and water** in the households.
- **Construction of more hygienic kitchen:** sunlight through transparent roof tiles, platform on which the stove is constructed
- **Rising of kitchen gardens:** in Maharashtra a total of 5911 kitchen gardens were raised until 2005/6.
- **Formation of Participant Groups (Wadi Tukdis)** – registered bodies. A group typically has around 8-12 household representatives as members. The group is the forum for the interactions between the staff and the participants.
- **Establishing of registered Women Self Help Groups** (training for activities such as nursery, vermicomposting, vegetable production, micro credit) (around 4% of the funds were scheduled for this item, however, after 5 years the actual amount spent for this purpose increased by around half). An employed book keeper helps the

¹⁰ Detailed quantitative monitoring reports are sent to KfW regularly – they mainly present information on output level.

groups to keep book. So far 314 SHG have been formed in 166 villages, of which 39 SHGs are of the landless. Out of the 314 groups 99 groups have taken up various income generating activities. Trainings and exposure visits are organised for the groups.

- **Landless and small holding families are selected for training in employment oriented skills** such as carpentry, masonry, and smithy. In total 491 landless were reached so far. Out of these 103 engage in loudspeaker and Mandap lending, 76 tailoring, 66 carpenters, 51 barbers, 33 pot trip construction 32 goat rearing, 27 blacksmith, and others in e.g. vegetable vendor, vegetable cultivation, trading, ... (for this item only around 3.5% of the total funds were scheduled, this sum increased by nearly half after 5 years).
- **Community Health Programmes** (in some areas only) focus on mother and child health care as well as primary and preventive health care. Participants are given training on sanitation and hygiene. Activities include lice and scabies control. Knowledgeable members of the village (Vaidu) are trained in diagnosis and treatment of common illness and serious cases are referred to appropriate facilities. 47 Vaidus were trained who now provide services in a Charak Centre like massaging, use of herbal medicines, steaming, etc. Each herbalist treats around 30-50 patients every month. In order to treat females, each Vaidu has got a female assistant, trained by the project. Currently 41 such assistants are working in the health centres. 21 Vaidus have a herb garden around their health centre. 7 Vaidu self help groups have been formed to support the Vaidus. These SHG use their saved money for procuring herbal medicines for the Vaidus. It is planned to form Vaidu Societies. The raw medicinal herbs collected by the SHGs will be sold to the Vaidu society at an economical price which will generate income for the SHG. The Vaidu society will collect all such herbal material and will make it available for sale to Vaidus in the surrounding areas. Medicinal staff is supervising the activities of the herbalists and monitors the cases treated by them. Most common ailments are: body ache, painful joints, stomach pains, fever, asthma, inflammations, and paralysis. Till date 3371 patients have been treated. (Around 7% of the total funds are scheduled for this item).

The table below shows that most stakeholders have a strong or very strong interest in poverty reduction.

Table 9: Comprehensive Tribal Development Programme - overview on stakeholders' interest in a pro-poor agenda

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|--------------------------------------|--------------------------------------|---|---------------|
| BAIF (NGO) | Coordination and implementation | Mandated to help the advance of the rural poor, in this particular case, the Adivasi, interested in poverty reduction and equity issues | ++ |
| MITTRA | Implementation, technical assistance | Mandated to work within the communities, implement the project together with the communities: the individual beneficiaries both landless and landholding, advisory services in technical and social issues. Motivated in reducing poverty. Need for implementation success and accountable for funds, therefore possibly reluctant in risk taking for the poorest (e.g. alcohol addicts are excluded of the project) | + |
| Village | Implementation of project | Interest in implementing the project in | + |

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|---|--|---|---------------|
| Committees | | a successful way, including poverty reduction; might not be too interested in helping the poorest | |
| SHG, Wadi committees | Activities on individual and group level | Interest in alleviating their own poverty and that of their group members | ++ |
| NABARD | Securing fund flows, coordination and M&E | Has proven interest in rural development and some interest in equity issues | + |
| Government of India / State Governments | Programme approval / Fund flow / monitoring | Poverty reduction / equity is primary development objective. | + |
| BMZ/KfW | Provision of funds, feasibility studies, M&E, Coordination | Overarching goal is poverty reduction and achieving MDGs | + |

| KEY | Strength/direction impact | ++ | + | 0 | - | -- |
|-----|---------------------------|---------------|----------|-----------------|----------|---------------|
| | | very positive | Positive | not significant | negative | very negative |

6.3 Transmission Channels and Related Output/Outcome/Impacts for Target Groups

In the following, the transmission channels through which outcomes and impacts are achieved are discussed in detail. The order follows the relative importance of the individual transmission channel.

Assets

Improved natural resource management by introducing permanent and temporary check dams and water management enhance the productive capacities of Adivasi agriculture. Both check dams and springs/wells usually benefit a group of 4-5 participating households.

The Wadi programme significantly enhances the **physical assets** of the Adivasi population wherever it has been already implemented. The productive capacities and capabilities of the land increases by cultivating fruit trees and planting of forest trees, by various soil conservation methods that help to reduce top soil erosion, and by improved water harvesting, and the construction of wells and protection of springs.

Until March 2006, in **Maharashtra** alone 13,848 households brought 122,935 acres under Wadi cultivation¹¹.

- Two third of the eligible families have been covered by the project. 67% of the Wadis are of a size of 1 acre, 31% 0.5 acres and only 2% are 1.5 acres large.
- Water harvesting secured access to water for irrigation of new orchards.
- Springs were used for watering new plants but also for drinking water.
- Women and men improved their kitchen gardens. 729 participants have taken up vegetable cultivation on 127 acres of land.

¹¹ All quantitative information on results quoted in this chapter derives from "Adivasi Development Programme, Maharashtra Progress Report", 2006 and discussions with field staff.

- 10,062 houses were provided with glass tiles to make way for more light into the houses and raised kitchen platforms were constructed in 559 households as a hygienic measure.
- To improve household and kitchen hygiene chimneys have been distributed to suck out the smoke generated in the kitchen while cooking. 7,300 such chimneys were distributed between October 2004 and March 2006 in Maharashtra alone.
- Seeds of improved varieties (wheat, gram, jawar) are provided to participants under the credit programme and some with partial support through the project.

Human assets are enhanced by the Wadi programme through trainings in various skills and health care components. These programmes cover eligible land-owning and landless farmers and women. Improvement of the socio-economic status lead to reduced migration pressure and also removes obstacles which have prevented poor Adivasi children to attend school.

The employability of the landless is specifically improved by skills development trainings. The landless are supported as individuals or as groups. In consultation with the Wadi Tukdi it is decided which trainings and tools the respective applicant receives in order to carry out an enterprise which provides services to his village and the villages nearby. Usually the applicant has to pay 20% of the costs of the tools in order to avoid reselling¹².

In addition, under the health component activities on nutrition, safe drinking water and herbal based programmes are pursued. Further, in all SHGs awareness training on most common ailments of the area was conducted. The health component reduces the incidence of infectious diseases in the area and improves the general health and sanitary situation in the villages.

Prices

Producer price and value of produce is positively influenced by improved marketing arrangements and the processing of products:

- Marketing support leads to more stable and more appropriate revenues for the wadi related produce (mostly cashew and mango) due to improved handling, reduced physical losses, sorting of produce and coordinated sales.
- The establishment of decentralised processing facilities under cooperative societies leads to higher valued products attaining better market prices. Landless tribal families are given priority employment opportunities in these processing units. A cooperative (founded in Gujarat) has even its own label (Vasundhara).
- The branding of processed produce contributes to more stable and higher priced sales
- Hygienic packaging improves the storability of the produce
- However, there are risks regarding price developments if competitive pressure increases due to a rapid growth of supply outstripping demand or shifts in consumer preferences.

Consumption

Not significant

¹² From an equity point of view, it could be reconsidered whether it is fair that landed farmers receive saplings and trainings for free and landless have to contribute of their own means.

Wages

Not significant

Employment and Income

In the beginning farmers are paid for the establishment of orchards in their fields. Self employment increases as Wadis have to be kept.

Processing of wadi produce creates some wage employment

Income generating activities of landless increase as they can earn additional income through their private business.

Adivasi living within the project area will hardly need to migrate to urban centres and can secure their livelihood within their villages.

Transfers

Grants and support provided by apex organisation and the implementing NGOs benefits the Adivasi target groups. As a result they will become more settled and out migration will be reduce.

Access

Through the project the Adivasi have gained access to training, funds, etc. Due to the project intervention they could also draw on other schemes.

Authority

Formal relations: The Wadi Tukdis are responsible for planning and implementing the project in their respective villages.

In Maharashtra until March 2006 a total of 314 SHGs have been formed out of which 39 groups are exclusively landless. These groups have taken up several income generating activities like vermin-composting, nursery raising, manufacturing of pot drips.

In general it seems that Adivasi have gained self esteem and are more likely to be heard in local decision making.

