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Informal progress review

**Creation of Industrial Zones with Access to Energy and  
Business Development Services (EnDev)-  
Program for Sustainable Economic Development (PSED),  
Ghana**

Report on the major findings and recommendations of the mission from September,  
23<sup>rd</sup> to October, 5<sup>th</sup> 2007

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## Glossary

BA	Brong Ahafo
BAC	Business Advisory Centre
BDS	Business Development Services
BMZ	Ministry for Economic Co-Operation and Development (Germany)
DGIS	Directorate-General for International Cooperation (Netherlands)
EnDev	Energising Development
FEF	Free Energy Foundation
GHC	New Ghana Cedi, exchange rate 1,00 € = 1,38 GHC (October 2007)
GTZ	Gesellschaft für Technische Zusammenarbeit
LRED	Local and regional economic development
MOAP	Market-oriented Agricultural Programme (GTZ)
MoE	Ministry of Energy (Ghana)
MoTI	Ministry of Trade and Industry (Ghana)
MoU	Memorandum of Understanding
NED	Northern Electrification Department (subsidiary of VRA)
PPP	Public Private Partnership
PREMA	Profitable Environmental Management
RuTIPP	Rural Trade and Industries Promotion Project (GTZ)
PSED	Program for Sustainable Economic Development (GTZ)
MSME	Micro, Small and Medium Enterprises
SMIA	Sustainable Management of Industrial Areas
SPEED	Support Program for Enterprise Empowerment and Development (GTZ)
VRA	Volta River Authority
Wp	watt peak (capacity of solar panels)

## 1. Executive summary

This report presents the results and recommendations of a preliminary progress review of the component “Creation of Industrial Zones with Access to Energy and Business Development Services (EnDev)” – Program for Sustainable Economic Development (PSED), Ghana. The mission was conducted by Johanna Klein and Michael Fink from September, 23rd to October, 5th 2007.

Progress of the project component is behind schedule. To date, only 5 MSME have relocated (after conclusion of the mission, this number has risen to 10) to the first industrial zone established under EnDev Ghana, giving a preliminary figure of 223 people reached. Implementation of four additional zones is on-going with varying progress. An additional 4 identified zones have been postponed due to different bottlenecks met. See section 3.2 for more details.

Two core causes for delays have been identified: The failure of the Volta River Authority co-financing to materialise and an unrealistic role foreseen for local Ghanaian institutions, especially the District Assemblies, in project planning. On the first issue, GTZ is in negotiations with the Ministry of Energy, which has indicated that it is willing to step in and to contribute the Ghanaian co-financing obligation foreseen. On the second issue, it has been realised that for District Assemblies it is difficult to meet financial and managerial obligations they had agreed to in early stages of project formation. This especially refers to the provision and maintenance of all non-electricity infrastructures necessary for the establishment of the industrial zones, such as roads, water and waste management facilities. Here, solutions have to be found to tackle this problem for those activities already initiated; in future the cost sharing arrangement in developing industrial zones should be redesigned. See section 4 for more details.

The project team also found that there is a scope for increased use of synergies within the components of the PSED as well as with other programmes of GTZ and the German Development Cooperation and made some recommendations on this issue. See section 4.2 for more details.

In addition to facilitating access to energy for MSME, the components targets and indicators also call for improved environmental management and capacity development in the area of eco-efficiency, especially through training and setting up of specialised BDS providers. The mission team proposes this as one area where cooperation with other components of the PSED would be especially effective. In addition, on-going awareness raising activities so far directly undertaken by the component staff should be linked more to the establishment and building of BDS and Eco- Efficiency service providers. See section 4.3 for more details.

The EnDev counting methodology was introduced and will replace the estimation method used so far. It was agreed that only MSME that had actually moved to an industrial zones and were newly connected to improved energy services would be counted in future progress reports. See section 3.2.5 for more details.

The mission team recommends to immediately undertake two activities:

- Prepare detailed cost plans for all industrial zones with separate sections on one time investment costs and on recurring maintenance costs. The cost plans should not be limited to the costs of establishing energy access, but should cover all aspects of setting up and maintaining the industrial zones, i.e. have to include land costs, roads, water, waste and other related infrastructure. Cost plans are a necessary basis to re-negotiate task sharing between all stakeholders involved in implementation. On the GTZ side, the scope for renegotiations is limited, as financial contribution has been limited to electricity

infrastructure and this should only be changed in exceptional cases. However, detailed cost plans can help GTZ to facilitate the negotiation between the MSME Associations and Assemblies in the provision of other infrastructure.)

- Prepare a detailed report and presentation on project implementation to date and on lessons learnt in the process. This will be useful to inform Ghanaian stakeholders such as the Ministry of Trade and Industry planning to replicate the approach in other districts. In addition, it gives important feedback to EnDev and overall GTZ knowledge management on project planning, as the apparent shortcomings in project planning should be avoided in future projects.

The mission team was asked by the headquarter EnDev team to outline possible options for future implementation of EnDev Ghana. These options are presented here without giving a recommendation on the future approach to take. Options include:

1. Implement component as planned. Here the mission team recommends limiting the scope on the 5 zones where activities have already been initiated. The remaining component funds, as well as possible co-financing contributions from others, should be used to improve the non-energy aspects of the industrial zones, such as necessary infrastructure and especially eco-efficiency and health and safety issues. Within this option, several non-electricity types of improved access to modern energy services could be included in the scope of activities to increase the number of people reached within the existing approach. PSED management has however expressed a preference only to widen the scope and include non-electricity types of modern energy services into the activities of the EnDev component if there is a clear perspective for an extension / upscaling beyond the current planning and if it also fits into the conceptual approach of the PSED. See section 4.5 for more details on potential technologies and approaches that could be included.
2. Upscaling / extension of project: This should only be considered if component progress improves over the next 9-12 months. The existing approach has revealed several shortcomings, which should be avoided in future. The Ministry of Trade and Industry's move to develop a new industrial policy, which will most likely include industrial zones as one important instrument, could offer a new and improved entry point for an EnDev intervention. Any upscaling or replanning should as well carefully consider the inclusion of non-electricity energy sources and approaches, as well as widening the geographical scope beyond Brong-Ahafo.

## 2. Tasks for the preliminary progress review mission

PSED management and EnDev had jointly agreed to this mission to address concerns about delays in implementation and to develop a sound basis for deciding on a possible upscaling / extension of EnDev Ghana.

Objective of the mission was to conduct a preliminary project progress review (PPR) to assess progress of the component, appropriateness of original planning, discuss appropriate counting methodologies, assess needs and potentials for replanning, and to assess potentials for improved integration of eco and energy efficiency aspects. Special attention was paid to the aspects of Ghanaian co-financing and expected district contributions. Contingency strategies should be developed together with GTZ project management on the assumption that VRA / MoE as well as district contributions will be further delayed or fail to materialise. Additionally, potentials for alternative interventions and/or scaling up of current activities were explored.

To meet the mission's objectives, the following activities were foreseen:

1. **Overall assessment of component progress, evaluation of impacts achieved to date** (implementation status, progress, results chains, synergies within PSED, with other GTZ programs and with activities of other development partners)
2. **Assessment of appropriateness of original concept of the EnDev intervention:** Overall concept, Ghanaian co-financing aspect; district planning aspect
3. **Counting**
4. **Replanning I: Alternative approaches / courses of action within existing project planning**
5. **Replanning II: Identification of alternative interventions** (cooperation partners, technologies, target groups)
6. Sustainable industrial area development and integration of **eco-efficiency and energy efficiency** aspects

The mission was planned to be conducted in two main parts. The first part has been conducted from September 23<sup>rd</sup> to October 5<sup>th</sup> by Johanna Klein and Michael Fink and included on-site visits in the project region and meetings / discussions in Accra. A detailed programme is attached as appendix 1.

The second part of the mission (which will involve Frank van Bussel and Carsten Hellpap or Florian Ziegler) has been postponed at least until December due to two reasons. A mission free period in Ghana from September 15<sup>th</sup> to November 30<sup>th</sup> did not allow visiting the energy and industry ministries in Accra, which are important stakeholders for the implementation of the EnDev component. Additionally, the status of the PPP with Philips had not matured sufficiently to plan with it.

### 3. Status of component activities

This section of the report gives an overview on the integration of the component into the PSED and the implementation status of the component. It draws on component planning documents and extended discussions with component staff.

The mission team recommends that EnDev component staff should produce a concise presentation on component progress, bottlenecks faced and lessons learnt, as little documentation on such matters had been produced so far beyond standard EnDev monitoring procedures.

