

Information about the Work Package of the Partners of the SHAKTI Project

Project Phase 1 - from 2005 to 2008

Work Package No 7	Monitoring and Evaluation
Coordination:	IZT
Objectives	<ul style="list-style-type: none"> • Development of an evaluation and monitoring system • Development of an integrated GIS system • Remote Sensing for analyses, monitoring and evaluation
Main Interactions	all WPs
Description of Work	<p>This work package consists of two major parts:</p> <ol style="list-style-type: none"> 1. monitoring and evaluation – process 2. monitoring and evaluation – associated tools (GIS, remote sensing) <p>Part 7.1: Evaluation and Monitoring System</p> <p>Shakti together with its planned sub projects will be integrated into targets and measures of short-, medium- and long-term sustainable development of the city of Hyderabad. Appropriate collaboration with local authorities, stakeholders and targeted local population is prerequisite to identify the relevant fields of reference, and to agree on the expected results and the methods of implementation.</p> <p>The aim of the Evaluation and Monitoring System is to collect information and to assess the effects, impacts and the progress towards the Shakti project targets.</p> <ul style="list-style-type: none"> • In the course of monitoring information and data will be continually collected and updated. Here the “Remote Sensing” and “GIS” part will play a crucial role. • Additionally the evaluation will summarise specific contents and results at different stages of the project. <p>Based on the Evaluation and Monitoring System the effectiveness of the Shakti project will be assessed (Self-evaluation). Furthermore, by providing information and data the Evaluation and Monitoring System facilitates all project partners and the tool will support in integrating the projects into the overall urban development of Hyderabad.</p> <p>Task 7.1.1: Setting up a Framework</p> <p>To successfully implement these tasks some basic framework has to be taken into account:</p> <ul style="list-style-type: none"> - Integration into the steering committee/project co-ordination team: The Evaluation and Monitoring System (E&MS) should be an integrated part of the project-management, because a project of this dimension needs permanent reflection and monitoring. - Feedback: The results of the Evaluation and Monitoring System will be feed back to the project partners especially to the steering committee/project co-ordination team. Thus, changing conditions will be recognised and be used for necessary adjustments. - Flexibility: The Evaluation and Monitoring System must be flexible to react to changing conditions. - Participation: The Evaluation and Monitoring System must be developed in close cooperation with the local government and the non-governmental organisations. Thereby a contribution to capacity building especially for civil society groups will be accomplished. <p>The Monitoring and Evaluation System is concentrating on:</p> <ul style="list-style-type: none"> - the process of the realisation of the Shakti-project (Evaluation of process) - the effects of the Shakti-project (Evaluation of results) <p>Task 7.1.2: Evaluation of the process</p> <p>The evaluation of the process focuses on the institutional arrangements of Shakti (e.g. the usefulness of the organisation structure, the quality of the cooperation between German and Indian partners, the political framework and its effects on the performance of the Shakti-projects, acceptance by the targeted population). This part of the evaluation will be done all through the project duration of SHAKTI.</p> <p>The concept for the evaluation of the process will be prepared and passed on the first and the second workshop and through ongoing consultations between the partners.</p> <p>Task 7.1.3: Evaluation of results</p> <p>The emphasis of this step is to evaluate the impact of the projects on the development of Hyderabad. Information is given on resource input and allocation and resultant achievements and their economical, ecological and social effects. The concept for the evaluation and monitoring will be detailed during the first two years.</p>

The Evaluation and Monitoring System (E&MS) comprises the following milestones:

- Definition of the Evaluation and Monitoring System (E&MS) within the first Workshop phase
- Establishing a group of German and Indian actors and institutions involved into this definition.
- Concerted definition of objectives, range and extent of E&MS by integrating the different requirements of users.
- Adjusting existing targets of urban development in Hyderabad with targets derived from specific SHAKTI projects.
- Developing a practical set of indicators enabling to measure achievements and shortcomings.
- Structuring the data bases with respect to information needed to better understanding and steering growth processes in different sectors.

The Evaluation and Monitoring System (E&MS) will be greatly assisted by the Work Packages, who provide and present data and indicators related to the specific sectors.

A major part in the evaluation process have to address the social issues. This will mostly be about urban growth and the possibilities to cope with it, the understanding of urban structure and process including segregation, and ways to guide them; negotiation and decision-making processes and social impacts of infrastructure investments; sensitivity and understanding of specific Indian forms of social organization; possible conflicts between traditional and modern sectors of society and how they might impact on the project; cooperation with public authorities, NGOs, universities; permanent insistence on sustainable development as the holistic goal of the entire project. Furthermore, the acceptance of new technical solutions their impact on different groups have to be assessed carefully. It further includes cooperation in the creation of a data base and advise in all methodological aspects of sociological urban analysis.

A collaboration of the E&MS and all the groups in the project, who provide data, information is essential.