Table 10: Comprehensive Tribal Development Programme - transmission channels

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|--------------------------|--|--|-------------------|--|--|
| | | | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| Prices | Production | Producer price and value of produce may rise | + | + | Improved marketing arrangements and the processing of products will lead to higher prices and revenues for farmers | The poor and women will only benefit if they are incapacitated to fully participate in the programme |
| | Supply/demand | Marketing support and branding of processed produce | + | ++ | more stable and appropriate revenues for the wadi related produce | Competitive pressure might lower prices |
| Employment | Public formal | | | | | |
| | Private formal | Some wage employment when cooperatives are in operation and sales can be increased | | ++ | | Local economic growth might be very limited and in turn limits local employment for casual labour |
| | Informal | Self employment | + | ++ | | |
| Transfers | Taxes | Not significant | 0 | 0 | | |
| | Public welfare / subsidy | Establishment of orchards is subsidised | + | + | From an equity point of view, it could be reconsidered whether it is fair that landed farmers receive saplings and trainings for free while the landless have to contribute 20% to the cost of tools in order to avoid reselling. | Marginal farmers and women may be neglected as they are often not in a position to make themselves heard |
| Access | Public services | Adivasi gain access to training, funds. etc. | + | ++ | | |

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|----------------------|--|--|-------------------|--|---|
| | | Details | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| Authority | Formal organizations | SHG (Wadi Tukdis) are formed | ++ | ++ | SHG are responsible for planning and implementing the project in their respective villages | Social situation of marginal farmers such as landless and of women can aggravate if leadership and management problems cannot be mastered |
| | Assets | Physical | Productive capacities and capabilities of the land increases | + | ++ | Cultivating fruit trees and planting of forest trees, various soil conservation methods help to reduce top soil erosion, improved water harvesting, construction of wells and protection of springs |
| Natural | | Wasteland is cultivated and brought back into production | ++ | ++ | Permanent and temporary check dams and water management enhance the productivity. Both check dams and springs/wells usually benefit a group of 4-5 participating households | Yields might be low and would require costly soil improvement efforts which cannot be financed |
| Human | | Trainings in various skills and health care components. The employability of the landless is specifically improved by skills development trainings. The landless are supported as individuals or as groups | + | ++ | Programmes cover eligible land-owning and landless farmers and women. Improved socio-economic status leads to reduced migration pressure and also removes obstacles which have prevented poor Adivasi children to attend school. | Employment opportunities of the landless might not arise in local economy as the income effect of a project is too small to stimulate local economic growth |

6.4 Output/Outcomes/Impact by All Stakeholders and their Capabilities

Economic: A study by Nirmal Beura (2004) found that the orchard (wadi) model makes assured income possible. He calculated that a typical family generates an average income of INR 6,000 from their orchard. By cultivating a one acre orchard, a tribal family starts to generate an additional income of INR18,000 from the 7th year. By the 10th year, when the orchard production reaches full bloom, the profit is about INR 35,000. The investment required for the model in an acre land is around 13,000 across 4 years (including both labour and material). In addition to this intensive agriculture such as intercropping is also recommended. Where water is assured families are also encouraged to cultivate vegetable.

The wadi approach diversifies the risk of income for the family by investing in horticulture, forestry and agriculture.

Security: Higher level of income security and membership in networks and co-operative organisations provide a basic level of social security.

Human: Many families have now started to send their children to school regularly (as they do no longer migrate). Vegetable gardens improve nutrition. Health facilities improve health. Drinking water improved through chlorinisation.

Socio-cultural: Women are empowered through formation of SHG and the income generating and other activities of the groups. In general Adivasi have a higher self esteem through productive work in their own fields.

Political: Through the formation of Village Committees and SHGs it was possible to establish linkages with various financial institutions and banks.

Table 11: Comprehensive Tribal Development Programme - impact on capabilities of target group

| Capabilities | Economic | | Security | | Human | | Socio-cultural | | Political | |
|-------------------------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|
| | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) |
| Target Group: | | | | | | | | | | |
| Land owning Adivasi, poor | + | ++ | + | + | + | ++ | ++ | ++ | + | + |
| Landless Adivasi poor | + | + | + | + | + | + | + | + | + | + |
| Women in general | + | + | + | + | + | + | + | + | + | + |
| SHG | + | + | + | + | + | + | + | + | + | + |
| Other possible beneficiaries | | | | | | | | | | |
| Households with larger land holding | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | |
|---------------------------|---------------|----------|-----------------|----------|---------------|
| KEY Matrix 2: | ++ | + | 0 | - | -- |
| Strength/direction impact | very positive | Positive | not significant | negative | very negative |

6.5 Outputs/Outcome/Impact by MDG++

The programme contributes to MDG 1 (extreme poverty/hunger), MDG 2 (universal primary education), MDG 3 (gender equality) and MDG 7 (environmental sustainability). Other MDGs (4 and 5) are marginally addressed.

Table 12: Comprehensive Tribal Development Programme – outputs / outcome / impact by MDG++

| MDGs "Plus" "Plus" | Outputs/Outcomes/Impacts | | Details & Risks |
|--|--------------------------|-------------------|--|
| | Short Term (+/-) | Medium Term (+/-) | |
| MDG 1: eradicate extreme poverty/hunger | 0 | + | Through income generation, improvement in nutrition through training and kitchen gardens, malnutrition will be reduced |
| MDG 2: universal primary education | 0 | + | By reducing migration, school attendance increases |
| MDG 3: gender equality empower women | + | + | Through the formation and support of SHG, the socio-economic situation of women improves. Women are also targeted individually through improvement of kitchen gardens, kitchen improvements, etc. |
| MDG 4: reduce child mortality | 0 | 0 | |
| MDG 5: improve maternal health | 0 | 0 | |
| MDG 6: combat HIV/AIDS, malaria, etc. | 0 | + | By reducing migration of Adivasi, the risk of contracting HIV/AIDS is reduced. However, as long as the fruit trees do not yet produce enough for the household to earn a sufficient income, part of the household might migrate and a part might stay behind in order to care for the trees. If this is the case, the spread of HIV/AIDS might even be increased. Through Health Workers, vaccination schemes might be more successful and higher awareness on illnesses secured. |
| MDG 7: environmental sustainability | + | + | By reducing erosion further degradation of lands is reduced |
| Pro-poor growth | 0 | + | Modest contribution, as project areas are relatively small |
| Protecting the vulnerable | + | + | Adivasi are a vulnerable group in India (<i>Scheduled Tribes</i>) |
| Peace, security and disarmament | 0 | 0 | |
| Human rights, democracy and good governance | 0 | 0 | |
| Protecting the common environment | 0 | 0 | |

| | | | | |
|---------------------------|---------------|----------|-----------------|----------|
| KEY Matrix 3: | + + | + | O | - |
| Strength/direction impact | very positive | positive | not significant | negative |

6.6 Monitoring Needs

Programme monitoring should in particular address the risks and critical components that might jeopardise the success of the projects such as eligibility criteria, employment opportunities for the landless, gender bias, leadership and management problems of SHGs and processing cooperatives, and market development.

6.7. Summary and Recommendations

The Wadi approach has proven its quality as a targeted programme, able to assist poor farmers with little land or access to low quality land to cross the poverty threshold – measured in terms of monetary income – by establishing and operating orchards. Even the landless are targeted by employment generating activities. The holistic and participatory approach that includes components such as formation of self-help groups, processing cooperatives, trainings, processing of raw materials, and marketing support also stimulates local economic diversification and contributes to a more stable livelihood of the target groups.

In order to exploit the full poverty reduction potential of the wadi approach, projects need to focus upon the following aspects:

- Strict application of the eligibility criteria by the implementing agencies
- Group specific trainings and skill development for landless and women
- Quality control of locally processed fruits in order to create branded products that find a sustainable market
- Provision of market information for cultivators and processors
- Medium term diversification of production in order to avoid local market gluts.

In general, the Wadi Programme has been successful in alleviating general poverty in the Programme Area and has equally addressed equity issues. It is widely replicated in India and has been promoted as one of the most successful Adivasi programmes.

7. Ex ante Poverty Impact Assessment of the Biofuel PPP

7.1 Background¹³

Biofuel is being promoted in India with three objectives:

1. Poverty reduction / rural economic development
2. Checking natural resource degradation / wasteland development
3. Promoting energy security (to respond to growing energy demands)

One potential for renewable resources is the production of biodiesel through tree-based non edible oils like **Pongamia pinnata** and **Jatropha curcas**. Pongamia has been indigenous in Andhra Pradesh and other regions of India since long. It has been collected for the production of oil, mostly as fuel for lighting. Presently there is an extended use of these oils in soaps, varnishes, lubricants, candles, cosmetics, etc. The use for biofuel is only gradually developing¹⁴.

Pongamia grows as a tree and needs around 500-2500 mm rainfall. Jatropha, a bush that might be trained as small tree, grows in arid to semi-arid areas and needs only around 200-1,000 mm rainfall. Both Pongamia and Jatropha can be planted on wastelands and degraded lands. Jatropha can be planted as live fence for arable lands and green capping of bunds and on shallow soils. Pongamia is suitable at the edge of fields. While Jatropha yields after around three years and attains maturity at 6th year, Pongamia yields start from the 4th to 7th year. Both plants are hardy and establish well in a variety of soils. Jatropha fruits need to be plucked – Pongamia collected. Both can be used for oil cakes as manure. Jatropha is highly toxic.

The **Government of Andhra Pradesh** has prepared a draft **policy paper** on biodiesel and plans to increase its coverage of Jatropha considerably. The forest department of Andhra Pradesh has undertaken a massive production of seedlings in recent years for Pongamia plantations, largely in response to meeting growing biofuel demands. Andhra Pradesh plans to distribute 33 million plants starting in 2005. It has also shown an inclination to act as a facilitator to protect the interests of the farmers. Under the Rain Shadow Area Development Programme around 500 Mandals of 10 districts are identified to develop 200 ha/year of Jatropha plantation in each Mandal. Thus, from 2005 the state has embarked on developing some 0.1 million ha of bio fuel plantations every year for the next 10 years. This scheme provides a subsidy of INR 90,000 per ha (both for plant material and drip irrigation, or INR 30,000 for just plant material), to cultivate at the rate of 2,500 plants/ha. It provides free seedlings to families who volunteer to plant Jatropha. In addition, all BPL (below poverty line) families get a grant to cover the plantation cost. The government has made special concession for promoting drip irrigation for Jatropha in the form of a subsidy to the extent of 90% subject to a maximum of INR 50,000 per farmer. However, there is a risk that farmers might initially agree to plant Jatropha, benefit of the irrigation subsidy and then plant other plants.