#### 3.1. Integration into the Sustainable Economic Development Programme

The development measure “Creation of Industrial Zones with Access to Energy and Business Development Services” is one of five components of the part of the Sustainable Economic Development Programme Ghana. The component is 100% co-financed by DGIS under the Energising Development (EnDev) framework. However, only two of the three indicators (no. 1 and 3) are directly related to the quantitatively oriented objectives of DGIS:

- *Indicator 1: At least 4 new industrial zones with access to electricity have been established in selected district capitals in Brong Ahafo (BA).*
- *Indicator 2: At least 12 BDS providers have been established in these industrial zones, of which at least 4 offer services towards improving on eco-efficiency.*
- *Indicator 3: At least 120.000 beneficiaries of the industrial zones (entrepreneurs, employees and their families) have new or significantly improved access to energy.*

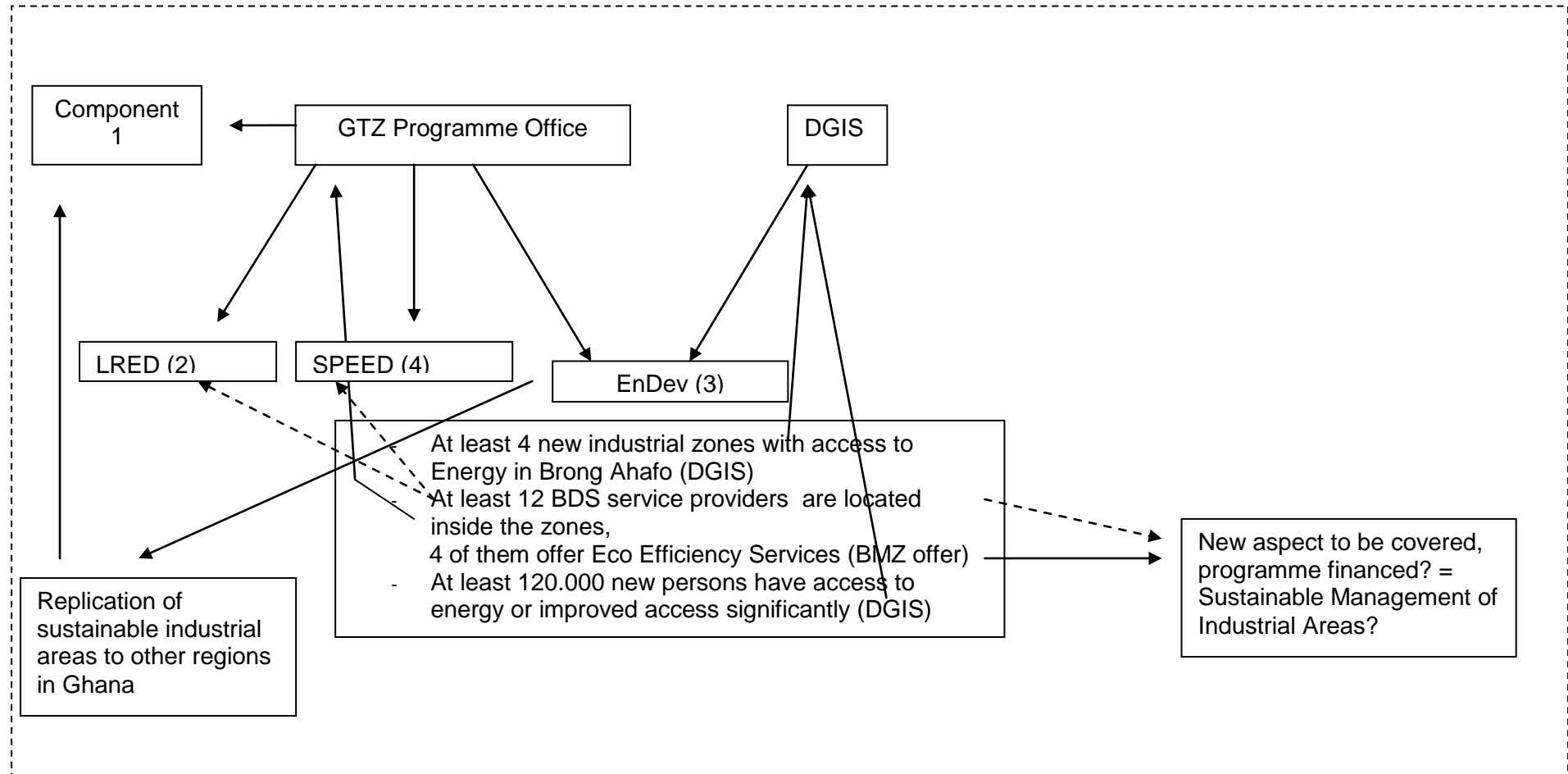
The mission found that there are potentials for increased cooperation between the components of the Sustainable Economic Development Programme. So far, the components see themselves in their tradition of being formerly “independent” projects. Staff in the several components concentrates predominantly on achieving their own objectives / indicators, leading to difficulties in reaching the full potential of synergies in activity planning and implementation. The process of programme formation has not yet been fully completed.

For example, possible synergies within the programme have not been tackled when developing the new work plan for LRED. The LRED scoping exercise considered component objectives and criteria in determining future activity areas; potential synergies with other components apparently were not included as a criterion in decision making. The EnDev component, on the other hand, presents itself as “GTZ energy project”, for example by using stationary with a project title “GTZ-DGIS Energy for Productive Uses Project” printed on it.

The mission team sees synergies and potentials for cooperation with other components of the programme mainly for component 2 (LRED, Local and regional economic development) and component 4 (SPEED, Support Program for Enterprise Empowerment and Development). This cooperation will be of special importance to be able to fulfil indicator 2, as this indicator cannot be seen as part of EnDev’s core business.

Recommendations regarding improved cooperation between the different program components are included in section 4.2.

# Integration of Component 3 into the overall GTZ programme





### **3.2. Key findings on component implementation status**

As transparently reported under EnDev monitoring, component implementation is behind schedule. Setting up an industrial zone has advanced in Techiman, while preparations, including procurement of necessary equipment, are underway for 4 additional district towns, with varying degrees of progress. Another four districts have been postponed due to obstacles met. Section 3.2.1 gives an overview on implementation status district by district.

**Co-financing:** The original planning of EnDev Ghana had foreseen a contribution of VRA accounting for 60% of the investment cost for electricity infrastructure. This verbal agreement could not materialise due to the rapidly deteriorating financial situation of VRA caused by the energy crisis. Following consultations with MoE, the partner contribution was reviewed and lowered to 40%. This change has been agreed to by EnDev management. VRA has since expressed that they do not see themselves in a position to contribute to the development measure financially due to their difficult financial situation. To cover the resulting gap, GTZ has entered into negotiations with the Ghanaian Ministry of Energy (MoE), which is in principle ready to partially take over the co-financing obligation from VRA. However, MoE at this time is not ready to disclose the amount they will be able to contribute as budget preparation is still ongoing. According to PSED management, it would be counterproductive to put MoE under further pressure on this issue. It is expected that the terms of MoE's financial contribution will be known by the end of November 2007. In the meantime, Government of Ghana confirmed its interest in cooperating with GTZ on energy for productive uses (# 483 in Ghana 2008 budget statement). MoE funds could however only be used for electricity infrastructure, but other infrastructure or BDS activities in the industrial zones.

**Cost sharing on industrial zone development:** In EnDev planning, it was agreed that EnDev would (together with co-financing partner VRA) cover costs for investment in electricity-related infrastructure, while District Assemblies would cover all other infrastructure investment necessary to set up the industrial zones. This includes access roads, water and waste management facilities. Maintenance is supposed to be undertaken by VRA for the electricity aspects, and District Assemblies as well as MSME associations for all other infrastructure. No standardised responsibility was fixed for the issue of land procurement and tenure. Depending on location, the land for the industrial zone has been leased by MSME associations or by the District Assembly. This cost-sharing set-up is reconfirmed in a draft Letter of Agreement between Ministry of Energy and GTZ which is being negotiated as a basis for MoE taking over the co-financing from VRA (see above). During implementation, it has become evident that especially the District Assemblies could not be able to fulfil their obligations under this original cost sharing agreement. See section 3.2.3 for more details.

Implementation status as measured against BMZ and EnDev indicators is discussed in more detail in sections 3.2.4 and 3.2.5 respectively.

A general problem exists for EnDev Ghana in dealing with the framework conditions of the energy sector in Ghana. Currently, the on-going energy sector reform is stalling, with little progress being made to unbundling and reforming of electricity sector institutions. Electricity tariffs are highly subsidised and continue to be far below cost-covering levels even after a tariff increase by 35-65% in early November (for more details on the Ghanaian energy sector, please refer to appendix 3). This poses serious problems in terms of EnDev sustainability indicators. Generally, grid based EnDev interventions should only be started where tariffs in force are already cost covering. As this general rule has not been considered in project planning, close monitoring of electricity tariffs and ongoing sector reform should be undertaken by EnDev Ghana staff in coordination with other donors (donor group). Thanks to a recently approved Worldbank energy sector assistance program (GEDAP) there are hopes,

that long pending steps of sector reform (management contract for ECG/VRA, tariff issues) will soon be tackled.

Overall, the mission team and EnDev component staff together identified a range of **bottlenecks** which are responsible for the delayed implementation status:

- Personnel resources had been insufficient, recently increased (Marco Hüls started as JFK on 01.08.2007).
- Complicated and time consuming GTZ procurement procedures mean that even in locations where all preparations have been made for industrial zone development, progress is delayed. Difficult procedure gives incentive to lump several zones into one procurement, which however creates a situation where tendering went ahead for zones which are not yet fully prepared to receive the electricity infrastructure (esp. Sunyani, Bechem and one of the two zones in Goaso).
- No MoU was signed with VRA and/or the MoE at project planning / inception stage.
- Ministry of Energy has promised some co-financing for the 2008 budget, amount not yet disclosed. GTZ Ghana advises against further pressure on MoE. No contributions from other Ghanaian sources can be expected in the short or medium term.
- High-standard road and water infrastructure for an industrial zone typically costs more than a full yearly budget for a whole district; initial cost-sharing arrangement therefore has proven to be unrealistic as District Assemblies are financially unable to meet promised contributions. If standards are reduced (e.g. dirt roads, only basic sanitation, etc.), it is not unrealistic if sufficient commitment and prioritisation are present at the Districts. (Bechem has moved beyond all expectations to clear the site and construct the access road, once the advert for the procurement of the electrical items appeared in the dailies)
- Existing industrial zones need to be upgraded from eco-efficiency (environmental hazards, occupational health and safety etc.) perspective.
- Land ownership/ land acquisition issues prove to be very difficult and intransparent to manage; unexpected setbacks occur (see section 3.2.1 below).

