

**Advisory Review of the Master Plan for the  
Rehabilitation of Lake Tai (second phase) in  
The People's Republic of China**

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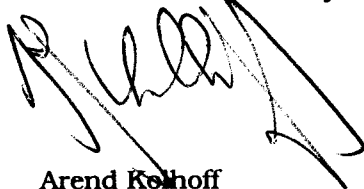
Utrecht, Commissie voor de milieureportage



**Advisory Review of the Master Plan for the Rehabilitation of  
Lake Tai (second phase) in The People's Republic of China**

Advice submitted to the Minister for Development Co-operation, by a working group of the Commission for Environmental Impact Assessment in the Netherlands.

the technical secretary



Arend Kolkhoff

the chairman



Dick de Zeeuw

Utrecht, 20 September 2005



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## 1. INTRODUCTION

### 1.1 The initiative: Master Plan for Rehabilitation of Lake Tai, China

A Dutch company (Grontmij) applied for funding under the MILIEV programme<sup>1</sup> for an export transaction to the People's Republic of China (PRC). The application concerns the selection of priority projects for a short term clean-up programme (phase 1) and preparation of a Master Plan (phase 2) for the rehabilitation of Lake Tai, located in the provinces Jiangsu and Zhejiang and the municipality of Shanghai, in order to achieve sustainable use of the lake (see Appendix 4 for a map of the Lake Tai area). The project started in September 2000.

The lake is heavily polluted due to population growth (discharge of untreated domestic waste water), agricultural activities (use of fertilisers and pesticides) and industrial activities (discharge of industrial waste water) in the catchment area of the lake.

The main objective is to contribute to the improvement of the water quality of Lake Tai and to maintain/rehabilitate the different functions of the lake (drinking water supply, water for irrigation, wetlands, fish production, buffer area, navigation/transport, recreational value) through setting up a clean-up programme and development of a Master Plan. The first phase of the project has been finalised already. The second phase is the execution of a Master Plan. Integrated water resources management (IWRM) is the guiding principle for the Master Plan study, the execution of the Master Plan was planned at 24 months. A Strategic Environmental Assessment (SEA) is conducted as part of this study. This SEA has been integrated in the study resulting into one report, the Master Plan. The main activities are as follows:

1. Phase 1 (10 months): preparation of a short-term clean-up programme.  
Goal: to select engineering projects in order to make a quick start in reducing water pollution.

Activities:

- to collect all relevant data and develop pollutant load inventory;
- to define criteria to select pollution sources that need to be reduced in the short term;
- to undertake an engineering feasibility study for pollution clean-up projects;
- to identify, list and prioritise the selected engineering projects and their combinations, to select and assess proposed locations and technologies of proposed engineering projects;
- to define functional district water pollution control zones.

2. Phase 2 (14 months); execution of a long term Master Plan study.

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<sup>1</sup> Programma Milieu en Economische Verzelfstandiging



**Goal:** to provide guidance in achieving a sustainable rehabilitation of Lake Tai. In the Master Plan an integrated approach for lake management is adopted. The Master Plan provides recommendations for long term management of Lake Tai. These recommendations include technical control measures and institutional arrangements.

The draft Master Plan consists of the following elements:

- **Problem analysis:** description of the current water quality of Lake Tai and an overview of the main causes of water deterioration.
- **Control measures:** presentation of a list of proposed technical control measures and their main characteristics.
- **Scenario analysis:** the effectiveness of proposed control measures to improve the water quality of Lake Tai are described on the basis of scenarios.
- **Planning for the future of Lake Tai:** the most effective measures will be proposed. A link with the upcoming 11<sup>th</sup> five-year plan is discussed, as well as options for more integrated lake management in Taihu basin. Water quality modelling as a management tool is evaluated.

## **1.2 Rationale and mandate for this review advice**

By letter dated 1 May 2000 (see Appendix 1) the Ministry of Foreign Affairs of the Netherlands (DOB) requested the Netherlands Commission for Environmental Impact Assessment (the Commission) to monitor the project. The objective of monitoring is to review the quality of the products of phase 1 (Engineering study) and phase 2 (Master Plan) of the study. Review of the two phases of the project will be executed in succession and will result in two advisory reviews prepared by a working group of the Commission. The following expertise is represented in the working group: water quality, modelling, water management, waste water treatment, ecology and sociology/economy (see Appendix 2 for composition of the working group).

As agreed upon in the Grant Agreement China 2000, dated 19 May 2000, a joint Chinese-Dutch mission visited Lake Tai in order to review the first phase of the project: 'Master Plan for the Rehabilitation of Tai Lake'. The joint mission, consisting of the working group of the Netherlands Commission and two representatives of the State Environmental and Protection Administration (SEPA) did take place from 2-10 November 2001 and resulted in the first advisory review that was submitted on 15 January 2002.