In addition, the **National Insurance Company** provides Jatropha cultivators with crop insurance support.

¹³ The information of this chapter mainly derives from a study commissioned by GTZ: "Liquid Bio fuels for Transportation: India country study on potential and implications for sustainable agriculture and energy." Report submitted by The Energy and Resources Institute India Habitat Centre, Lodhi Road, New Delhi. No date

¹⁴ In Hyderabad AP Pongamia oil has been used for power generation since World War II when the Nizam of Hyderabad initiated the construction of a power plant which fired Pongamia oil to substitute for scarce and expensive fossil diesel. This power plant ran for more than 40 years. .

Further, a sum of INR 9.85 million has been released to **R & D institutions** for taking up bio fuel related research activities. The government has also promised a reduction in value added tax (VAT) to the bio diesel industries coming up in the state.

Raising bio diesel plants/tree borne oilseeds in wastelands has been identified as a thrust area by **NABARD**. NABARD along with other financial institutions provides credit facilities for plantation of bio diesel plants, raising nurseries, establishments of seed collection and oil expelling centres and bio diesel manufacturing units. As part of its environmental promotional assistance scheme, NABARD is assisting NGOs and other research organizations to spread awareness about non-conventional energy sources including bio fuels through demonstration of alternatives and technologies. NABARD is also interested in **preparing a model scheme** to popularise *Jatropha* in wastelands and bio diesel production.

7.2 Activities / Stakeholders, Intermediaries and Target Groups

In this politically favourable context, a PPP is in the process of being signed between GTZ, Southern Online Bio Technology and Lurgi AG in Andhra Pradesh as partners¹⁵. ICRISAT (International Institute for the Semi Arid Tropics, Hyderabad) provides the agronomic know how to the stakeholders. The objective of the PPP is to support the farmers' activities in the value-chain of biofuels so that the rural poor benefit from the production of bio-diesel on a commercial basis.

The PPP intends to increase the plantation and collection of *Jatropha curcas* and *Pongamia* as raw material to produce biofuel. Southern Online Bio Technologies Ltd. in Andhra Pradesh has already constructed a biofuel AP production plant using the technology of Lurgi AG around 20 km away from Hyderabad. The plant can currently produce 10,000 tonnes a year of bio diesel, using around the same amount of seeds. At the moment the plant can run with various oilseeds, but it is hoped to increasingly use *Jatropha* and *Pongamia*. The plant includes both oil expelling and trans-esterification units.

Southern Online Bio Technologies Ltd. has also established a market department that has addressed the 63 villages that are situated in a radius of approx. 50 km around the plant. During around 4 visits in each of the villages, the collection and plantation of seedlings was promoted. Before the PP has started, some farmers have already made agreements with Southern Online to produce *Jatropha* and sell it to farmers.

The PPP partners

Lurgi AG is a leading technology oriented company operating worldwide in the fields of process engineering and plant contracting. The strength of Lurgi lies in innovative technologies of the future focussing on customized solutions for growth markets. The technological leadership is based on proprietary technologies and exclusively licensed technologies in the areas of gas-to-petrochemical products through synthesis gas and methanol to synthetic fuels, petrochemicals, renewable resources (from-Crop-to-Fuels) and food. The Lurgi AG had a turnover of approx. 592 million Euro and approx. 1,300 employees.

Southern Online Bio Technologies Limited (SBT) is a leading Internet Service Provider in the state of Andhra Pradesh listed on the Hyderabad and Bangalore Stock exchanges in 2000. The company has a turnover of over INR 3 crores from the commencement of operations with a reasonable profit. The company has 40 employees. SBT has diversified into biotechnologies. SBT will run the plant.

Chemical Construction International (P) Limited has its business in the field of oil seed extraction and processing since 1944 with integrated workshops for fabrication of necessary process equipment and hardware and undertaking turn-key projects in India. The company has close technical cooperation with Lurgi AG in the field of Fatty Acid and Bio-diesel plants. CCIL has a turnover of approx. 6,2 million Euros, employs 20 chemical and mechanical engineers, and operates 2 workshops with approximately 110 workers. CCIL has built nearly 300 reference plants in oil extraction, oil refining and hydrogenation.

There are several components in this PPP. In the following these, as well as the roles of the different partners are described.

¹⁵ Another public private partnership involving DEG of KfW, University of Hohenheim, Stuttgart, and Daimler-Chrysler is already operative to develop bio diesel products from *Jatropha*.

It is envisaged to promote two **cooperation models**:

| Collectors' Model | Growers' Model |
|--|--|
| This model involves primarily the landless poor in collecting the seeds of <i>Pongamia</i> and <i>Jatropha</i> either from forests or from plantations. The landless will be trained in various activities such as collection of seeds, nursery raising, oil extraction, sale of oilseed cake and networked with various village-level institutions (SHGs, etc). Such collective action will ensure sustainability as well as achieve the scale of operations required to fuel the bio diesel plant. | Farmers are encouraged to plant <i>Jatropha</i> and <i>Pongamia</i> on notified degraded public land and forestland, their own marginal agricultural land which is mostly fallow (current or old) or cultivable allocated wastelands (NOT farming land). This option addresses farmers that have land (even if they so far have not cultivated it) and/ or user groups, e.g. SHG that get the usufruct rights for notified forestland or common lands. |

According to information provided by the Managing Director of Southern Online LTD some landholding **farmers have already taken up contracts** with Southern Online – even before the PPP arrangements were signed. The contract covers the following aspects¹⁶:

1. the amount of acres the farmer agrees to plant
2. If the farmer gets no direct support (seedlings, irrigation) from the GoAndhra Pradesh, the company will provide advance payments.
3. The company guarantees to purchase the seeds of the *Jatropha* planted at a guaranteed price of RS 3,00 per kg / or, if the farmer sells the oil after extracting the same from the seed with his own resources, the Company agrees to purchase the oil at a price of 14.5 per kg.
4. The Company agrees to provide technical and other information as required by the farmer
5. The farmer agrees to sell his entire yield exclusively to the company.
6. The contract is valid for a minimum period of 15 years.

Copies of the agreement are given to the relevant department of the Go Andhra Pradesh.

The establishment of a proper collection system: So far no proper collection system is in place. Farmers and landless collectors find it difficult to travel to the factory for selling the seeds. Therefore, once areas are identified where the plantation of *Jatropha* will be centred, it is planned that oil pressing machineries will be provided to either individuals or self-help groups. They would be in a position to purchase the seeds from farmers, produce the oil and extract oil cakes that in turn they can sell to the farmers, so that the nutrients can be returned to the fields. Experience with such a production line has been made in other parts of the country.

Training / capacity development: ICRISAT's main role in the PPP is to provide agronomic know how and to help farmers in planting oil-bearing trees through training, technical support, and demonstrations over a period of three years. The project will focus on the following tasks:

1. Training of farmers to cultivate biofuel plantations on their allocated wasteland
2. Training of landless and / or SHG in various activities such as collection of seeds, nursery raising, oil extraction, sale of oilseed cake

¹⁶ A contract was shared with the consultancy team.

3. Networking the farmers, landless people and oil extractors
4. Strengthening network or establishment of SHG, etc.
5. Developing and evaluating suitable cultivation practices and oil extraction process.

Certified Emission Ratings: In addition, ICRISAT will also work on developing Clean Development Mechanism models. One way to do this could be that Southern Online receives Certified Emission Ratings that are somehow transferred down the line to farmers.

Involvement of SHGs and / or business units: ICRISAT plans to raise awareness and to test different expeller models with SHG and / or business units for establishing oil extracting units. These locations will also serve as trading points for the farmers and landless collectors for selling of seeds and buying of oil cakes which help to improve soil fertility¹⁷.

Research and Development: The use of Jatropha and Pongamia for bio-diesel production still being in its infancy, ICRISAT will conduct the testing and development of new seeds as sources of raw oils and development of other value additions.

Being the first of its kind, the planning documents state that it is intended to **develop “best practices” from raw material production to final product**. This could provide incentives to promote bio-diesel production and enrich the formulation of **new government policies**. ICRISAT will explore the options for establishing an information platform; organize annual workshops where they would share the project experience with various stakeholders. In addition, members of ICRISAT will present their findings at relevant national and state bio fuel events.

The identified stakeholders are thus the state government of Andhra Pradesh (GoAP), Southern Online Ltd., ICRISAT, Lurgi AG, NGOs, BMZ. NABARD, being a future financing agency for biofuel is so far not mentioned in the PPP documents. However, the experience from this PPP could contribute to the NABARD’s planned model scheme to popularise Jatropha in wastelands and bio diesel production. In the following table, the various stakeholders’ interest in equity and poverty reduction is summarised.

