

# TOR Audit WWTP MEZ1

For project implementation  
**Management concept to the eco-industrial Development of  
Philippine Economic Zones, Philippines**

Project number:  
**2005.2062.7**

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## A. Project Description

### A.1. Project Brief

The project “Management approach to the Eco-Industrial Development of Philippine economic zones” contributes to more economic efficiency of industrial zones by developing and disseminating concepts of sustainable site development and reduces pollution for employees and neighbouring population.

Similar to other developing countries of the region, special economic zones are important to the economic and structure policy of the country. However, over the past two decades this way of industrialization has led to considerable regional disparities and extensive pollution. Up to now, ecological management of those special industrial zones is little efficient and insufficient. Economic development is considerably slowed down, companies, as well as the region are turned less competitive, and the increase in pollution increases health risks of population and employees.

The overall aim of the project is: Improvement of ecological management of selected industrial zones and companies located there.

The project focus is on the two industrial zones of Mactan island, Cebu. The *Philippine Economic Zone Authority (PEZA)* is supported in building up services based on integrated management concepts of Eco-Industrial Development (*Eco-Industrial Development, EID*) and will be guided to their implementation and dissemination. The project plays a decisive role in initiating and establishing a process of systematic and efficient environmental management in the industrial zones administrations and in individual companies of Mactan and in achieving first resource savings, decreasing numbers of environmental breaches, as well as in achieving higher efficiency. After successful implementation in the industrial zones of Mactan, other industrial zones will be gradually integrated into the project and further dissemination will be secured.

The project is closely related to the key strategy document “Economic reform and building of market economy”. Industrial eco-management, eco-efficiency and transfer of efficient technologies is one of the four intervention fields. Furthermore, the project corresponds to the medium-term development plan of the Philippines of 2004 – 2010. The project is highly significant for PEZA and NEDA, as there are no other projects of foreign donors in this sector yet the need for action is high.

Support components of the German contribution consist in consulting by an expatriate long-term expert, one national long-term expert, short-term assignments of experts on training of female and male specialists and management personnel of partner institutions and service industries for special studies and in building a knowledge-management system, as well as minor supplies of materials and one vehicle.

The project is planned for one single phase and will be running for three years (09/2006 – 07/2009).

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## A.2.. Binding Elements

<p>A.2.1. <i>Overall objective, Indicators</i></p>	<p><b>Overall objective:</b></p> <p>Improvement of ecological management of selected industrial zones and companies located there.</p> <p><b>Indicators:</b></p> <ol style="list-style-type: none"> <li>1. Decrease by 33% in Mactan 1 and Mactan 2 of the number of non-compliance with emission standards, waste water contamination and waste disposal according to company internal monitoring reports and environmental inspections by competent bodies (DENR and PEZA).</li> <li>2. Decrease of water and energy consumption by 15% per production unit and decrease of waste production by 25% per production unit in Mactan 1 and Mactan 2.</li> <li>3. A minimum of 3 other PEZA administrated industrial zones are going to adopt the in Mactan proven eco-management concept to their performance specification.</li> <li>4. Women and men living in the area of the industrial zones or are working there, confirm a considerable decrease in pollution at work and in the areas close to the industrial zones (established by interviews: data will be collected in 2006).</li> </ol>
<p>A.2.2. <i>Target group(s) and mediators</i></p>	<p><b>Target groups:</b> The total population, particularly population living in close proximity to the industrial zones consisting mostly of low-income classes (men and women). Another target group are entrepreneurs of small and medium-sized industries located in those industrial zones, as well as their employees, consisting mostly of women (70 – 80%).</p> <p><b>Mediators</b> would be managers and developers of the industrial zones, employees in the field of environment protection at PEZA, managers of companies in the industrial zones, environmental commissioners who must be appointed by each company causing pollution of water, air and ground, employees of service industries and individual consultants, as well as selected administrations (e.g. the <i>Department for Environmental and Natural Resources</i>) on municipal, regional and national level.</p>
<p>A.2.3. <i>Philippine counterpart organisation</i></p>	<p><i>Philippine Economic Zone Authority (PEZA)</i> in Manila</p>

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## A.3. Essential Information

### A.3.1. Context

Economic zones are highly significant in the Philippine economic development. From 2003 to 2004 alone, the number of employees in economic zones increased by 12.1% to 1,017,000 employees. Especially small and medium-size companies show a majority of female employees. Between 1994 and 2002 export from economic zones rose from 2.74 BUS \$ to 22.78 BUS \$. In 2004, 83% of export profits can be attributed to the economic zones. On the other hand, economic zones are causing considerable environmental problems. Appropriate waste management doesn't exist, neither for non-hazardous industrial waste nor for the 2.5 Mio tons of hazardous industrial waste/year. Waste water treatment is rarely applied and process-integrated technologies and methods are rarely being realized. Pollution is a serious risk for Philippines economic development and the health of the Philippine population.