This advisory report is the second advisory review of the project. In January 2002 the second review of the draft Master Plan for the Rehabilitation of Lake Tai was scheduled for July 2002. However for a number of reasons the draft Master Plan (dated 9 June 2005) was only recently submitted by the Grontmij for review by the Commission, a delay of almost three years. On June 16 2005 the Commission was invited by the Grontmij and an explanation for the draft Master Plan was given.

### 1.3 Justification of the approach

In this advisory review the findings of the review of the draft Master Plan are presented. They are based upon the draft Master Plan for the Rehabilitation of Lake Tai dated 9 June 2005, prepared by Grontmij Nederland bv.

For reviewing the quality of the draft Master Plan the Commission has applied the review framework she has drafted as part of the first advisory review. This framework has been made in 2002 and is based on the following reports: (i) Grontmij Consulting Engineers (supported by the Chinese Research Academy of Environmental Sciences (December 1998)) Feasibility Study: Master Plan for Rehabilitation of Lake Tai, China, de Bilt: Grontmij Consulting Engineers and (ii) review frameworks prepared by the Commission for similar type of studies<sup>2</sup>.

In Appendix 3 the review framework is presented. The review criteria have been agreed in the Terms of Reference of July 2000 stating that 'the joint review working group will review the products of the project based on the quality criteria completeness and correctness of the information'.

This advisory review was not made in co-operation with the reviewers of SE-PA because the Commission did not succeed to stay in contact with the reviewers after drafting the first advisory report. FMO agreed that this second review should be carried out by the Commission.

## 2. MAIN FINDINGS AND RECOMMENDATIONS

The Commission has made the following observations and recommends to include the requested information in the final Master Plan.

1. The draft Master Plan does not provide an adequate decision framework because essential components are missing.

*Recommendation: Apply the following approach in order to provide an adequate framework for decision making about the measures to be taken:*

- a. Problem analysis; the base line situation should be described by making use of previously identified criteria, which can be used as a reference situation.*
- b. Measures and strategies (a strategy is a combination of measures). The scenarios described in the draft Master Plan as well as the Chinese 10<sup>th</sup> and 11<sup>th</sup> five-year plans are in fact examples of strategies.*

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<sup>2</sup> Advisory reports by the Commission on the following projects: Lac Sud, Tunisia; Laguna de Bay, Philippines, Tidal Inlet – Cartagena, Colombia.

- c. *Scenarios; in this section an estimation of the autonomous development should be described for e.g. economic growth, population growth, technological development and climate change.*
- d. *Alternatives; alternatives should consist of a combination of strategies and scenarios. Alternatives or combinations of alternatives can be compared and ranked through a score card or a similar support tool. The existing model can be used to quantify specific decision parameters for this review. Decision criteria should include an analysis of the costs and benefits. Finally alternatives or combination of alternatives should be prioritised.*
- e. *Implementation of proposed alternatives; institutional opportunities and constraints with respect to the implementation of the proposed alternatives should be described and assessed.*
- f. *Monitoring and evaluation.*

*With respect to the description of the base line situation; it seems that production figures for e.g. fishing and aquaculture are missing and therefore an adequate cost-benefit analysis will be difficult to make.*

2. The draft Master Plan and in particular the decision framework can be considered as successful in case the selected alternatives to rehabilitate the lake are incorporated in the next 11<sup>th</sup> five-year plan.

*Recommendation: The draft Master Plan should describe a strategy how the results of this study can provide an input for the decisions to be taken for the preparation of the next 11<sup>th</sup> five-year plan.*

3. In the draft Master Plan there is a strong focus on the reduction of the phosphorus load to the surface water system. In the short term this is a realistic approach to combat the effects of eutrophication because the growth of algae (phytoplankton) in the lake is limited for phosphorus. However, in the long term the load of nitrogen, COD, coliform bacteria and other substances need to be reduced as well in order to meet the Chinese water quality standards (GB 3838-2002) for nitrate and total nitrogen.

*Recommendation: Measures as well as alternative(s) should be elaborated to achieve the Chinese water quality standards for nitrate and total nitrogen.*

4. Agriculture contributes 84% of the total nitrogen load and 33% of the total phosphorus load. The draft Master Plan states that it is very difficult to promote improved agricultural practices and no control measures are mentioned to reduce the pollution caused by agriculture.

*Recommendation: Measures and alternative(s) should be elaborated to reduce the N and P load from the agricultural sector.*

5. The current draft Master Plan focuses on waste water discharges from point sources. However, non-point or diffuse sources such as agriculture are for some substances of equal or greater importance.

**Recommendation: The draft Master Plan should describe a long-term strategy to reduce waste water discharges from non-point sources.**