Table 13: PPP Bio fuel - overview on stakeholders’ interest in a pro-poor agenda

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|--------------------------------------|--|---|---------------|
| State Government | Provide legal framework and support in terms of grants and subsidies | Strongly interested in poverty reduction, but does not see bio fuel production as the main way to do so However, GoAP is actually providing high level subsidy (free plantation material / plantation cost / assured irrigation source) to below poverty line families to take up Jatropha plantation | 0+ |
| Southern Online | Buy seedlings and produce bio diesel | No particular interest in poverty reduction | 0 |
| ICRISAT | Capacity Development Research & Development | Mainly interested in developing viable, sustainable agronomic approach, but also interested in poverty reduction | + |
| Lurgi AG | Technology Transfer | No particular interest in poverty reduction | 0 |
| NGOs | Organising village level | By their mandate interested in poverty | ++ |

¹⁷ It is important to note that none of the written documents given to the consultant team mentioned this aspect – albeit essential for having a sustainable pro-poor impact.

| Stakeholders / intermediaries | Main Tasks | Interests and pro-poor agenda, Aspects that might hinder them to have a pro-poor agenda | Rating |
|--------------------------------------|--|---|---------------|
| | groups to ensure equity | reduction and equity issues | |
| NABARD | Not yet defined, but could be integrated to feed experience continuously | Has proven interest in rural development and some interest in equity issues | + |
| BMZ/GTZ | Coordination and funding | Overarching goal is poverty reduction and achieving MDGs . Further, fostering economic cooperation with India | + |

| KEY | Strength/direction impact | ++ | + | 0 | - | -- |
|-----|---------------------------|---------------|----------|-----------------|----------|---------------|
| | | very positive | Positive | not significant | negative | very negative |

7.3 Transmission Channels and related Output/Outcome/Impacts for Target Groups

Major transmission channels which determine the outcomes and impacts for the (poor) target groups are:

Prices:

Guaranteed marketing including assured prices is one of the prerequisites for resource poor farmers to take up risky new product lines. As small producers have a low bargaining power in the market, contract farming can be a viable way of balancing farmers' and buyers' interests in a fair and transparent manner. The planned PPP has to be aware that the hitherto practiced contractual arrangements between individual farmers and the local processor pose a number of fundamental questions regarding pricing.

Some of the built-in disadvantages of contract farming, based upon individual arrangements between individual sellers and large scale industrial buyers can be overcome by forming self help groups and co-operative societies which also venture into the processing of raw materials to claim a higher share of the value added.

So far, Southern Online, one of the PPP partners, has paid a guaranteed price of 3INR/kg oil seeds and 14.5 INR/kg of pressed oil. This price is fixed for the minimum contract period of 15 years. No reference price system or an inflation-indexed price adjustment is contractually foreseen (a contract was provided to the consultancy team), although oral communication claims differently. Since the market price is among others a function of overall supply and demand, competitive and inflationary pressures, it is difficult to predict whether market prices are likely to increase or fall over such a long period. However, since energy markets will become tighter with the high Indian economic growth rate - and the typically accompanying inflationary process (current inflation rate 4.2 at an economic growth rate of 6- 8%)-, there is a high likelihood that prices for biofuels will also rise. Increasing supplies of bio fuel raw materials might moderate the upward price pressures. It is assumed though that market prices for bio fuel raw materials tend to rise.

Under the current contractual regime farmers tend to be the losers over time (if no price adjustment is foreseen). If we assume a stable market price and a moderate inflation rate of approx. 4%, the real price paid to the farmers will get less and less. In 2010 the real price will be at 2.4 INR/Kg and in 2020 at only 1.6 INR/kg.

In addition, it seems that the current contract price of 3 INR/kg tends to be on the low side to be an economically attractive proposition for the farmers. An example was provided by the study on “Liquid Bio fuel for Transportation in India” commissioned by GTZ shows that in Khammam district of Andhra Pradesh in 2005, farmers uprooted some 200 acre under Jatropha when they did not get the promised buy-back price of INR 6-8 per kg from a local company but only INR 2-3 per kg¹⁸.

Other buyers like M/S Natural Bio Diesel in Andhra Pradesh offered a procurement price of 6 INR/kg. In a feedback session organized at ICRISAT, the farmers from the rain fed areas of Medak, Kurnool and Cuddapah of Andhra Pradesh expressed their willingness to take up cultivation of Jatropha if they are offered a buy-back price of at least INR 6/kg. Farmers from fertile and water abundant Krishna district in coastal Andhra Pradesh, however, cited a minimum buy-back price of INR 10/kg.

Certainly, the optimal price depends on the opportunity cost. If energy crops are cultivated in wasteland (with very low, near zero) opportunity cost, it would be profitable for farmers to produce even at a low price. If cultivation is on farmland, however, its high opportunity cost will push up the desired price. It is therefore difficult to make statements on economic and financial profitability. The PPP will have to look into this issue.

There is need to protect the interests of the farmers in initial years as the model is new and there are still a lot of unknown variables, such as e.g. yields. Some apprehensions could be overcome by providing Minimum Support Price (MSP) which may be decided after assessing the cost of cultivation, gross and net returns. Numerous organisations are currently *doing agronomical studies on bio-fuel production. The PPP will be able to benefit of these results and complete them through own experience.*

Initiating a cooperative on the farmers’ side might increase the bargaining position of farmers vis-à-vis the company.

Employment

The employment effects of the foreseen PPP will be significant. Informal or self employment will by far outnumber formal employment effects. Estimates on employment creation vary between 200-350 person days/ha while establishing the plantation (1st year) and 50 person days in established plantations. Assuming 40,000 ha as planned under Jatropha, the longer term employment will increase by 10,000 full time jobs (based on 200 person days per year). The targeted number of Pongamia trees (2.5 mill trees or 25,000 ha) might have similar employment effects.

Informal employment will be created in several ways: by collecting seeds in forests and on common lands, by growing Jatropha and Pongamia on private and common lands, by forming SHGs that run oil pressing equipments, by operating nurseries and by buying used cooking oils from restaurants and hotels.

a) Collection of seeds from existing trees: The assured marketing for Jatropha and Pongamia seeds will – if profitable - encourage landless and poor farmers to collect the seeds from existing trees in forests and on common lands. However, marketing will be difficult as long as no nearby purchasing centre is available and as transportation costs to the factory might even exceed gains from selling the seeds. It will therefore be necessary to establish close by collection stations.

¹⁸ Liquid Bio fuels for Transportation: India country study on potential and implications for sustainable agriculture and energy.” Report submitted by The Energy and Resources Institute India Habitat Centre, Lodhi Road, New Delhi. No date; p. 61

b) Cultivation of Jatropha and Pongamia on private land and common land: poor land that was formerly not under cultivation can be planted with Jatropha and Pongamia. The study commissioned by GTZ quotes research that estimates that one hectare of Jatropha plantation will generate 313 person days in the first year itself [TERI, 2004]. Another study [Becker and Francis, 2005] estimates around 200 person days of employment generation per hectare during the first year and about 50 person days in the subsequent years. However, there is no study yet what the gains of this work could be.

Panchayats could possibly supplement their revenue earnings by leasing out village common lands to local community groups for bio fuel plantations.

c) Running of pressing machinery and nurseries: Women SHG could be trained to run nurseries. The potential for engaging **women** in raising nurseries and in collection of TBOs as part of biofuel initiative could lead to their enhanced participation in the household and village economy. This is indicated by some of the pilot projects in which active participation of women was encouraged. For example, in Orissa women have been trained in biodiesel production process and have played a major role in the planning and implementation of the project.

Further, the Integrated Tribal Development Agency (ITDA) in Adilabad District of Andhra Pradesh has promoted the participation of women in its biofuel initiative. The work of managing the oil expeller, raising nursery and plantation activities were all done by the women's SHGs. In the year 2004 and 2005, the women's SHGs raised 20,000 seedlings of Pongamia and Jatropha. While half of the seedlings were sold to forest department at 3 INR/seedling, the rest were planted on the field boundaries, farm bunds and community owned lands. Another example from Karnataka, Shimoga district, Samagra Vikas, with the help of the Forestry Department, have promoted nursery activities to raise 50,000 Pongamia plants and 30,000 neem plants which were planted and raised with the help of 175 women's self-help groups (SHGs).

From the very start of the PPP, NGOs should be involved building the capacity to form groups – if possible constituting of landless and / poor households / women who are then linked to credit facilities and training. In some cases individual young persons from the village may start a nursery. The second approach will, however, limit the poverty impact of the PPP.

Formal employment: Formal employment will be mainly created by created the establishment of oil factories such as the Southern Online plant. In addition, SHGs can grow and become viable oil-producing co-operatives which then will create formal employment in their collection and oil extraction centres.

Transfers:

Positive and negative transfers influence the economic outcome and in turn the impact on poverty. Taxes, tax rebates, subsidies, and possible gains from trading certified Emission Ratings are the important transfers in the case of the planned PPP. In particular, tax rebates and subsidies will have a positive and significant impact on the economic returns for individual farmers and the other stakeholders.

a) Reduced Taxes: Rural production of Jatropha and Pongamia is not taxed. Biofuel production of the factory falls under the oil segment and it taxed only 4% (less than ordinary diesel). Therefore the production of bio fuel could be sustainable, especially when crude oil prices will still be growing.

b) Subsidies: Farmers whose income is below poverty line are eligible for a free-of-charge starter package to establish Jatropha and Pongamia plantation funded by the GoAP. Other small farmers may get subsidized seedlings and inputs.

c) *Certified emission ratings*: If ICRISAT succeeds in negotiating an agreement that farmers benefit of the certified emission ratings some further income would be guaranteed. It would be a challenge however, to also include the landless that may only collect small amounts of seeds from wastelands in these arrangements. Strong village organisations are needed to make sure that potential gains from certified emission ratings are shared equally.