Part 7.2: „Integrated Geo information System (GIS)“

Geo data forms the foundation for all planning and decision processes and thereby for sustainable development of urban areas. It is acquired for, represented by and analysed within the framework of geo information systems (GIS). Therefore, the application and use of geo-information techniques also is essential to accompany the growth of cities by providing data and tools for planning and decision making.

Geo data within GIS may consist of different data types – also of possibly different degree of information extraction – from different data sources. Examples range from geo-referenced satellite imagery to classification results of remote sensing data or line mapping from photogrammetry. The data may be used and applied for documentation and monitoring of the current situation within a GIS, but it also may form the basis for simulations of future developments.

The GIS part is subdivided into three tasks corresponding to the workshops and the related milestones:

Task 7.2.1: Current Situation of GIS in Hyderabad

The goal of the first topic is to assess the current situation concerning the use of GIS. The main questions deal with the assessment of current users of GIS and the already available data. For the later, the coverage and the suitability for current and future applications seems to be of importance. Furthermore, the distribution of and the access to the data by different institutions/organisations is an additional topic.

Task 7.2.2: Demands for GIS in Hyderabad

The goal of the second topic is to assess the GIS-related needs of different institutions/organisations for planning as well as for monitoring purposes. Again, the suitability of existing data has to be checked with respect for analyses and applications of GIS, which may extend to more than the actual ones. Investigations should also address the questions of closing the gap between available and necessary data.

Task 7.2.3: Concepts for GIS in Hyderabad

Based on the previous investigations, a concept for GIS is developed. This concept will be designed in close contact with the Indian partners and will comprise aspects of the set-up of an integrated GIS for Hyderabad. Further aspects like updates, which are mandatory when introducing GIS in an area of

rapid growth and changes, will be included.

The work package described here depends on the input of the other Indian and German partners to define applications of the Hyderabad GIS (HyGIS) - including documentation and monitoring of impact of projects. Furthermore, the "GIS" part has close links to the "Remote Sensing" part, because remote sensing data is one of the main sources for data acquisition for GIS. Therefore, the tasks 7.2.1 and 7.2.2 will be addressed in close coordination. Besides questions related to content and applications of GIS – including also new applications tailored for the demands of Hyderabad – technical implications are also essential and in the focus of this work package.

Part 7.3: "Remote Sensing"

Strategies to manage urban growth need substantial information on the urban environment. In particular for rapidly developing cities, the necessary data are often outdated, unreliable or simply unavailable. Remote sensing can provide up-to-date, high resolution key data sets for large areas that are essential to managing sustainable development. Thus, the development of concepts and techniques to make use of the valuable information provided by remote sensing data is the main task of the part "Remote Sensing".

Observations of the structural types of settlements (e.g. city centres, suburbs, urban fringes, peripheral clusters, slums, conurbations) and infrastructure (e.g. street networks or water reservoirs) serve as basic information from which value-added products are generated. These might include an estimate of population density or the analysis of the capacity of the infrastructure networks. The mapping of surrounding natural areas adds to an assessment of the exploitation of natural resources. Monitoring change detection over time provides the opportunity to derive a better understanding of current dynamics and processes in the city and, hence, to calculate future development scenarios.

Accordingly, the part "Remote Sensing" includes two main tasks: the provision of basic geo-information and the extraction of meaningful indicators and thematic information related to the four sectors targeted by SHAKTI ("water", "sewage, sanitation", "energy" and "transportation"). Corresponding to the defined milestones of the SHAKTI approach these two basic blocks are subdivided into three phases.

Task 7.3.1: Provision of additional geo-information

The initial phase is closely related to the part "GIS", which deals with the determination of the required and available geo-data sets. Complementary to the part "GIS" the main focus is set on the potential of remote sensing data to fill identified gaps in the available geo-data base.

In a second phase earth observation data are assessed with respect to the demands and requirements identified in the previous stage. This includes an identification of applicable remote sensing sensors that are particularly suitable in terms of their spatial, spectral and temporal resolution. In this context the consideration of the earth observation (EO) systems of India and Germany (optical/radar) will be of special interest as they guarantee constant and unrestricted data access.

The third phase deals with the extraction and generation of the required geo-information. Here, the EO data identified in the previous step will serve as the basis for the according considerations. This step implies major technical issues such as the compilation of appropriate classification keys, the selection of suitable image processing and analysis techniques and the design of an appropriate monitoring concept.

Task 7.3.2: Provision of meaningful indicators and thematic information

This task consists of three comparable phases. Initially a set of required indicators and thematic information will be defined in close cooperation with the project partners. Following the applicability of remote sensing in terms of providing the requisite information and indicators respectively is assessed. The third stage leads to both, the preparation of a catalogue of valuable indicators and value-added products as well as to a selection of appropriate techniques and approaches to generate the required information.

The generated remote sensing layers contribute essential information for an effective Geo-Information-System (GIS) that will be designed in the part "GIS".

Deliverables

- Framework for an evaluation and monitoring system
- Analyses of state of the art and future demands for GIS
- Concepts for a GIS system
- Geo-information data for future monitoring