Faced with these bottlenecks, component staff has reacted in several ways with the aim of avoiding further delays:

- EnDev component has resorted to only expecting minimal contributions from districts (clearing of sites and provision of non-surfaced roads).
- Realisation that EnDev should not contribute financially to the provision of infrastructure for which districts are responsible under current task-sharing agreements. Direct financial assistance towards establishment of infrastructure for which districts are responsible beyond current budget of EnDev component; would send wrong message as would reward inactiveness of districts. Approach however recognised as unsustainable and not fit to future expansion / replication.
- RCC with support from Regional Minister now pressures District Assemblies to earmark funds in District Assembly Common Fund supplementary budgets for development of the industrial zones. The amounts made available however are still far too small to cover initially anticipated contribution.
- Roads can potentially be financed from Urban Roads department in the districts which are designated as Municipal Assemblies. Techiman and Sunyani already are Municipal Assemblies, Goaso and Berekum will attain this status by January 2008. It is however unclear how long it will take until urban roads departments are operational in these districts.
- Assist District Assemblies to tap additional financial sources, including the KfW district assistance facility and the Private Sector Development Strategy (PSDS) Pooled Fund.
- Widening the scope of the component to include additional economic activities: Component interventions so far mainly target automotive MSME; further potentials are wood-related and agro processing activities. Wood sector offers potential to cooperate with SPEED, agro processing offers potential to cooperate with MOAP.

### **3.2.1. Implementation status and major findings in the selected industrial zones**

In 2006 9 out of 19 district capitals in Brong Ahafo were selected for component implementation in a consultative, objective way. This is documented in an extensive report (see report "Local Economic Development"). The remaining 10 district towns were assessed to be too small and have too little industrial activity to make development of an industrial zone feasible.

Action plans have been developed on 6 out of the 9 selected districts (Atebubu, Bechem, Berekum, Kintampo, Sunyani, and Techiman). The workshop in Goaso failed to come up with task sharing and timeline, the workshop minutes are therefore not counted as action plan. No documents have been prepared for Wenchi and Kenyasi for the lack of suitable land.

In early 2007, the component decided to concentrate on the development of industrial zones in 5 districts: Techiman, Goaso, Berekum, Sunyani, and Bechem. The zone in Techiman is in an advanced stage; for the other 4 districts, procurement of equipment is ongoing. Progress in these zones is discussed in detail further below in this section.

The remaining 4 selected zones in Kintampo, Wenchi, Kenyasi and Atebubu face a variety of severe problems that reduced prospects for implementation to an extent that the component decided to separate them from the more promising ones. The main problems faced in these four districts are:

- Wenchi: too small industrial area selected, identification of new site is in progress. DA is dialoguing with Traditional Authorities.
- Kintampo: A new site has been proposed, as the originally selected site fell within another district. There are serious technical problems. Kintampo is connected to the national grid via shield wire system, which makes three phase electricity connections difficult and expensive. Cost estimation by VRA could not be finalised, as international consultant's opinion is needed.
- Atebubu: Land for the development of an industrial zone is available, but District Assembly has no funds to survey and provide the necessary infrastructure. Proper land has been acquired by DA and limited electricity access installed on the site. Size of land is unclear. Commitment of DA is considered low by EnDev Ghana team.
- Kenyasi: District Assembly is unable to provide land due to traditional land ownership issues. The traditional chiefs are speculating on higher prices for residential land use and are therefore reluctant to sell the land to interested MSME associations. Since mining company Newmont is located in this area, there is a potential for a PPP with Newmont and IFC if there should be progress concerning this site.

As problems in these four districts are severe, the mission team advises not to automatically proceed with developing these zones if additional funds become available, e.g. from MoE co-financing. Instead, a new selection exercise should be undertaken, looking beyond Brong Ahafo region. For more detailed recommendations, please refer to section 4.7.2.

Current implementation status in the 5 industrial zones already in progress is as follows:

#### **Techiman:**

Techiman has the only industrial zone where electricity infrastructure (transformer and distribution network) has already been installed. To make the zone fully operational, the district assembly still needs to provide infrastructure such as improved internal access roads including a culvert at the junction with the main road, as well as water and waste

management facilities. (Meanwhile, the culverts and the main access roads have been constructed.)

The land of the zone has been purchased by the EUREKA Garages Association (EGASS) in Techiman. Each member that is planning to relocate to the zone or plans to set up a new company there needed to pay GHC 200 for the plot and GHC 100 as an initial membership fee. 5 MSME have actually moved to the zone (this number has risen to 10 after conclusion of the mission), 350-400 more acquired land and are expected to move till end of December. The zone is located around 7 km from the city centre, which is rather remote for customers from the town, but convenient for trucks crossing Ghana on the main North-South highway and therefore attractive for automotive services and repairs.

The progress of MSMEs moving to the industrial zone is still slow due to two main reasons: businesses are afraid of losing business, if they do not enter the zone all at the same time (competitive advantage for the companies still located in town). Secondly, there is a financial constraint to cover actual moving costs, including setting up new structures in the zone. Most of the companies that already have purchased a plot now lack sufficient financial capacity to set-up new workshops inside the zone. Access to financing is seen as the main challenge for the industrial zones in Techiman. This was also stressed by the representative of BAC. He stated that MSME expressed their priority training needs to be improving access to finance, although missing management skills seem to be the main constraint for businesses in their daily operations and planning.

In Techiman besides the BAC, the rural technology training centre provides technical training for the companies inside the region. One future potential for the Techiman industrial zone would be to set up a PPP with an automotive company.

#### **Berekum:**

The industrial site in Berekum consists of two parts, the “old” and the “new” site. There is an existing area (old zone) that is already under operation, which will be expanded with the support of EnDev (new zone). 120 MSME are currently located inside the industrial area that is located outside of the town centre. The site cannot be seen from the main road (signage would be an important factor) and the access road is not paved and in a relatively bad condition. Internal roads are in a bad condition as well. The district assembly recently upgraded some streets inside the industrial area, however due to the heavy rains large parts of the industrial zone are not accessible by car, which restricts the competitiveness of the industries. The garage association has paid commitment fees for two bore holes; however the DA only installed one. They are confident that the second one will be installed as soon as GTZ provides energy to the industrial area. Mixed messages were sent about the connection of the zone to the local waste management system. While the district assembly confirmed that a lorry was picking up the waste of the industrial area, the association complained that waste is not being picked up due to the fact that the location of the industrial estate is too far from the final waste disposal site of Berekum.

The site was acquired by the garage association in Berekum in 1986 for a total of 350,000 Cedis. Since 2002 some of Berekum’s garages have moved to the “old site”. The area is connected to electricity, but three-phase connections are not readily available. There is one borehole on the site. Both electricity and water are however stated as not having sufficient capacity even for the MSME already present on site. There is still a large number of garages located inside the town. They are currently operating on insecure land tenure and intend to move to the site as soon as the EnDev electricity connections are installed at the new site.

Although only a small share of plots at the old site is physically occupied, few plots are available for additional MSMEs willing to move to the industrial zone. This is because members of the garages association, who have bought plots at the old zone but decided to remain in town, are unwilling to sell their plots, which serve as an insurance in case moving to the zone should be enforced.

Several MSME have already moved to the new site in anticipation of electricity access soon to be set up there. As expectations of this target group have been raised, it is advisable to prioritise the installation of electricity access infrastructure in Berekum compared to the other districts. At the same time, it will be necessary to pay increased attention to management

and maintenance of the zone, as environmental as well as occupational health and safety issues are not handled any better than in entirely unplanned areas.

#### **Sunyani:**

In Sunyani, different associations are interested in setting up industrial areas. EnDev is currently cooperating with the garages association, which has identified a potential site and has the support of the Municipal Assembly. This support does however not translate into real actions of the Municipal Assembly. In fact, in Sunyani the MA's commitment to the project is extremely low in comparison with all other districts.

The zone faces severe land acquisition problems. The process surveying, acquisition and clearing of the proposed industrial site is currently stopped as farmers are still occupying the land. While the farmers claim that they rely on the land for their livelihood and have no alternatives, the District Assembly is technically entitled to take the land, but would have to negotiate compensation for the crops. At the time of mission, the conflict was heated with farmers threatening to kill any surveyors or other officials coming to the site.

As an additional target group, tailors have expressed interest to develop an industrial zone in the town centre. Support by EnDev for this site should be considered if the tailors association manages to develop a concrete plan on how to develop the site. The main problem here is that the tailors association is not as well organized as the garage association.

#### **Bechem:**

The site in Bechem is not yet cleared, because valuation of crops for compensation is still ongoing. Additionally the district assembly is waiting for the confirmation of the Ghana Highway Authority to set up the access road to the industrial zone. If the Ghana Highway Authority and/or urban roads department does not support the district assembly, no sufficient funds for setting up the access road will be available. (As of December 2007, the access road has been cleared and constructed to sub-grade level, the site has also been cleared and compensation issues have largely been resolved by the Assembly. Rapid development of this industrial zones is now mainly slowed down GTZ procurement procedures.)

However, Bechem is the district assembly with the highest commitment for the project. The industrial zone is given high priority by all high-level district officials. Ownership of the District Assembly is further strengthened by the fact that the land was acquired by the DA. Application processes for plots in the industrial zone is managed by the DA in close cooperation with the involved business associations (garages and carpenters).

Thanks to the high commitment of all involved parties, Bechem is expected to be ready for installation of electricity equipment before the end of 2007.

#### **Goaso:**

In Goaso, EnDev is currently considering two different sites for development of an industrial zone. One site has already been cleared, and few firms are operating there with limited access to electricity. This land is owned by the garages association. For this zone, installation of electricity equipment is ongoing.

For the second zone, the land has been acquired by the District Assembly and different industries (garages, wood processing, palm oil processing) are expected to be relocated. Land acquisition is however still unclear, as a former sawmill owner claims to own part of the land. The land is partly still occupied by farmers. Compensation is being discussed between the MSME associations and the concerned farmers.