Access:

The planned PPP will create access of the target group to seedlings, irrigation water, production credits, and innovative technologies which will contribute to an improving livelihood status.

Through the agreements with GoAndhra Pradesh, farmers will access credit, seedlings, and irrigation facilities.

The PPP will definitely increase the access to technology for Jatropha and Pongamia growing. If oil pressing units are established, ICRISAT will also provide information on oil pressing.

Authority /socio-economic status:

The socio-economic status of the poor target groups can be strengthened by involving self-help groups which specifically address women and the landless poor.

If self-help groups comprising women and landless are involved e.g. in the plantation of Jatropha and Pongamia on common lands, and in the running of oil pressing units, the bargaining position of women and landless can be improved.

Assets:

The PPP will significantly contribute to the creation of assets. The most important outcome will be that wastelands and fallow lands are brought into production. In addition, human assets are created by know how transfers. However, to what extent this will be in favour of the poor depends very much upon the chosen approach and political will.

a) *Use of wasteland and fallow land*: Land that has not been used before may become profitable and produce oil.

- Gram Panchayats should be encouraged to lease common lands to landless farmers. In fact, wastelands and marginal agricultural lands need tree cover for protection against further degradation by water and wind erosion. The presence of tree cover is likely to improve the soil health through litter fall, recycling of nutrients from deeper layers and nitrogen fixation in case of legumes (Pongamia).
- In a study covering Hyderabad, Jatropha had a leaf fall of 2,431 kg/ha/year, which returned 19 kg nitrogen to the soil [Rao and Korwar, 2003]. Besides soil fertility, addition of organic matter will improve the soil physical properties. In the long term, due to soil improvements, wastelands under Jatropha/Pongamia plantations may be brought back into agriculture.
- To ensure that the de-oiled cake after oil expelling is given back to farmers, decentralized oil expelling needs to be promoted. Once the plants have established themselves and have fertilized the soil, their shade can be used for intercropping of shade-loving vegetables that can provide additional income to farmers

b) *Human assets*: through ICRISAT technical extension services, farmers' skills in Jatropha and Pongamia planting will grow. SHG, i.e. women or landless – if given the chance - might acquire skills in nursery production of seedlings and running of oil pressing machinery.

c) *Physical assets*: through credits, SHG or cooperatives may be in a position to acquire oil pressing machinery

d) *Social* networks: the PPP connects farmers with the factory that buys the products. Through the formation or use of existing SHG or cooperative relationships within the village could be strengthened.

Main conditions / risks and monitoring needs:

- Continuing interest of Government of AP to promote biofuel
- Continuing interest of farmers to grow *Jatropha* and *Pongamia* (depends on price and support offered and alternative income earning possibilities)
- Involvement of NGO to form SHG or cooperative to ensure equity

Table 14: PPP Bio fuel - transmission channels

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|----------------|---|--|-------------------|--|--|
| | | | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| Prices | Production | The project intends to enhance the production of Jatropha and Pongamia for oil extraction as raw material for bio fuel. | + | ++ | Contract farming plus initial subsidies will help resource poor farmers to enter into business. | Cultivation losses partially covered by crop insurance |
| | Supply/demand | Before the PPP had started, Southern Online fixed the price for oil seeds (3 INR per kg) and pressed oil (14.5 Pr/kg). It is not sure whether this contract is taking into account inflation and other upward pressures on market prices. | 0 | - | The profitability of contract farming under present conditions might be questionable. Energy prices might go up due to economic growth. Therefore demand for bio fuels might increase. If acreage under Jatropha and Pongamia will significantly increase the supply of raw materials might counteract upward market price. Inflationary pressure might persist. | Contractual arrangements will have to be monitored in terms of their effects on the poor |
| Employment | Public formal | | 0 | 0 | | |
| | Private formal | Some farmers might find employment in refinery | | + | Employment effects depend upon the overall growth of the bio fuel industry. Demand for unskilled labour will provide opportunities for landless rural poor. | Technology choice might minimise employment effects and demand for unskilled labour |
| | Informal | <i>Collection of seeds from existing trees and Cultivation of Jatropha and Pongamia on private land and common land:</i> Different research estimate that one hectare of | + | ++ | Employment effects will be most pronounced for cultivators commanding land resources. Landless farmers might earn additional income as collectors and | Net impact on poverty depends upon a clear pro-poor agenda by the GoAP, the donor agencies |

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|--------------------------|--|--|-------------------|---|---|
| | | Details | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| | | <p>Jatropha plantation will generate between 200 and 313 person days in the first year itself and about 50 person days in the subsequent years. However, there is no empirical evidence yet what the gains of this work could be.</p> <p>Panchayats could possibly supplement their revenue earnings by leasing out village common lands to local community groups for bio fuel plantations.</p> | | | <p>wage labour.</p> <p>Employment effects for landless and for poor women can be enhanced by fostering self help groups who produce oil seeds on leased lands and venture into the processing of seeds.</p> <p>SHGs could be formed and trained to form cooperative societies</p> | and the involved NGOs. |
| Transfers | Taxes | Tax rebates on bio fuel | + | + | Provides a competitive edge for bio fuels | Government may cancel tax rebate |
| | Public welfare / subsidy | Subsidies for the establishment of plantations and irrigation facilities | + | + | Poor farmers can start an oil seed business if basic investment costs are borne. | Intransparent and corrupt handling of subsidies might bias equity consideration of the GoAP. Subsidies might be reduced |
| Access | Public services | Access to seedlings, irrigation water, production credit, extension services | ++ | + | Provision of inputs and advice to cultivators | |
| | Other | Innovative technologies, research results | + | ++ | PPP provides access to advanced bio fuel technologies along the value chain from production to processing | Limited capacities for technology transfer into local production |

| Transmission Channels & Details | | Transmission Channel Used | Output/Outcome/Impact by Transmission Channel Categories | | | |
|---------------------------------|----------------------|--|--|-------------------|--|--|
| | | | Short Term (+/-) | Medium Term (+/-) | Details | Risks |
| Authority | Formal organizations | Establishment of self-help groups which specifically address women and the landless poor. Cooperatives could be established | | ++ | The socio-economic status of the poor target groups could be strengthened | |
| | Physical | Enlargement of capital stock by investing into oil extracting machinery | | + | | |
| Assets | Natural | Use of wastelands and fallow lands for producing oil seeds | | + | Bringing wastelands and fallow under permanent cultivation will enlarge the productive capacity of the available lands without foregoing other production. | Equity considerations may be neglected by PRI when promoting cultivation |
| | Human | Know how transfer | | + | Additional skills help to diversify production and contribute to additional income or higher wages | |

| KEY | Strength/direction impact | ++ | + | 0 | - | -- |
|-----|---------------------------|---------------|----------|-----------------|----------|---------------|
| | | very positive | Positive | not significant | negative | very negative |

7.4 Output/Outcomes/Impact and the Capabilities of Poor Target Groups

The impact on the capabilities on poor and / or landless farmers and women very much depends on the model that will be chosen by the PPP. Therefore the following is just a preliminary assessment. Ongoing projects in other areas of Andhra Pradesh and in the rest of India will have to be closely followed in order to learn lessons for this PPP. At the same time this PPP will contribute to the general discussion in India on biofuel production.

Economic capabilities:

The bio fuel PPP should help that poor farmers and poor landless can earn additional income to permanently cross the poverty threshold. Assuming an average household size of six persons and a monthly poverty line for rural areas of 360 INR, the household income should reach at least 25,900 INR per year to cross the poverty threshold.

The biofuel project Powerguda, a remote tribal hamlet in Adilabad district of Andhra Pradesh has actually achieved this. It can be seen as a reference project. The project, operated by the Integrated Tribal Development Agency (ITDA), Adilabad, has resulted in an increase in income of 77% over three years. Household income reached an average of INR 27,821 (2002-03) from INR 15,677 (1999-2000). In 2003, the four self help groups (SHGs) of the project had INR 552,000 as total savings, which works out to INR. 6,608 per household. This has released them from the clutches of money lenders and now, they are in a position to directly approach banks for loans.

The overall impact on income and poverty of the bio fuel PPP depends upon the number of trees planted and harvested, the yields attained, the production and marketing costs incurred by the farmers.

Yields for Jatropha may vary between 1 and 5 tonnes/ha or 0.625 kg/tree and 3.1kg/tree respectively. Yields for Pongamia are varying between 9 kg and 90 kg/ tree. Soil, moisture, and husbandry influence the net yields. If we assume that a resource farmer can cultivate about one acre of trees or roughly 400 - 500 trees, yielding between 3 and 20 kg/tree, the income may vary between 1,200 and 8,000 INR/ farmer.

If grown on wastelands and fallow, the yields might be low due to the low quality of soil and lack of moisture. On the other hand, any production on lands hitherto not used or underused, will be source of additional income.

It needs to be stressed, tht most of the studies so far available on biofuel production in Inida (and quoted in this report) are based on single surveys, **longer term studies are still not available. Therefore the PPP needs to closely monitor effects of the project.**

It is therefore difficult to safely conclude if the proposed PPP is a viable economic proposition for resource poor farmers. However, it is assumed, that if good crop husbandry results in higher and more stable yields, the cultivation of Jatropha and Pongamia will generate additional income. For resource poor and very poor cultivators who have to forego other production, the current prices paid might not be enough to invest in these new crops in spite of assured marketing and initial subsidies.

Landless collectors, however, may earn additional income as they will have an assured marketing channel.