The core problem is that environmental management of economic zones is inefficient or barely applied.

Main reasons: It is not sufficient to look only at individual companies in order to solve the massive environmental problems in the economic zones. Up to now, multi-corporate approaches are non-existent. Due to their personnel and expert capacities economic zone administrations can only offer incomplete services. Many conditions for a structured management (e.g. waste water and waste treatment facilities) are not met. The solution of many of the problems requires the co-operation of administrations and municipalities. Constructive co-operation between municipalities and economic zones is not ascertainable.

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## **B. Service Description**

### **B.1. Current Situation**

After the successful completion of project phase I (2004-2005) the second phase starts in September 2006 with the long-term international expert taking up post in Manila.

During the preparation mission (July/August 2006) the project team (PEZA + GTZ) agreed upon starting project implementation, one of the initial, most urgent activities being the improvement of the current wastewater treatment plant (WWTP) in MEZ1.

The WWTP was designed and constructed by JICA, financed by JBIC and turned over to PEZA in October 2005. Operation is outsourced, Chemrock (daughter company of MactanRock) being the sub-contracted operator of the facility. The facility is designed for municipal sewage only; no industrial sewage shall be accepted.

The capacity of the facility is 4,700 m<sup>3</sup>/day, actual daily input flow is currently about 1,000 m<sup>3</sup>.

The assignment shall address the project performance indicators (see above chapter A.2.1).

#### *B.1.1. Time frame*

This intervention shall be starting as soon as possible. Findings and recommendations for improvement shall be available by 10<sup>th</sup> December 2006.

### **B.2. Scope of Service**

#### *B.2.1. Intervention Objective*

The objective of the assignment is to investigate the current practice for wastewater treatment and management in MEZ1 (as baseline data for project performance indicators) and to come up with a catalogue of findings, recommendations and action plan for improvement.

Implementation of the improvement program will be one of the core work packages of the PEZA GTZ EID project. A series of interventions is expected.

#### *B.2.2. Intervention Scope*

The scope of this initial assignment is PEZA Economic Zone Mactan 1.

The assignment shall address the WWTP itself as well as related infrastructure (sewer network, storm drainage, recycling network of treated wastewater) and shall give a comprehensive picture of the current situation concerning wastewater treatment and management in the economic zone.

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## *B.2.3. Questions to be answered by the assignment?*

- Which of the locators are currently connected to the drainage systems? How is the input flow measured?
- Is the WWTP suitable to serve MEZ1? What are possible weaknesses of the facility?
- What is the current practice of WWTP operation?
- Is the plant well operated? How can operation possibly be improved?
- Which parameters are measured? (input/output flows, sludge, energy consumption, re-use of water, ...)
- Which are the possible shortcomings with regard to infrastructure (e.g. piping system)?
- Why are locators not yet tapped?
- What are current operation and maintenance costs? Covered by whom?
- How can a fee/tariff system look like?
- How can fees/tariffs be calculated and communicated to clients?
- How can the sewage sludge be managed? What are possible/suitable disposal channels for the sewage sludge?
- What are the possible tapping/connection fees for locators?

Essential is that the outcomes of the assignment serves as basis for impact orientated project controlling, monitoring and evaluation which supports eco-efficient management of Economic Zones.

Based on the initial audit/assignment a comprehensive workplan for the improvement of the current situation shall be elaborated.

The objective is a well operated WWTP running on its capacity limit with 100% of MEZ locators connected to the system.

## *B.2.4. Impact oriented project implementation*

The logic of impact orientation follows the new project/programme framework (AURA) agreed by BMZ and GTZ. AURA reflects the stronger focus on impact of technical development cooperation rather than on the pure achievements of results/outputs. AURA results in a clear separation between development-political controlling of Technical Cooperation and its implementation, consequently increasing its flexibility. GTZ together with its implementation partners is responsible for reaching defined objectives.

Success of a project/program is measured by the degree of reaching the objective(s) through impact oriented monitoring and evaluation. The Consultant has to comply with the two principles of "Realising Impact" and "Increased flexibility of performance".

## **B.3. Qualification of Consultant**

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The consultant(s) shall be familiar with wastewater treatment technology (design and infrastructure) as well as management (including operation and financial management).

The working language is English.

## **B.4.Expected Assignment Results/Outputs:**

The consultant is expected to provide the following tangible results/reports (in English):

- **Audit report** covering the findings of the auditing process
- **Assignment report** covering the consulting process, the findings prioritised suggestions for improvement of the current situation. Report structure will be jointly agreed upon.
  - Presentation of first draft report
  - Final version 3 weeks after the presentation based on feedback and comments (31 December 2006).
- **Documentation of information**
  - Status quo documented in suitable form (photos, graphs, interview documentation, statistics, etc)

## **B.5.Expected Assignment Results/Outputs:**

- Start of initial assignment: January 2007