Cooperation potential with the rural technology service centre and the rural enterprises project (financed by African Development Bank/ IFAD) exists in Goaso.

#### **General findings on the development of industrial zones:**

- EnDev and its partners face difficulties in finding suitable, attractive sites for the industrial zones. All the zones are located quite far from the city centre (up to 8 km) as District Assemblies have an interest in removing land uses that are considered a nuisance from built-up areas. This makes the selected sites suitable e.g. for MSME from the automotive

sector, but not for sectors that are relying on close consumer interaction. Due to this, as well as to the fact that the garages associations seem to be relatively well organized, the zones are all dominated by the automotive sector. This is not in line with district and regional priorities, which consistently state the wood and agro-processing sectors as the intended backbone of industrial development in Brong Ahafo.

- The district assemblies face extensive problems to provide the promised investment in the infrastructure of the industrial zones. Provision of high-standard infrastructure in one zone cost more than an annual budget for a whole district. Therefore the component staff decided to start the procurement and setting up of the electricity access of the industrial zones, as soon as a minimal commitment of the district assemblies can be foreseen. This led to the start of the procurement process also for sites that are still not cleared and can therefore not be provided with energy access yet. The problems in providing additional infrastructure can be partly solved by cutting down standards, as it was done in the five zones currently being realised. The district assemblies and automotive association in Berekum, Sunyani, Goaso and Bechem have been given a deadline until the 15th of October to clear the sites. It is seen as problematic by the mission team that tendering already started before these zones were ready for installation.
- From this experience, a separate procurement process for each zone should be considered, even if this leads to increased administrative and management costs.

### **3.2.2. Awareness raising on HIV and Environmental Issues**

Awareness raising activities on HIV and environmental issues are foreseen in the activity planning of the component. Currently, component staff is implementing these activities through organising informative meetings and short awareness raising trainings for the MSME associations. Pilot cases for this awareness raising training are Techiman and Berekum, since these are the two zones that are currently already operating.

Training on environmental issues tackle very basic issues, such as the explanation of the term environment, the difference between natural and built up environment, as well as the advantages on undertaking an Environmental Impact Assessment following the criteria of the Environmental Protection Agency. The awareness raising trainings are of great importance as a precondition for any eco- efficiency services that could possibly provided inside the industrial areas. Currently, MSME do not know anything on negative environmental effects of industrial processes (oil spills etc.). Easy concepts, such as the concept of waste water as an output of the production processes, are not known. Occupational Health and Safety is an additional topic where awareness raising could lead to big impacts, since working and safety conditions are severe in some of the industrial areas.

Implementing awareness raising activities exclusively through component staff is a drain on personnel resources and not sustainable in the long term. The mission team therefore recommends integrating the awareness raising activities into the SMIA approach. This will also contribute more directly to achieving indicator 2, which calls for establishment of BDS providers in the area of eco-efficiency.

### **3.2.3. Responsibilities and tasks of District Assemblies, MSME Associations and other Ghanaian institutions**

Initial arrangements for task sharing on industrial zone development between different stakeholders in project implementation were agreed upon at a kick-off workshop on “Local Economic Development” in Sunyani on 16.03.2006 (still under RuTIPP at the time). In EnDev planning, it was agreed that EnDev would (together with co-financing partner VRA) cover costs for investment in electricity-related infrastructure, while District Assemblies would cover all other infrastructure investment necessary to set up the industrial zones. This includes access roads, water and waste management facilities. Maintenance is supposed to be

undertaken by VRA for the electricity aspects, and District Assemblies as well as MSME associations for all other infrastructure. No standardised responsibility was fixed for the issue of land acquisition. Depending on location, the land for the industrial zone has been leased by MSME associations or by the District Assembly.

This task-sharing set-up is reconfirmed in a draft Letter of Agreement between Ministry of Energy and GTZ which is being negotiated as a basis for MoE taking over the co-financing from VRA. Signing of this MoU is however still pending. With the district assemblies, apart from the action plans, no agreements have been signed between the partners to fix these commitments.

In the course of project implementation, it has since emerged that the District Assemblies face severe difficulties to meet their commitments under this task-sharing agreement.

Obligations assumed by the districts during project planning would incur investments often far beyond their annual budgets, only for the provision of infrastructure in the industrial zones.

Additionally, the benefit of moving potentially dangerous industrial activities out of the town centre has proven to be a quite weak incentive for the districts to push the development of industrial zones.

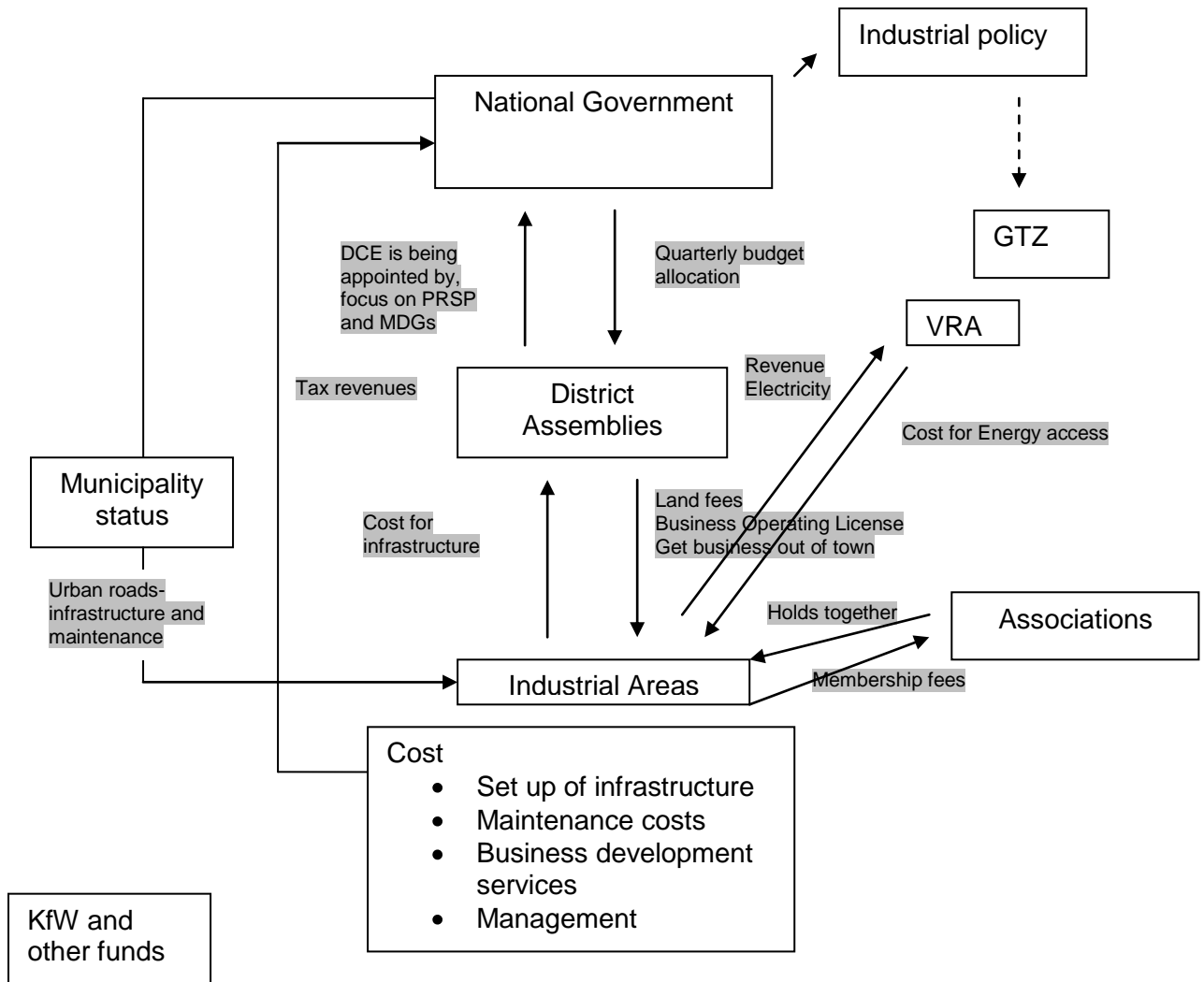
The Ghanaian fiscal system unfortunately offers only very weak direct economic incentives to District Assemblies to invest in industrial zones. Fiscal benefits are negligible, as most taxes are levied on national level. The scope and amount of local fees to be raised by the districts is too limited to even sustain the maintenance of the industrial zones.<sup>1</sup>

On the political side, according to interviews during the mission, many district administrations opt for more directly visible social investment rather than private infrastructure development. Health and education investments are often prioritised over economic development.

The main cost factors of the industrial zones are the access roads and the roads inside the zone. One possible way out is the fact that four out of the five districts either are already designated as Municipal (i.e. urbanised) Areas (Techiman and Sunyani) or will be by January 2008 (Goaso and Berekum). Municipal Areas are entitled to benefit from a fund for urban road development, which means that roads for the industrial areas could possibly be financed from that source. This urban roads fund is however not administered directly by the districts but organised centrally from Accra. Therefore even in the districts where the Department of Urban Roads is present, a lot of coordination and consultation efforts between districts and Urban Roads are involved. Furthermore it is unclear, how long Urban Roads Department will need to become operational in the newly designated municipalities of Berekum and Goaso.

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<sup>1</sup> KfW and the GTZ decentralisation programme have made similar experiences with the construction of markets in district capitals. The experiences and lessons learnt regarding the maintenance of the markets are well documented in a recent study. This could serve as a starting point for considerations on the industrial zones to avoid making the same mistakes.