Security/ social protection capabilities: The PPP will make the owning poor less vulnerable.

Human capabilities: The involvement of the poor in the project will lead to increased knowledege which will improve their working capabilities.

Socio-cultural capabilities: The involvement of the poor into the project shall foster their socio-cultural integration.

Political capabilities: If the poor are involved in the self-help groups their social and political awareness may rise. They are then better informed.

Table 15: PPP bio fuel – impact on capabilities of target groups

| Capabilities | Economic | | Security | | Human | | Socio-cultural | | Political | |
|----------------------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|
| | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) | Short Term (+/-) | Medium Term (+/-) |
| Poor Target Groups: | | | | | | | | | | |
| Land owning poor | + | + | + | + | 0 | + | 0 | + | 0 | 0 |
| Landless poor | + | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 |
| Women (married, poor) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Women (single headed households) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Stakeholders | | | | | | | | | | |
| SHG | + | ++ | 0 | 0 | 0 | + | 0 | + | 0 | + |
| Land owning wealthier households | ++ | ++ | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 |

| | | | | | |
|---------------------------|---------------|----------|-----------------|----------|---------------|
| KEY Matrix 2: | ++ | + | 0 | - | -- |
| Strength/direction impact | very positive | positive | not significant | negative | very negative |

7.5 Outputs/Outcome/Impact by MDG++

The PPP might have positive impacts on MDG 1 and 3. However, in numbers this impact is small, as the scale of the PPP – being a pilot project - is rather limited.

Table 16: Bio fuel – outputs / outcome / impact by MDG++

| MDGs "Plus" "Plus" | Outputs/Outcomes/Impacts | | Details & Risks |
|--|--------------------------|-------------------|--|
| | Short Term (+/-) | Medium Term (+/-) | |
| MDG 1: eradicate extreme poverty/hunger | | + | If poor / landless farmers are in a position to collect and sell enough seeds at a reasonable price to gain a substantial income |
| MDG 2: universal primary education | 0 | 0 | |
| MDG 3: gender equality empower women | | + | If women self help groups are given priority and support when establishing oil pressing |

| MDGs "Plus" "Plus" | Outputs/Outcomes/Impacts | | Details & Risks |
|--|--------------------------|-------------------|--|
| | Short Term (+/-) | Medium Term (+/-) | |
| | | | units and / or usufruct rights to plant Jatropha and Pongamia is granted on common lands |
| MDG 4: reduce child mortality | 0 | 0 | |
| MDG 5: improve maternal health | 0 | 0 | |
| MDG 6: combat HIV/AIDS, malaria, etc. | 0 | 0 | |
| MDG 7: environmental sustainability | + | + | The plantation of Jatropha and Pongamia could contribute to put wasteland and fallow land back into production |
| Pro-poor growth | 0 | 0+ | As this is just a pilot project, the impacts are limited |
| Protecting the vulnerable | 0 | 0+ | |
| Peace, security and disarmament | 0 | 0 | |
| Human rights, democracy and good governance | 0 | 0 | |
| Protecting the common environment | 0 | 0 | Compare to MDG 7: If the approach is successful and replicated on a larger scale, long term beneficial effects might be possible |

| | | | | |
|---------------------------|----------------------|-----------------|------------------------|-----------------|
| KEY Matrix 3: | ++ | + | 0 | - |
| Strength/direction impact | very positive | positive | not significant | negative |

7.6 Monitoring Needs

During the early phases of the PPP close monitoring is required that allows quick adjustments if necessary. The following monitoring information is required (monitoring minimum):

- Development of acreage under Jatropha and Pongamia by different land and soil classifications
- Number of growers and collectors (by sex, age, land owning status, etc.)
- Socio-economic status of growers and collectors
- Production and transportation costs along the whole value chain
- Yields and yield variation
- Crop husbandry problems
- Health status of workers handling seeds and extraction equipment
- Marketing of seeds
- Recording prices for seeds and non edible oil in local and neighbouring markets
- Demand and supply development for bio diesel in India by state.
- Formation of SHG and other forms of cooperation among growers and collectors
- Policy of Andhra Pradesh and GoI

7.7 Summary and Recommendations

The ex ante Poverty Impact Assessment shows that the bio fuel PPP has a potential to reduce poverty if biofuels from non edible oils are produced and collected by resource poor farmers, landless farmers and poor women

- Who have access to suitable land which enlarges their overall production capacity,
- Who have access to the required inputs, know how and technology,
- Who have access to subsidies and/or credit,
- Who are underemployed and can engage in self or wage employment which is being created by a growing rural based industry along its total value chain
- Who have an assured marketing channel
- Who are paid cost covering and fair prices by the industrial buyers, and
- Who can freely associate in Self Help Groups and/ or cooperatives.

In order to assure the highest possible poverty impact, however, of the planned PPP relevant stakeholders such as the GoAP, Southern Online, Lurgi AG, ICRISAT, BMZ/GTZ, concerned PRI and local NGO need to maintain a pro-poor standpoint. Stakeholders should also be aware of the risks that poor farmers take when investing in the new biofuel industry and its raw material production.

A full analysis of the profitability of the non edible oil production requires more and information about production cost, yields, risks, industry structure, competition, and the agronomic specificities of the *Jatropha* and *Pongamia* trees.

A number of risks of the bio fuel programmes need to be addressed in order to make it successful investment for the target groups:

- **Seeds costs are high.** It is essential to distribute seeds of high purity, having a high germination rate. For this, selection of superior germplasm from the existing population and to get seeds with superior genetic quality should be a priority.
- Numerous feeding experiments with different animal species have demonstrated that ***Jatropha seed is highly toxic***. Studies have demonstrated the toxicity of the oil, the fruit and the pressed cake. Oil extracted could result in allergic conditions of the workers. It is essential that proper knowledge about the safe handling of bio fuels is made available to any person or corporation dealing with these fuels.
- **Currently price of biofuels are not competitive to fossil fuels.** Increase in the crude oil prices and technological advancements being made on the biofuel production could make green fuels to economically vie with fossil fuels in the near future.
- **Upscaling of acreage under *Jatropha* and *Pongamia*** depends on the availability of fallow or wasteland and the possibility of farmers to engage in a profitable and secure economic activity.
- **Present yield levels of 1-2 t/ ha further constrain the production** potential. Unless crop productivity can be enhanced and farmers can be convinced to grow bio fuel crops on private wastelands, bio diesel is not likely to make any significant impact as transport fuel.

- ***To develop bio diesel into an economically viable and significant option as renewable energy*** in India, biotechnological innovations to increase the seed yield are required. Ensuring good prices for by-products is central to making bio diesel production an economically viable enterprise.
- ***No detailed studies on diseases and pest attacks on Pongamia and Jatropha,*** hence it is difficult to quantify the pesticide use for growing of these plants.

8. Summary Findings of the Poverty Impact Assessments

Broadly speaking, all NRM programmes assessed here are tasked with capacity building, physical conservation and production enhancement. The study focussed upon three programmes which are of strategic importance for India's NRM sector and for reducing rural poverty through a combined approach of conservation and socio-economic development.

Two ongoing and a planned Indo-German programme have been assessed with respect to their impacts on poverty and equity using a methodological approach, recently developed by DAC/OECD

- the Integrated Watershed Development Programme
- the Wadi Programme and
- the planned Private Public Partnership on biofuel development.

All programmes involve NABARD as funding agency and are implemented by NGOs or shall be implemented in co-operation with private business (biofuel).

Our assessment as well as other evaluations of similar **watershed programmes** show that it is an extremely successful **area-based approach** and has a sound poverty reducing potential but that there has been much more emphasis on physical works and fairly little on productivity growth and livelihood development. Therefore a "watershed plus" approach (watershed + agro-processing + livelihood development) is favoured by this study. The involvement of the landless is another weak point of the watershed programme in terms of its capability to make a structural impact on poverty. As the landless poor benefit mainly from wage labour during the construction phase and increased demand for casual labour afterwards, they might benefit less than the landowning farmers. The gap between the poor and rich might grow.

The **Wadi programme** is a very successful example of combining conservation and pro poor development – it follows a **people-based approach**. It targets the disadvantaged and deprived members of the community and is explicitly gender sensitive. However, it is obvious that the Wadi programme's long term success will depend upon a general rehabilitation of degraded land extending beyond micro-schemes.

Both programmes have been replicated within India and it can thus be safely assumed that they have had and still have **structural impact**. The Watershed Development Fund (WDF) is now a large-scale nationwide programme financed jointly by GoI / Ministry of Agriculture and NABARD. The fund was set up to spread the message of participatory watershed development as developed by the Indo-German Watershed Development Programmes. The fund is replenished / augmented by returns from RIDF interest differentiation. Unfortunately, GoI has not contributed to the Tribal Development Fund (TDF). It is financed from NABARD profits only. It is therefore much smaller than the WDF and cannot be extended nationwide without additional resources. The extension of the Wadi programme and its nationwide replication is therefore impeded because of scarce funds.

The planned **public-private partnership on biofuel development** focussing upon non edible oil crops will contribute to employment generation, environmental rehabilitation and energy security. All partners see an enormous longer term potential for biofuels in India and interpret it as win-win option for all major stakeholders: the farmers, the collectors, the processors, and the consumers. The project is a pilot and will have to test several ways how to best address equity issues and best outcomes for the poor. It could learn from other ongoing projects on biofuel in India but also of the other projects supported by Indo-German Development Cooperation (e.g. the formation of cooperative as promoted by the Wadi

project). **NABARD** is interested in **preparing a model scheme** to popularise Jatropha in wastelands and bio diesel production. By testing different models, monitoring rigorously their results and disseminating the lessons learned, this could be another opportunity for German Development Cooperation to have a structural impact in the field of NRM in India.

It can be concluded that through the developing and testing of different approaches German Development Cooperation can have a structural impact on poverty in the field of Natural Resource Management Approaches. However, the extent to which German Development Cooperation can have a structural impact on poverty reduction and enhancing equity is much more difficult to assess. Inequity and inequality are – despite the advanced legal system – deeply rooted in Indian culture. Changes towards more equity must develop from within Indian society. Considerable progress in this respect is widely acknowledged. German development cooperation can mainly contribute to these movements by strengthening institutions and structures that promote pro-poor approaches and equity issues and build capacity among these institutions and organisations – be it governmental or, in case this is not feasible, non-governmental.

The **following general issues need to be** considered for future programmes in the field of Natural Resource Management in India:

- ***Pro poor institutional development*** is critical for achieving structural impact. The formation of self-help groups or village committees which can grow into formalised co-operative societies taking up agro-progressing has proven to be a workable approach (e.g. Comprehensive Tribal Development Programme (Wadi) Project). However as Gram Panchayats have become statutorily local government with the mandate and responsibility of local planning, development and resources they will be the most important vehicle (public resources and mandate) for local development in the future. Therefore creating independent and parallel village committees may weaken good local governance. A viable balance needs to be found that existing and well functioning village committees are neither politically hijacked by local politics nor that they weaken local government. One important way is to give the poor and women more voice in the Gram Panchayat and make the Panchayats more responsive to equity issues, e.g. by means of statutory participation, training and access to information. However, the persistent social realities in most Indian villages show that it will be along way to make the voices of the poor really heard.
- ***Capacity development is a strategic component*** in any development programme which aims at a sustainable reduction of poverty and improved livelihoods of the poor and disadvantaged groups. The assessments show that on **target group level** the low educational level together with a lack of proper know-how transfer mechanisms, and poorly working or absent community-based organisations impede production enhancement, productivity growth, and livelihood opportunities. Future capacity development programmes on target group level shall therefore focus on individual skill developments, NRM related know how, improved cultivation and husbandry practices, introduction of agro-processing, and strengthening of community based organisations.
- ***Strengthening the capacities of the local government institutions*** is a further prerequisite for achieving structural impacts. Only then can they effectively function as institution for local decision making and development. In addition, it is important to improve the capacities of the service providers for delivering quality services to the rural people.
- ***Funding mechanisms of the major NRM schemes*** require careful considerations. The planned Umbrella Programme between NABARD and German Development Cooperation proposes to develop innovative loan based programmes as the grants provided by the GoI will be not enough to finance the necessary expansion of the

various successful NRM programmes. It seems necessary to take a step by step approach, to develop a mix of financial instruments. Loans for conservation are hard to sell. However, loans for productive purpose (value chain) are taken and are already part of mixed mode investment schemes. Loan-based agricultural production could be matched with grant-based financing of conservation on public land. One might also consider combining loans with additional financial services like indexed insurance schemes.

- ***Socially differentiated funding mechanisms*** should be considered in order to avoid the exclusion of poor households but ensure at the same time that programme extensions can still be financed.
- ***Past programme monitoring was inadequate*** to measure poverty outcomes and impacts of the various programmes. Monitoring efforts of the major stakeholders centred on disbursements, physical outputs and economic outcomes but lacked a disaggregating by socio-economic groups. Future programme monitoring should include poverty outcomes and impacts of socio-economic groups, reflecting economic as well as non-economic dimensions of poverty. Only if we identify the most effective mechanisms that break up rigidities that perpetuate poverty we can expect to achieve a structural impact on poverty reduction.

Annex 1: Schedule and Interview Partners

| Date | Time | Programme Schedule | Place of Stay / Travel |
|--------------|---------|---|---|
| Fr 19/05 | 9:00 | Meeting GTZ NRM Office: Mr. Michael Glueck Clarification of objectives Preparation for Study | Delhi Delhi |
| Sa 20/05 | | Preparation for Study | Delhi |
| Su 21/05 | 11:00 | Meeting GTZ NRM Office: <ul style="list-style-type: none"> discussing questionnaire and approach | Travel to Mumbai (Evening) |
| Mo 22/05 | 11:00 | Meeting NABARD Headquarters: Dr Venkatesh Tagat (General Director), Mr Shankar Rao <ul style="list-style-type: none"> IGWSMP (KfW / GTZ: Maharashtra) Watershed Development Fund | Mumbai |
| Tue 23/05 | | Visit to NABARD Discussion among consultant team | Travel to Andhra Pradesh: Hyderabad (Evening) |
| Wed 24/05 | | Meeting NABARD Regional Office Hyderabad: Mr P.V.S Suryakumar, Deputy General Manager in charge of WSD <ul style="list-style-type: none"> IGWSMP-AP (KfW) | AP: Hyderabad |
| | 15:00 | Meeting WASSAN (NGO): Mr. A. Ravindra <ul style="list-style-type: none"> IGWSMP-AP (KfW) General discussion on WSD projects, have worked with PRI | |
| Thu 25/05 | 11:00 | Meeting Commissioner Rural Development, Government of Andhra Pradesh <ul style="list-style-type: none"> AP Rural Livelihood Project | AP: Hyderabad |
| Fr 26/05 | AM / PM | Field Visit – Watershed Gudimalkour Village in S. Naryanpir, Mandal of Nalgonda District (AP-RLP intervention site) <ul style="list-style-type: none"> Discussion with village groups (SHG, Labour Groups, VWC) Discussion with implementing NGO SWEET (through WASSAN) | AP: Hyderabad |
| Sa 27/05 | 8:30 | ICRISAT: Dr. Suhas P. Wani (Bio-Fuel), Principal Scientist <ul style="list-style-type: none"> Discussion on Bio fuel PPP | Travel to Maharashtra: Pune (Evening) |
| | 11:30 | Southern Online Ltd.: Mr. N. Satish Kumar, Managing Director of Southern Online Bio Technologies Ltd. <ul style="list-style-type: none"> Discussion on Bio fuel PPP | |
| Su 28/05 | 16:30 | Meeting with Mr Samuel Abraham, formerly employed by WOTR, now independent consultant <ul style="list-style-type: none"> <i>Maharashtra Promotion of Watershed Self help Project</i> APRLP | Pune |
| Mo 29/05 | 11:00 | NABARD Regional Office: Er. Jagdish Prasad Nema (General Manager) and relevant staff | Travel to Nasik in the evening |
| | 15:00 | BAIF: Mr. Girish Sohani, Executive Vice President <ul style="list-style-type: none"> <i>WADI project, KfW</i> | |
| Tue 30/05 | | Field Visit – Adivasi Development Programme, Maharashtra (ADPM), Thane and Nasik District Discussion with individual households | Travel to Training Centre WOTR, |

| | | | |
|--------------|-------|---|------------------------------|
| | | Accompanied by staff from MITRA : Mr B.V. Sherkar and Mr S.M. Wagle | Deharawadi |
| Wed 31/05 | | Field visit WSP : WOTR field site | Travel to Delhi (Evening) |
| Thu 01/06 | 10:30 | NABARD : Mr S.K. Mitra, Executive Director | Delhi |
| | 15:00 | KfW : Mr Nand Kishor Agrawal, Project Manager Rural Development and Watershed GTZ : Mr Michael Glück <ul style="list-style-type: none"> ➤ Discussion of impacts ➤ Feedback of consultancy team ➤ Discussion of next steps | |
| Fri 02/06 | | Discussion among consultancy team | Delhi |

Annex 2: Questionnaire

Open Questionnaire to be adapted depending on interviewee and intervention

General Poverty Assessment

Has NABARD or any other institution carried out any (participatory) poverty assessment in the concerned states, districts, villages? (Can we access the material?)

In case of absence of a poverty assessment how are the poor identified?

How do Poverty Assessments come into use for targeting, planning, implementation, monitoring of both, Indo-German and GoI / NGO projects/programmes?

Who are the different poor groups in the area and how is poverty manifested in their situation? (e.g. landless, female headed households, low castes,... / economic, social, protective, political, security related poverty aspects).

Stakeholders

Who does what? Who is involved at which level?

e.g. NABARD

PRI

Community Organizations / SHGs / Labour Groups / User Groups)

State Government

NGOs

What are the stakeholders' vested interests in their roles? How strong is their commitment to poverty reduction? What might influence their commitment to poverty reduction?

What sort of criteria (poverty / any ?) are used to select project / programme sites?

Can Panchayati Raj Institutions target the poor? Have they proven effective in targeting the poor, the very poor / landless / women?

Can Community Organizations (Watershed Committee / SHGs) target the poor? Have they proven effective in targeting the poor, the very poor / landless / women?

What pros and cons of NABARD's channeling investment lending through PRI instead of Community Organizations do you expect? What are your hypotheses in working through PRIs?

Target groups and other beneficiaries

Who are the target groups **and** other beneficiaries of the intervention (e.g. landless, female headed households, richer farmers, high castes, low castes,...? Who shall benefit of the action?

Who are the intermediate and final beneficiaries?

In which way are they competitive to each other?

Impact channels

What is the process by which the intervention influences the **target groups**, and the overall impact anticipated by each channel on the target groups short term and medium term? Quantify where possible. In which way do you think the poor or poorest even will benefit?