### 3.2.4. Implementation status regarding BMZ indicators

This section assesses component implementation status to date and prospects for meeting the targets with a view on the indicators defined in the BMZ offer. Three indicators have been defined for the EnDev component. While indicators 1 and 3 are related to the overall EnDev objective of increasing access to modern energy services, indicator 2 is tackling issues related to the sustainability of setting up the industrial areas.

Indicator	Implementation status and prospects for meeting target
<p>Indicator 1: At least 4 new industrial zones with access to electricity have been established in selected district capitals in Brong Ahafo (BA).</p>	<p>Industrial zone in Techiman established, but insufficiently developed in terms of infrastructure. Only 5 MSME have actually relocated so far. (10 since conclusion of mission)</p> <p>Berekum seems to be on track, prospects for realisation of other industrial zones uncertain.</p>
<p>Indicator 2: At least 12 BDS providers have been established in these industrial zones, of which at least 4 offer services towards improving on eco-efficiency.</p>	<p>No activities directly aimed at sustainable establishment of BDS providers. Awareness raising activities take place and are a necessary precondition to raise awareness for environmental problems.</p> <p>To ensure that indicator 2 can be fulfilled a more integrated approach towards sustainable management of the industrial zones as well as on improvement of processes inside MSMEs should be developed.</p> <p>Fulfilment of this indicator cannot be sole responsibility of the EnDev component, as it is not strictly energy related. Significant support from component 2 (LRED) and component 4 (SPEED) is recommended.</p>
<p>Indicator 3: At least 120.000 beneficiaries of the industrial zones (entrepreneurs, employees and their families) have new or significantly improved access to energy.</p>	<p>To date, approximately 60 beneficiaries as defined in indicator have new or improved access to energy; number increases to 223 beneficiaries if EnDev counting method is used. Target of 120.000 is unrealistic.</p> <p>Mission team recommends using upcoming Änderungsangebot to reduce target number to 22,600 as already communicated towards DGIS in EnDev monitoring.</p> <p>Indicator 1 specifically refers to electricity, while indicator 3 allows all types of improved energy access. The mission team recommends taking this up by including additional non-electricity types of improved energy services into the component activities (see section 4.5).</p>



### **3.2.5. Implementation status regarding EnDev indicators; counting methodology**

#### **Implementation status (status quo compared to half-yearly targets)**

EnDev target figures have been revised downwards several times. At the time of mission, the target figure for the end of the component period (09/2009) was 22,900 people reached. Interim target figures were 6,300 people to be reached by 06/2007 in the EnDev 2007 interim report. As this target has not been met, a new interim target of 5,000 people for 12/2008 has been set by the component team in collaboration with EnDev monitoring staff for EnDev annual planning 2008.

#### **Counting**

The mission team discussed together with GTZ component staff that data availability is sufficient to use EnDev's "counting" (not "estimation") method to determine impact achieved. This will actually lead to a two to three times higher headcount. The mission team developed a simple, Excel-based tool to be used in future EnDev impact monitoring (see appendix 2). The tool will also be made available to EnDev staff in HQ for inclusion in EnDev's knowledge management base.

The exact methodology of counting to be used was discussed with GTZ component staff. Agreements reached include:

- Use of counting method as outlined in Excel tool.
- Use of district capitals as area of intervention. This is justified by the fact that MSME expected to move into the industrial sites have almost all been located in the respective towns already.
- Calculation of 2007 population base from census figures of 2000 and 1984 assuming an extrapolation of the inter-census growth rate. This is the accepted methodology in Ghana and the only one for which sufficient data exists.
- Extraction of number of MSME needing energy from GTZ-WB survey where data exists (Techiman, Berekum and Goaso). Numbers for district capitals where no survey has been conducted can be extrapolated from survey district capitals with similar characteristics (i.e., Sunyani from Techiman and Bechem from Goaso).
- MSME newly connected to energy will include new MSME or additional branches where an entrepreneur holds on to the old workshop and opens a second workshop in the industrial zone. It includes MSME that have established first time energy access by moving to the industrial zone. MSME that have already had energy access at their previous site will not be counted under EnDev, even if their moving creates positive development impacts (use of synergies, economies of scale, cluster benefits in the zones; decongestion of town centres).
- Agreement that in future EnDev impact monitoring, headcount will be calculated only from MSME that have physically moved and have actual access to energy services. Registration for a plot in an industrial zone or the intention to move there is insufficient to be counted as "having access".

## **4. Recommendations**

This section gives an overview on recommendations made by the mission team based on the assessment of the components implementation status as outlined above.

Based on this analysis, two options for future implementation of EnDev Ghana emerge. These options are presented here without giving a recommendation on the future approach to take. Options include:

1. Implement component as planned. Here the mission team recommends limiting the scope on the 5 zones where activities have already been initiated. The remaining component funds, as well as possible co-financing contributions from others, should be used to improve the non-energy aspects of the industrial zones, such as necessary infrastructure and especially eco-efficiency and health and safety issues. Within this option, several non-electricity types of improved access to modern energy services could be included in the scope of activities in increase the number of people reached within the existing approach. PSED management has however expressed a preference only to widen the scope and include non-electricity types of modern energy services into the activities of the EnDev component if there is a clear perspective for an extension / upscaling beyond the current planning if it fits within the conceptual framework of PSED. See section 4.5 for more details on potential technologies and approaches that could be included.
2. Upscaling / extension of project: This should only be considered if component progress improves over the next 9-12 months. The existing approach has revealed several shortcomings, which should be avoided in future. The Ministry of Trade and Industry's move to develop a new industrial policy, which will most likely include industrial zones as one important instrument, could offer a new and improved entry point for an EnDev intervention. Any upscaling or replanning should as well carefully consider the inclusion of non-electricity energy sources and approaches.

Before giving specific recommendations on the options outlined above, this section outlines some general recommendations which are relevant irrespective of which option will be adopted eventually.

### **4.1. Improving infrastructure of GTZ office Sunyani**

During its field visit, the mission team realised that there is a need to improve facilities at the GTZ office in Sunyani, specifically by installing a generator as power outages are frequent and long, and by installation of reliable broad-band internet access for all staff members. Further, the current building structure is neither suited for office use nor representative. Significant maintenance works and alterations are needed. It is proposed that the component team works out a proposal on what improvements are necessary and submits this to programme management.

### **4.2. Increased cooperation with other activities of German development assistance**

#### **Within PSED**

There is potential for increased use of synergies through cooperation between the EnDev component and other components of the PSED, especially LRED and SPEED. This will contribute towards EnDev component indicator 2 on establishment of BDS providers. Cooperation with the policy advise components of the PSED is a necessary precondition for preparation of an upscaling approach in line with the future industrial policy of Ghana (see

section x). EnDev actually is an attractive cooperation partner for the other components as it offers very direct and visible benefits to partners. In Brong Ahafo, the GTZ PSED is widely associated with electrification of industrial zones.

LRED is implemented under a consultancy contract by Icon Institute and Swiss Contact. It provides policy advice on national and regional level and capacity building on local level. No concrete information on future sectors and regions was available at the time of mission, as an inception report had not been finalised at the time, but which has been published since (15.10.2007). LRED is already working with local BDS providers and has made its data base of local consultants in Brong Ahafo region available to the mission team and EnDev staff. LRED had originally planned to discontinue its work in Brong Ahafo and to select 9 districts for future activities according to its indicators. There seemed to be limited interest for cooperation first, with potentials for cooperation not considered as a criterion for selecting the future scope of the component. However, this was adjusted after joint discussions with PSED management (see below).

SPEED (component 4 of PSED) is implemented by GOPA under a consultancy contract and is co-financed by DANIDA with 7 Million Euro. It aims to improve the access of micro, small and medium sized enterprises to demand-oriented business development and financial services through assisting market development in Ghana. As concerns non-financial services, the program will provide technical assistance in the form of capacity building and organizational development as well as financial support to BDS provider networks and local market development initiatives, and will introduce low-cost instruments for rapid market appraisal, research and product delivery that respond to felt needs of current and potential BDS clients.

As concerns financial services, it supports awareness creation for the profitability of serving the MSME market sector. The program will also focus on interventions that are earmarked to strengthen the capacities of financial institutions in terms of qualified staff, microfinance technologies and strategic management. It will work to strengthen product development and service delivery by working closely with training institutions and bank associations. Finally, it will collaborate with the Bank of Ghana and the Ministry of Finance and Economic Planning to improve the legal, political and regulatory environment for MSME financing.

The BDS Component of SPEED is faced with very limited HR capacity (only two long-term experts) and has therefore undertaken a strict priority setting. 5 main sectors (Tourism, wood, natural plant product, garment textile and use of ICT in BDS) have been selected for future work. SPEED sees opportunities for cooperation with EnDev, but this is not their highest priority. A BDS survey in Brong Ahafo region had been prepared and was due to start soon after the mission. Wood-related MSME were discussed as a possible cooperation area, as the automotive sector was seen by SPEED as institutionally weak. SPEED can support pilot studies and projects up to USD 100k, but employs a strict results-based contracting model, requiring partners to work impact oriented and to prefinance activities. There was agreement that most, if not all potential cooperation partners in Brong Ahafo are not yet strong enough financially and institutionally to work under such an arrangement. SPEED has undertaken a study on clustering in the wood sector, which was made available to the mission team and EnDev.

Potentials for increased cooperation within SED Ghana were discussed with Marita Brömmelmeier (country director and programme director) and Julius Spatz (deputy programme director) who shared the need for increased cooperation between programme components. As an immediate measure, it was decided that LRED will continue to be active in Brong Ahafo on the regional level and that LRED and SPEED will share information on Ghanaian BDS providers who can be employed to contribute to achieving EnDev indicator 2. If additional industrial zones are going to be developed in future, one important selection criterion should be focussing on regions and sectors that other components (namely SPEED and LRED) are already active in to increase synergy potential.