What might interfere with your intentions? What are the most prominent **risks** (technical, managerial, institutional and political) you see in attaining your set goals? How do you want to tackle them (**mitigating measures**)?

1. **Employment** – changes in formal and informal employment, as well as self-employment by owner operators of business.
 - Public formal
 - Private formal
 - Informal
2. **Prices** –covers changes in consumption and production prices, as well as wages, salaries and interest rates.
 - Production
 - Consumption
 - Wages
3. **Transfers and Taxes** –covers changes in taxes, welfare payments and subsidies, to and from public authorities; and private remittances and gifts
 - Taxes
 - Public Welfare subsidy
 - Private remittances
4. **Access** –covers changes in access to goods and services, provided both by the private and public sector.
 - Public services
 - Other
5. **Assets** –covers changes in the levels and rates of return of assets
 - physical assets (buildings, vehicles, tools etc)
 - natural resources (land, water, timber etc)
 - financial resources (savings, cash, stocks, bonds etc)
 - human assets (including skills)
 - social networks (family and friendship relations, links and support etc)
6. **Authority** –covers changes in
 - formal and informal power structures and process, which determine the rights, obligations, incentives and sanctions people face

Outcomes for all stakeholders concerning their capabilities (short term and medium term; direct and indirect)

1. Economic
2. Socio-cultural
3. Protective / security
4. Political
5. Human

How do you judge the intervention's contribution to reaching the MDGs ++

(if possible quantify and give source of information)

1. MDG 1: eradicate extreme poverty/hunger
2. MDG 2: universal primary education
3. MDG 3: gender equality empower women
4. MDG 4: reduce child mortality
5. MDG 5: improve maternal health
6. MDG 6: combat HIV/AIDS, malaria, etc
7. MDG 7: environmental sustainability
8. Plus 1: pro-poor growth
9. Plus 2: improved governance
10. Plus 3: global environmental security

Monitoring and Evaluation

- What M& E is in place?
- Who does what in M&E?
- Do you have baseline surveys?
- Are poverty impacts monitored?
- What indicators and methods do you consider as useful?
- Has monitoring data been used? For which purpose (to adapt approach, to write reports, to allocate funding)?

General aspects

What are the main challenges in future implementation, e.g.

- working through PRI / Community Organizations?
- working with loans / grants?
- Working on conservation / productivity enhancement / produce processing & marketing
- Others?

How do you think these changes will influence outcomes and impacts on the poor (e.g. through selection of project areas, activities,...)

What sort of **mitigating measures** or **attractive packages** do you think are possible or are already applied?

Annex 3: Poverty Statistics, India

Poverty headcount ratio in selected states in India

| Name of State | Headcount ratios: 50 th Round | Headcount ratios: 55 th Round |
|------------------|--|--|
| Andhra Pradesh | 29.2 | 26.2 |
| Assam | 35.4 | 35.5 |
| Bihar | 48.6 | 41.1 |
| Gujarat | 32.5 | 20.0 |
| Haryana | 17.0 | 5.7 |
| Himachal Pradesh | 17.1 | 9.8 |
| Jammu & Kashmir | 10.1 | 6.1 |
| Karnataka | 37.9 | 30.7 |
| Kerala | 19.5 | 10.0 |
| Madhya Pradesh | 36.6 | 31.3 |
| Maharashtra | 42.9 | 31.9 |
| Orissa | 43.5 | 43.0 |
| Punjab | 6.2 | 2.4 |
| Rajasthan | 23.0 | 17.3 |
| Tamil Nadu | 38.5 | 24.3 |
| Uttar Pradesh | 28.6 | 21.5 |
| West Bengal | 25.1 | 21.9 |

Poverty Headcount ratio per sub region in Andhra Pradesh

| Name of Sub Region | Headcount ratios: 50 th Round | Headcount ratios: 55 th Round |
|--------------------|--|--|
| Andhra Pradesh | 29.2 | 26.2 |
| Coastal | 31.3 | 23.1 |
| Northern | 26.1 | 26.1 |
| Western | 38.6 | 34.9 |
| Southern | 21.9 | 35.3 |

Poverty headcount ratio in Maharashtra

| Name of Sub Region | Headcount ratios: 50 th Round | Headcount ratios: 55 th Round |
|--------------------|--|--|
| Maharashtra | 42.9 | 32.0 |
| Coastal | 19.1 | 25.6 |
| Western | 29.7 | 19.3 |
| Northern | 53.3 | 43.1 |
| Central | 53.4 | 39.5 |
| Inland Eastern | 55.6 | 33.7 |
| Eastern | 55.2 | 46.1 |

HDI and GDI of selected states in India

| States / Union Territories | HDI Rural | | HDI Urban | | HDI Combined | | GDI | |
|----------------------------|------------|------------|------------|------------|--------------|------------|------------|------------|
| | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 |
| Andhra Pradesh | 0.262 | 0.344 | 0.425 | 0.473 | 0.298 | 0.377 | 0.744 | 0.801 |
| Arunachal Pradesh | 0.228 | 0.300 | 0.419 | 0.572 | 0.242 | 0.328 | 0.537 | 0.776 |
| Assam | 0.261 | 0.326 | 0.380 | 0.555 | 0.272 | 0.348 | 0.462 | 0.575 |
| Bihar | 0.220 | 0.286 | 0.378 | 0.460 | 0.237 | 0.308 | 0.471 | 0.469 |
| Goa | 0.422 | 0.534 | 0.517 | 0.658 | 0.445 | 0.575 | 0.785 | 0.775 |
| Gujarat | 0.315 | 0.380 | 0.458 | 0.532 | 0.360 | 0.431 | 0.723 | 0.714 |
| Haryana | 0.332 | 0.409 | 0.465 | 0.562 | 0.360 | 0.443 | 0.536 | 0.714 |
| Himachal Pradesh | 0.374 | 0.442 | 0.600 | 0.700 | 0.398 | 0.469 | 0.783 | 0.858 |
| Jammu & Kashmir | 0.301 | 0.364 | 0.468 | 0.575 | 0.337 | 0.402 | 0.584 | 0.740 |
| Karnataka | 0.295 | 0.367 | 0.489 | 0.523 | 0.346 | 0.412 | 0.707 | 0.753 |
| Kerala | 0.491 | 0.576 | 0.544 | 0.628 | 0.500 | 0.591 | 0.872 | 0.825 |

| States / Union Territories | HDI Rural | | HDI Urban | | HDI Combined | | GDI | |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 | Value 1981 | Value 1991 |
| Madhya Pradesh | 0.209 | 0.282 | 0.395 | 0.491 | 0.245 | 0.328 | 0.664 | 0.662 |
| Maharashtra | 0.306 | 0.403 | 0.489 | 0.548 | 0.363 | 0.452 | 0.740 | 0.793 |
| Manipur | 0.440 | 0.503 | 0.553 | 0.618 | 0.461 | 0.536 | 0.802 | 0.815 |
| Meghalaya | 0.293 | 0.332 | 0.442 | 0.624 | 0.317 | 0.365 | 0.799 | 0.807 |
| Mizoram | 0.381 | 0.464 | 0.558 | 0.648 | 0.411 | 0.548 | 0.502 | 0.770 |
| Nagaland | 0.295 | 0.442 | 0.519 | 0.633 | 0.328 | 0.486 | 0.783 | 0.729 |
| Orissa | 0.252 | 0.328 | 0.368 | 0.469 | 0.267 | 0.345 | 0.547 | 0.639 |
| Punjab | 0.386 | 0.447 | 0.494 | 0.566 | 0.411 | 0.475 | 0.688 | 0.710 |
| Rajasthan | 0.216 | 0.298 | 0.386 | 0.492 | 0.256 | 0.347 | 0.650 | 0.692 |
| Sikkim | 0.302 | 0.398 | 0.515 | 0.618 | 0.342 | 0.425 | 0.643 | 0.647 |
| Tamil Nadu | 0.289 | 0.421 | 0.445 | 0.560 | 0.343 | 0.466 | 0.710 | 0.813 |
| Tripura | 0.264 | 0.368 | 0.498 | 0.551 | 0.287 | 0.389 | 0.422 | 0.531 |
| Uttar Pradesh | 0.227 | 0.284 | 0.398 | 0.444 | 0.255 | 0.314 | 0.447 | 0.520 |
| West Bengal | 0.264 | 0.370 | 0.427 | 0.511 | 0.305 | 0.404 | 0.556 | 0.631 |
| Andaman & Nicobar | 0.335 | 0.528 | 0.575 | 0.653 | 0.394 | 0.574 | 0.645 | 0.857 |
| Chandigarh | 0.437 | 0.501 | 0.565 | 0.694 | 0.550 | 0.674 | 0.719 | 0.764 |
| Dadra & Nagar Haveli | 0.269 | 0.310 | 0.268 | 0.519 | 0.276 | 0.361 | 0.888 | 0.832 |
| Daman & Diu | 0.409 | 0.492 | 0.518 | 0.629 | 0.438 | 0.544 | 0.760 | 0.714 |
| Delhi | 0.439 | 0.530 | 0.531 | 0.635 | 0.495 | 0.624 | 0.595 | 0.690 |
| Lakshadweep | 0.395 | 0.520 | 0.370 | 0.545 | 0.434 | 0.532 | 0.688 | 0.680 |
| Pondicherry | 0.338 | 0.556 | 0.443 | 0.591 | 0.386 | 0.571 | 0.753 | 0.783 |
| All India | 0.263 | 0.340 | 0.442 | 0.511 | 0.302 | 0.381 | 0.620 | 0.676 |

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