The mission team also raised the idea of developing a joint Brong Ahafo strategy for the whole PSED, taking into account all components which are active in this region.

#### **With other GTZ programmes**

The mission team sees a need to increase cooperation both with MOAP and the Good Governance programme.

Cooperation with **MOAP** will be especially useful if non-electricity types of modern energy services will be included into the scope of the component, as MOAP is already working in the areas of solar drying and pumping. The mission team recommends further investigating possible cooperation of EnDev with MOAP in the food processing sector. MOAP works along agricultural value chains, and processing activities are often concentrated near district capitals. The industrial zone in Goaso could be a starting point for such cooperation, as it will cater to some food processing (palm oil) enterprises.

The **Good Governance** programme can give valuable advice on structuring incentives for District Assemblies to become more committed to contribute to EnDev implementation and to supporting District Assemblies' capacity to meet their commitments under the current task sharing agreements. The programme should also be consulted as an advisor on the recommended development of sustainable management concepts for the industrial zones.

#### **With other potential partners**

The **District Development Fund** as well as the **PSDS pooled fund** offer potentials to tap additional sources of funding for sound implementation of the industrial zones. The mission team recommends using additional funds primarily to improve the quality of the infrastructure in the already targeted industrial zones instead of further increasing the number of zones.

**MASLOC** offers subsidised small and micro loans to MSMEs. In principle, this could be a welcome opportunity to address the financial bottlenecks mentioned by MSMEs as one of their major constraints in contributing more to the development of the industrial zones, including covering the costs of moving there. However, MASLOC is based on a highly problematic, unsustainable business model as it is based on a core fund, which will be quickly depleted by subsidised interest rates, low repayment rates, high administration costs and political interference. The mission recommends the component team to further pursue linking up the target group with micro finance institutions, but apart from MASLOC also other micro finance providers with more sustainable business models should be considered. Component 4 (SPEED) could provide further advice on suitable micro finance products for the artisans located in the industrial zones.

### **4.3. Integration of BDS and Eco- Efficiency services**

Indicator 2 of the BMZ offer clearly states that the EnDev component should not only work on the provision of energy for industrial zones, but should also focus on developing the market for BDS and Eco- Efficiency Services inside the industrial zones. Currently the component teams' main focus regarding these activities lies in establishing contacts with NBSSI and the BAC in the different districts. Additionally NBSSI is currently establishing a data base for all BDS service providers in Brong Ahafo region.

None of the service providers that could be identified until now is working in the area of Eco-Efficiency, but Environmental Protection Agency (EPA) is known to have a consultant network for impact assessments.

Access to finance, management skills and technical training have been identified as the most pressing issues for the companies that are located inside the industrial zones. Environmental issues are not mentioned by MSME themselves as a priority area. All zones are in a rather bad status regarding their environmental situation and occupational health and safety in the MSMEs.

Regarding development of BDS services, the mission team suggests to strongly cooperate with the other relevant PSED components, especially with SPEED. Additionally NBSSI might be a good partner. At the regional office in Sunyani a DED advisor will be posted soon. This new person would be a potential focal point for cooperation for the development of BDS services for the industrial areas. However, a thorough assessment of the implementation capacity of NBSSI and the individual BACs would be necessary; during the mission several interview partners commented on severe institutional and financial weaknesses at NBSSI.

Concerning Eco- Efficiency services, GTZ provides different easy to use tools, which are not only focussing on the environmental situation inside a company, but also on organizational development, economic efficiency and occupational health and safety. The so called PREMA approach (Profitable Environmental Management) focuses on small scale enterprises and has been successfully implemented in different countries worldwide. A trainers market would have to be developed to successfully and sustainably integrate such a tool into the industrial areas. As for the development for Eco- Efficiency services in Ghana, the mission team sees this approach as the most favourable.

However, due to the focus of the programme on industrial areas, the mission team suggests to combine profitable environmental management on the company level with tools on how to sustainably manage the industrial area, laying a strong focus on maintenance of the infrastructure. The relevant associations need to be trained on how to manage their industrial area in a more sustainable way. This can be done by using the Sustainable Management of Industrial Areas (SMIA) approach which was developed by GTZ and UNEP two years ago. (For further information see section 4.3). Services for Eco- Efficiency on a company level are also part of this approach and will be easier to implement if the associations see the benefits of eco- efficiency on the zone level. A special guide for profitable environmental management for mechanics has been developed a few years ago. This guide will be adapted to the specific situation in Brong Ahafo in cooperation with PRUMA.

Implementing awareness raising activities exclusively through component staff is a drain on personnel resources and not sustainable in the long term. The mission team therefore recommends integrating the awareness raising activities into the SMIA approach. This will also contribute more directly to achieving indicator 2, which calls for establishment of BDS providers in the area of eco-efficiency.

Especially for technical training the project team is looking on the potential for future PPP with automotive companies. Currently most of the cars and trucks being repaired in the industrial areas are old and do not need any special electronic repair services. However, this will change during the next years as more and more new cars and trucks will be imported to Ghana. Especially for the zone in Techiman a training centre or the provision of training together with a truck company, such as MAN, would be beneficial as a technical training service. Workers inside the industrial areas will need such training to stay competitive and upgrade their businesses. Since Techiman is located on the main North- South route in Ghana, a big potential and also an important necessity for local availability of such knowledge will arise. Therefore the mission team recommends further assessing the PPP potential with different large international automotive companies.

#### **4.4. Development of services for sustainable industrial zone development**

The development of a structure that is responsible for the management of the industrial zones, guarantees the maintenance of the infrastructure, supports smooth business processes and minimum environmental and occupational health and safety standards should be supported to make sure that the EnDev component does not only provide energy access to the industrial zones, but also guarantees the sustainability and supports successful operations of these zones. This is not only of importance for those industrial zones targeted directly by EnDev Ghana, but also to develop a basis for replication of the project results to

other districts and regions in future. When developing such business models for industrial zones, the administration on the regional as well as on the national level should be integrated. An approach such as SMIA can only work if the relevant framework conditions are in place.

The sustainable management of industrial areas approach (short SMIA) combines organisational learning, management of industrial areas and environmental and OHS aspects and could be adapted to the situation in Ghana. To make the SMIA approach sustainable and replicable for other industrial areas, local trainers should be trained. Planning officers of the districts, Natalia Bonney (currently GTZ staff) and Dan Inkum have been suggested as potential SMIA trainers for Ghanaian industrial zones. A proposal on how to integrate sustainable management of industrial areas into the project will be submitted separately by Johanna Klein. The project team should elaborate whether any CEFE trainers have been trained by other GTZ projects and programmes. If available, they would be interesting partners to be trained as PREMA trainers.

Maintenance is a major issue to make sure that the industrial zones will function smoothly in the long term. Therefore it is suggested by the mission team that the project team elaborates the minimum necessities for maintenance of an industrial areas and puts together a first map of the different stakeholders responsible for the maintenance of the industrial areas. This map should also include the financing mechanisms of the different MSME associations, including an assessment whether there are any business models, where the associations plan to collect fees for the maintenance of the industrial zones and elaborating, if the members of the association pay regular fees to the associations.

This will help to define who will be the most important actors to be integrated into the management of the industrial areas and into the trainings for the management of industrial areas. The mission team also proposes to develop a paper and a presentation on lessons learnt in developing the industrial zones. This will be of importance in two aspects, on the one hand to be fed into the national level and the industrial policy and on the other hand for the development of a sound management model for the industrial zones.

#### **4.5. Inclusion of additional (non-electricity) energy sources for productive use within the existing component concept**

So far, the EnDev component has solely relied on access to electricity to connect productive users to modern energy sources. There is however a range of non-electricity types of energy that could possibly be included within the existing concept (providing access to modern energy to MSME in newly established industrial zones) meeting additional demands at a lower per capita cost. Interviews with regional, district and target group stakeholders consistently drew attention to this point. Including non-electricity sources would contribute to addressing agricultural processing which is a development priority sector in Brong Ahafo. For any extension / upgrading of EnDev Ghana, inclusion of non-electricity approaches should definitely be considered.

The case for inclusion of non-electricity types of modern energy access is supported by a first, informal assessment of Income Generation through Energy and Complementary Services (INGENS) survey results. There are very few MSME using substantial amounts of electricity – the typical monthly bill is far below GHC 10, with some users (welders, butchers using refrigeration equipment, etc.) paying bills between GHC 20-30. On the other hand, food processors, “chop bars” and schools often use substantial amounts of fuel wood and / or charcoal (up to GHC 600 / month), offering potential savings to be realised through introduction of improved stoves.

The following alternative technologies were assessed during the mission:



- Improved stoves for productive use
- Solar technologies:
  - Solar drying for productive use
  - Solar lamps and solar home systems for productive use
- Small scale, off-grid windmills
- Small hydropower

**Improved stoves for productive use** can contribute to fuel wood / charcoal savings in the agro processing and food sectors, which are priority sectors for Brong Ahafo according to national and regional policies. Some improved stoves are already locally manufactured and used in Ghana, but it is not a widely adopted technology. The mission team on initial assessment sees potential both in agro-processing (palm oil, gari, etc.) and food processing / catering (“chop bars”) sectors. The mission could not establish whether improved stoves would be economically attractive for potential users. One possibility could be the dissemination of a locally produced stove that is fuelled with by-products from wood processing, which are available for free.

**Recommendation:** Potentials to include improved stoves for productive use should be pursued further by EnDev Ghana. Stoves would address important sectors at the basis of the pyramid with a very direct poverty reduction focus. Many of the smallest and most informal MSME in Brong Ahafo don’t need or cannot afford electricity, but would greatly benefit from improved access to modern energy. Additionally, including stoves would most likely bring down average costs per head. A more precise idea on the feasibility of including stoves in EnDev Ghana can be obtained by analysing available documentation, the results of the survey and, if promising, by conducting a specific study.

**Solar drying for productive use** is already being advocated by MOAP in the project region, among others through monitored operation of four pilot projects. Large potentials exist in agro processing (cocoa, mango, chillies, cassava, fruit, cashew, herbal products, etc). Those activities are often carried out in rural areas around the district capitals, therefore solar drying equipment will not likely be installed within the GTZ-supported industrial zones. The zones could however accommodate dealers, producers and maintenance workshops for solar drying equipment. MSME reached through solar drying could be additionally counted as EnDev impact. **Solar lamps and solar home systems for productive use** are areas of intervention already addressed by a range of institutions in Ghana (IFC, WB, GEDAP, Free Energy Foundation, DENG, KNUST). Interviews with Free Energy Foundation and DENG showed that both solar lamps and solar home systems only become affordable to more than very few households if productive uses can be obtained from them. Charging of mobile phones is especially attractive as the mobile phone coverage area extends far beyond the grid. Charging of mobile phones is usually done by physically transporting them to on-grid settlements, for which specialised service providers charge about 0.30€. Simple calculation models (10-20 mobiles per village \* 5-10 charges per month \* 0,30€) arrive at monthly revenues of about 30€ / month, which can quickly repay the costs for solar lamps (35-70€) or even contribute substantially towards a solar home systems (14 wp = 270€; 50wp = 600€). Additional productive uses mentioned include lending out of mobile phones; lighting and radio for shops, kiosks and restaurants; and barber shops. **Recommendation:** Potentials to include solar technologies (for productive use, not for residential purposes) should be pursued further by EnDev Ghana. Solar technologies would address rural, off-grid areas with a very direct poverty reduction focus. Brong Ahafo is well positioned as geographical area of intervention as it has a relatively low grid access rate, while at the same time cash crop farming is widespread and even rural households can raise capital to invest in solar technology (much more so than in Northern Ghana). Additionally, farmers in Brong-Ahafo have well established links to micro-finance institutions (rural banks).

There may be potential to cooperate with telecom companies in the form of a PPP. Possible fields of cooperation would be using their distribution network or bundling solar with mobile phone products.

The industrial zones can contribute to and benefit from this approach through locating solar dealers and training facilities (maintenance, business development skills) there. It is unrealistic in the short and medium term to relocate assembling / manufacturing of solar equipment to Brong Ahafo, as the Accra region offers comparative advantages (skilled labour, research facilities, etc.). Also see comments on Philips PPP (section 5).

**Small windmills** could contribute mechanical energy for sawmills, water pumping etc. using well-established, low tech and low cost technology. In terms of on-grid wind energy generation, most of Ghana except some coastal sites does not offer sufficient wind conditions. Wisdom Togobo of MoE Ghana was involved in a World Bank small scale wind energy project “Power to the Poor in Ghana” for poverty reduction in 2003 (<http://www.uni-oldenburg.de/presse/uni-info/2007/1/thema.html>; [http://www.enewsbuilder.net/whatworks/e\\_article000230626.cfm](http://www.enewsbuilder.net/whatworks/e_article000230626.cfm)). Due to mission free period, he could not be interviewed by the mission team. However, compared to improved stoves and solar technologies, potential benefits and feasibility look much less attractive. **Recommendation:** The project staff should contact Wisdom Togobo on results of the 2003 demonstration project. Depending on results, this option could be pursued further.

**Small hydropower** was raised as another potential area of intervention. A scoping report on small hydropower in Ghana however comes to the conclusion that the existing potential is very limited both in terms of number and total capacity of sites. Additionally, most sites are located in already grid-connected areas. On-grid small hydropower is not eligible under EnDev criteria; no feed- in tariff exists etc. **Recommendation:** This option should not be pursued further.

**Overall recommendation on non-electricity technologies:** The mission team recommends including non-electricity technologies into the approach of EnDev Ghana. It seems advisable in considering alternative technologies to concentrate on improved stoves and solar technologies for productive use. More detailed scoping and planning are necessary on both priorities and should be undertaken by the component team. It could be helpful to discuss the topic of small windmills with Wisdom Togobo. The mission team also recommends seeking cooperation with MOAP especially on improved stoves and solar drying, as there are direct links to MOAP’s value chain approach in agro-processing including a geographical overlap in Brong Ahafo region.

PSED management has however expressed a preference only to widen the scope and include non-electricity types of modern energy services into the activities of the EnDev component if there is a clear perspective for an extension / upscaling beyond the current planning if it fits into the conceptual framework of PSED.

#### **4.6. Recommendations on option 1: concentrate on 5 industrial areas already in progress**

The mission team recommends continuing working with the 5 industrial zones that have been selected as a first batch.

As only Berekum and Goaso are currently prepared at least with a minimum standard (land rights secured, commitment from District Assembly and MSME associations) it is however recommended that the procurement process for the zones in Sunyani, Bechem and Goaso (second site) should be put on hold until all land issues are solved.

Additionally, the process of MSME moving into the industrial zones has to be reviewed. It has to be made sure that moving to the zones does really take place. A marketing strategy for the industrial zones, as well as for the concerned MSME and the district administration should be developed and information on how to access micro- financing should be provided by the

component team. Moving of the MSME to the industrial zones will be a crucial factor for the success of the component. The component team should provide as much support as possible to the existing industrial zones to guarantee a smooth moving process.

To make sure that the industrial zones will be set up in a sustainable way, the focus of the activities should not only lay on the provision of electricity, but also on the development of an integrated approach for the development and the management of the industrial zones as a whole. Different management models for the zones shall be developed by the component team. The management should consist of the associations as well as of the district assemblies. The best balance and structure for the management of each zone has to be assessed by the component team. It should be made sure that the management scheme provides the opportunity that the industrial areas are not limited to only one association, but also permit the integration of businesses from other sectors in the industrial areas.

This is of importance to make sure that the whole component is not only focussing on garages. Although transport is one of the main sectors in Brong Ahafo, according to district, regional and national planning frameworks the development policy for the region foresees a strong focus on agriculture, wood processing and agro processing. One of the zones in Goaso is currently addressing agro processing business activities such as palm oil processing. This zone can be used to assess the potential for the integration of agro-processing businesses in industrial areas. Additionally different other forms of energy for productive use could be piloted in this area.

The mission also discussed what should happen in cases where districts continue to fail to provide the minimum infrastructure for the set- up of the industrial areas. The mission team recommends working with a set of detailed deadlines for milestones that have to be reached by District Assemblies, MSME associations and other partners. It should be made clear that if deadlines are repeatedly ignored EnDev is willing and able to drop such a non-cooperating district from its list and select a different district to be supported. To avoid such problems, a set of minimum pre-conditions should be fulfilled before ordering equipment in future.

#### **4.7. Recommendations on option 2: Extension / upscaling**

Currently, the mission team feels that efforts should concentrate on the 5 (out of 9) districts that have been selected by the component as a priority in implementation. If it can be established over the coming months that the bottlenecks which have slowed down the component so far have been overcome, however, there are some interesting potentials for extension / upscaling of EnDev Ghana.

##### **4.7.1. Ghana's new industrial policy: potential to replicate pilot sustainable industrial zones**

As outlined in appendix 4, Ghana is currently in the process of establishing a new industrial policy. One major part of this new policy will be setting up of industrial zones in all regions of the country as an important instrument to increase economic growth and spread it more in geographic terms, thereby avoiding growing spatial imbalances. The GTZ concept for industrial zone development, which is looking at the energy access as well as BDS services, meeting of basic environmental standards and a good management structure, could serve as a model for replication in other areas in Ghana. Due to this fact, the PSED has already been asked by the ministry of Trade and Industry to provide support in the implementation of the future industrial policy.

As a first step, the mission team recommends that the component team should develop a paper with recommendations towards the establishment of industrial zones in Ghana based on lessons learnt in implementation of the EnDev component. This paper could contain the major challenges, insights on funding models, roles and responsibilities of different stakeholders, land issues, the importance to provide not only infrastructure but also BDS and management services, different suggestions on how to organize the maintenance of industrial zones, experiences from dialogue processes, potentials to improve cooperation between districts and between multiple associations, etc.

The ongoing INGENS survey can provide important empirical evidence and conclusions on the combination of energy and business development services for enterprises in clustered environments.

EnDev Ghana also prepares the scene for more extensive industrial zone development through training of service providers on implementation of SMIA and PREMA.

However, to make the development of industrial zones a valid industrialization strategy, further activities to support the ministry to implement their industrial policy should be conducted. Under the current framework conditions (missing incentives for the districts to set up industrial areas, no financing schemes for setting up and maintaining the infrastructure, see section 3.2.3) a sustainable implementation will be difficult. The mission team will provide more detailed ideas on how to support the ministry in developing a sound policy for industrial area development.

#### **4.7.2. Changes / additions to the geographical scope of component activities**

The rationale for choosing Brong Ahafo as activity area for the EnDev component (addressing growing imbalances between economic development in Southern and Northern Ghana; building on previous GTZ development interventions; etc.) is in principle shared by the mission team. GTZ component staff however drew attention to some promising districts outside Brong Ahafo where promising preconditions appear to exist for the establishment of additional industrial zones.

- Tamale: Industrial hub for underdeveloped Northern regions of Ghana
- Akim Oda (Eastern Region): District has plans to establish wood sector industrial zone
- Amansia East (Ashanti Region): has already started to develop small industrial zone on own initiative.
- Takoradi: The metropolitan assembly has started developing an industrial zone for the automotive sector. Electricity distribution is stated as the main constraint.

GTZ component staff proposes in future to focus on districts with clear commitment and own interest in developing industrial zones and to require binding agreements on sharing of tasks and responsibilities, detailed financing plans on investment and maintenance, as well as agreements with MSME associations on quick adoption of the zones once they are ready. If other SED components are already active in a district, this should be considered as a strong additional criterion.

**Recommendation:** The EnDev team should monitor whether progress is made in the 4 remaining stalled districts in Brong Ahafo, but without investing substantial effort as of now. If additional resources become available through the promised contribution from MoE or through additional funding for industrial zone development, the first priority should be to invest more in the five zones already started to make sure that impacts achieved are really sustainable. This should also specifically include activities that go beyond electricity

infrastructure (investment in other infrastructure such as roads and water; improved services; introduction of sustainable management models).

Only if this is ensured, additional districts should be included into the scope of the EnDev component. Here, the mission team recommends following the component's team preference to work in districts where promising preconditions (demand from associations, land availability, district assembly commitment) exist even if they lie outside Brong Ahafo. Since the problems for the 4 remaining zones are seen as severe and not easy to solve, the project should not only focus on Brong Ahafo, but on the districts and industrial areas where the potential for sustainable operations of an industrial area are greatest. A regional and sectoral focus on areas where the SPEED and LRED component are active will generate additional synergies between the different components of the project.

To make sure that districts are committed to invest in an industrial area that GTZ will be working with, a standard template for the application for funding for electrification should be developed. Industrial areas shall only be developed in districts where long-term sustainability can be ensured. Binding agreements should be signed by all parties involved on roles and responsibilities as well as financing arrangements. A stakeholder mapping on the responsibilities of the different actors should be developed. This stakeholder mapping should not only show the responsibilities of the different stakeholders, but should also include their potential benefits and risks when developing an industrial zone. Additionally the economic implications, as well as the financial viability for the development and the maintenance of industrial areas have to be assessed in detail.

The mission team recommends awarding an external consultant with the task of developing a calculation model for the investment cost and maintenance cost of standard infrastructure (water, sanitation, roads, and waste management infrastructure) in light industrial zones.

## **5. PPP activities with Philips**

A possible PPP with Philips on solar lamps had been under consideration at the time of mission. The mission team together with component staff reviewed the PPP proposal on request of the deputy programme director with a view on overall feasibility and on how the PPP would fit into the component and program.

This review came to the result that the proposal had several shortcomings, including a too small contribution from Philips as private sector partner; the already established availability of solar lamps which even include a local assembly component; an insufficiently defined role for GTZ's involvement, overlaps with planned IFC / GEDAP initiatives and doubts towards the selection of the project region. Detailed comments were prepared in an email dated 08.10.2007.

It has since been decided that Philips will undertake its initiative with direct support from DGIS without an involvement of GTZ. DGIS, GTZ and Philips however continue working on a concept for a larger, Africa-wide PPP initiative.

## Appendix 1: Programme of the mission; list of interviews and site visits

Date	Time	Activity
23.09.07- Sunday	6.30 pm	Arrival (FRA-ACC)
24.09.07-Monday	8.30am	Meeting PSED deputy director (Julius Spatz)
	9.30am	Meeting LRED (Lisa Wegner)
	10.00 am	Meeting SPEED: Paul Weijers
	11:00am	Drive to Sunyani
25.09.07-Tuesday	8:30am	Join Survey Team in Techiman
	9.15am	Business advisory council: Ibrahim Amil
	10.00am	Meeting with VRA: Linus A. Agalis (VRA Area Commercial Officer), Noble Dormenu (VRA Teamleader Techiman Area), Joseph Arizien (VRA Technical Matters)
	11.30am	Visit Techiman MA: J. Adu-Koranteng, Deputy Municipal Coordinating Director
	2.00pm	Visit new zone, meeting garages association
	3.00pm	Meeting solar dealer: Manu Arthur, Nkoroanza
	4.30pm	Meeting with SolarNow: Marcellien Joosten, Regional Coordinator West Africa
26.09.07-Wednesday (In Sunyani)	8:00am	Interview with Regional Economic Planning Officer
	9.30am	Interview with Regional Manager NBSSI (Beatrice Boakye)
	10:30am	Interview with MASLOC Regional Co-ordinator (Jorson Osei Bonsu)
	11:30am	Meeting with VRA Area Manager
	12.30pm	Lunch
	1:00pm	Visit with MSMEs <ul style="list-style-type: none"> <li>• Dressmakers Association</li> <li>• Garages Association</li> <li>• Carpenters Association</li> <li>• Repairers of refrigerators and televisions</li> </ul>
27.09.07-Thursday	8.30am-5.00pm	Join the survey team at Nkoranza Interview with Nkoranza District Assembly Visit to carpenter and garages workshops Visit to gari processing site
28.09.07-Friday	8:30am 10.00 am	Visit Berekum Industrial Zone Meeting mission & EnDev staff: reflection of field visit results, discussion of preliminary findings
29.09.07-Saturday	Full day	Report writing
30.09.07-Sunday	Full day	Drive back to Accra
01.10.07-Monday	9.00am	Kite Accra: Theodora Oduro
	11.00am	Energy Foundation: Andrew Lawson, acting executive director
	2.00pm	Energy Commission: A.K. Ofosu Ahenkorah, Ag. Executive Secretary
	4.00pm	De-briefing: Country Director, PSED Team
02.10.07-Tuesday	2:00pm	Meeting with Mr. Phillipe Sas, Swiss Embassy, outgoing energy donor group coordinator
03.10.07-Wednesday	9am -10am	PPR Team meeting
	11.00am	Meeting with DENG Solar Energy, Frede Bosteen, Chairman
	2.00pm	Meet LRED team (Lisa Wegner, Afia Darkwa-Amanor, and Julius Spatz (deputy program director))
04.10.07-Thursday	8.30am	Yves Guicquero, AFD, energy donor group coordinator
05.10.07-Friday	10.00am	Meeting with Lothar Diehl, Programme Director MOAP
	1.00pm	Meeting with KfW, Peter Wefers

	2.00pm 3:00pm 4:00pm	Meeting with Julius Spatz, PSED Meeting with Mr. Achim Schmitt, WZ-Referent German Embassy Meeting with Philips Team (Frank W. Altena, Philips and Fons de Zeeuw, Berenschot)
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## **Appendix 2: Excel tool for EnDev impact monitoring**

See separate .xls document.

## Appendix 3: Background information on energy situation in Ghana

More detailed information to be inserted by EnDev Ghana.

Energy sector coordinated donor group – German development cooperation takes part as an observer, need to define internal procedures for coordination between different agencies

Active donors: WB, AFD, DEZA, JICA → outline their main activities  
GEDAP, SHEP IV, AFD-JICA master plans on decentralised solutions from mini hydro, wind and solar

Situation: Generation crisis contained for the moment, substantial private investment into generation in the pipeline, electricity prices highly subsidised (up to USD 800m per year!!), tariff reform pending (first increase finally in October 2007), but still not fully cost-covering, PURC

Energy sector reform in Ghana is not progressing satisfactorily. Unbundling as a necessary precondition was started with VRA amendment act in 2004, but Grid Company and other structures were just formed last year and are neither operational nor truly independent from VRA. ECG supposed to get external support through management contract, funding from DEZA, but strong resistance from Ghanaian government

### New electricity tariff Ghana (from 01.11.2007)

Customer Class	New rates GHp/KWh	Existing rates		% Increase
		Cedis/KWh	GHp/kWh	
<b><u>Residential</u></b>				
0-50	9.50	700.00	7.00	35.71
51-300	12.00	700.00	7.00	71.43
301-600	16.00	1,200.00	12.00	33.33
600+	19.00	1,400.00	14.00	35.71
Service Charge	50.00	5,000.00	50.00	-
<b><u>Non-Residential</u></b>				
1-300	14.00	1,020.00	10.20	37.25
300-600	17.00	1,250.00	12.50	36.00
600+	19.50	1,450.00	14.50	34.48
Service Charge	250.00	25,000.00	250.00	-
<b><u>SLT-LV</u></b>				
Capacity Charge	100.00	-	-	-
Energy Charge	16.00	1,200.00	12.00	33.33
Service Charge	750.00	75,000.00	750.00	-
<b><u>SLT-MV</u></b>				
Capacity Charge	900.00	90,000.00	900.00	-
Energy Charge	9.05	500.00	5.00	81.00
Service Charge	1,250.00	125,000.00	1,250.00	-
<b><u>SLT-HV</u></b>				

Capacity Charge	900.00	90,000.00	900.00	-
Energy Charge	9.05	450.00	4.50	101.11
Service Charge	1,250.00	125,000.00	1,250.00	-

Bulk Generation Tariff (BST)	6.92	494.00	4.94	40.08
Distribution Service Charge (DSC)	5.85	450.00	4.50	30.00
Average End User Tariff (AEUT)	12.77	944.00	9.44	35.28

## **Appendix 4: Background information on industrial policy in Ghana**

More detailed information to be inserted by PSED Ghana.

A new / improved / updated industrial policy is under development under the lead of the Ministry of Trade and Industry (MOTI). Unclear when the policy is expected to be ready. One element of the industrial policy will be supporting the establishment and subsequent development / management of industrial zones. Supporting the implementation of this policy could prove an opportunity for future upscaling of EnDev Ghana, provided that the recognised shortcomings of the current approach are avoided. The Ghanaian Ministry of Finance and Economic Planning already requested funding and support from GTZ towards implementation of its Private Sector Development programmes (letter dated 30.07.2007).

## **Appendix 5: Photo documentation of project progress**

Photos selected by mission team will be inserted together with short comments; Michael Fink will prepare this appendix in December 2007.