

# Concept Paper

## Development of Master Plans for TMAs in Sindh



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# Concept Paper

## Development of Master Plans for Talukas and Towns in Sindh/Establishment of Master Plan Unit (MPU)

### 1. Introduction:

Planning of a town or a city is an important planning process, which guides the growth of town in a sustained manner, through specified development planning imperatives. The Master Plan document, which is prepared through an interactive process, lays down a roadmap of how to reach the future from the present.

Government of Sindh, in line with policy objective of having healthy cities and towns, intends to develop Master plans for the cities and towns in Sindh, so as to have a planned and endured growth of communities and, to allocate resources based on future needs of the community.

### 2. Background:

Proposal was prepared for the preparation of Master Plans and forwarded to Local Government Department (LGD), for discussion and finalization. The LGD convened a meeting and invited the concerned department and stakeholders to share their experience. Keeping in view the suggestions and recommendations of the concerned departments and other stakeholders concept paper has been developed on the Master Planning process to be under taken by the Master Planning Unit (MPU) which will be housed at LGD.

### 3. Why Master Plans:

- 3.1. According to the Sindh Local Government Ordinance, 2001 (ordinance # XXVII of 2001) the functions and powers of the TMA (section 54) would be, among others, to:
  - prepare spatial plans for the taluka in collaboration with union councils, including plans for land-use, zoning and functions for which the TMA is responsible;
  - seek approval of the taluka council to the spatial plans prepared by it after due process of dissemination and public enquiry, incorporating modifications on the basis of such inquiry;
- 3.2. It is clear from section 54 that, it is the responsibility of TMA to prepare spatial plan (master plan), much the same way, as they have the

responsibility to execute and manage the development plans. To supplement these functions, according to section 53 of SLGO, defining structure of TMA, the TMA will have a position of Taluka Officer (Planning) who shall be responsible for:

*Spatial planning and land-use control; building control; and coordination of development plans and projects with union administration, village councils and other local governments.*

- 3.3. In the Joint SDSSP Review Meeting held on 26 April 2006, the Advisor to CM on Finance observed *“though it was not possible at the moment that the master plans are prepared by all the TMAs, it should be ensured that during the next three years (SDSSP-II), the Master plans are prepared for the whole Sindh – all districts and TMAs – for next 25-30 years, so that the local governments and the provincial government could plan and budget the social sectors efficiently. The provincial government would finance the initiative.”*

*Source: Minutes of the Joint SDSSP Review Meeting held on 26 April 2006, circulated vide letter no. FD/SDSSP/PSU/RM-01/06 of May 2006).*

- 3.4. One the major policy outcome under the Asian Development Bank assisted Sindh Devolved Social Services Program was to conduct surveys for development of Master Plans for the TMAs. Since, surveys are essential prior to the development of master plans, the whole master planning exercise, when fully carried out, will confirm the achieving of objective. Mid-term review of SDSSP, conducted during 26 February - 03 March 2007 also referred to the importance of surveys and master plans.

#### **4. What is a Master Plan?**

A Master Plan is a planning document that serves to guide the physical form, growth, and development of a city or town. It describes how, why, where, and when of the development imperatives of a city or town. It provides guidance to local officials when they are making decisions on budgets, zoning and subdivision matters, and other growth-related issues.

A Master Plan also provides an opportunity for community leaders to look ahead, establish new visions and directions, set goals, and map out plans for the future. A Master Plan functions much like a roadmap or a blueprint. It is a guide to the future and should be reviewed and updated as conditions change within a community. The purpose of the Master Plan is to set the best and most appropriate future development of the area.

## 4.1. Basic Characteristics of a Master Plan

A Master Plan has three characteristics, which are described as under:

Physical Plan: It is a physical plan. While, it is a reflection of social and economic values, the plan is fundamentally a guide to the physical development of the community. It translates values into a schemes, that describes how, why, when, and where to build and rebuild.

Longer-Term Planning: A second characteristic is that it is long-range, in terms of time. It usually has a timeline of 1 to 5 years, depending upon the administrative requirements and the economic status of the town.

Comprehensive Planning: A third characteristic of a general development plan is that it is comprehensive in nature. It covers the entire city geographically – not merely one or more sections. It also encompasses all the functions that make a community work, such as transportation, housing, land use, utility systems, and recreation. The plan considers the interrelationships of functions and, is a guide to decision-making.

## 4.2. Preparing a Master Plans

Typically, preparing a Master Plan is a forward-thinking process that will help to move a town or a city from present realities to future development targets. The word “process” is central to this view of planning. There are four processes involved in preparing a Master Plan: a legal process, a technical process, a public process, and a management process.

Eight steps are involved in developing a planning process. These are:

- Step 1: Community visioning: engaging the public and developing vision statements, goals, and objectives;
- Step 2: Data collection (population, socio-economic surveys, environment profile) and inventory: preparing the community assessment and existing land-use maps;
- Step 3: Data analysis: formulating future development scenarios based on vision statements, the community assessment, and land-use maps;
- Step 4: Evaluating future development scenarios;
- Step 5: Selecting a preferred development scheme (the future land use map) and preparing and adopting a plan;

- Step 6: Implementing the plan;
- Step 7: Monitoring the plan; and
- Step 8: Amending and updating the plan.

*(Adapted from the background documents of the previous Karachi master plan)*

## **5. Preparation of Master Plans for TMAs of Sindh**

For the preparation of Master plans for all the TMAs of Sindh a "base paper" was prepared by SDSSP and was forwarded to the Local Government Department, Government of Sindh for stakeholders review. During the Stakeholders' review on 26 February, which was attended by the representatives of LGD, SDSSP, PHE Wing LGD, P&D Dept, Town Planning Department LDG Hyderabad. All the aspects related to the Master planning process were discussed in details and the participants expressed their view points on the paper prepared by SDSSP and finally arrived at the following conclusions:

- LGD will assist TMAs to prepare the Master Plans for the time period of 23 years i.e. Up to 2030
- Master Plans will cover entire area of TMAs (both rural and urban), and the Master Plans will include all the sectors like Health, Education, WSS, Transportation etc.
- Geographical Information System (GIS) maps should be developed by each TMA, in conjunction with the preparation of Master Plans.
- Master Plans should include water quality data of surface and ground bodies. Water quality assessment conducted by UNICEF and, EPA, Sindh, may be included in the Master Plans; and
- The work of GIS Mapping and Master Planning process should start as early as possible.

**5.2.** In order to achieve the objectives with regard to preparation of Master Plans of TMAs, it is suggested that a Master Planning Unit (MPU) may be established in LGD which will assist and guide TMAs to conduct various surveys, prepare GIS maps and develop their Master Plans. The exercise of Master Planning will help local government department in planning the medium and long term objectives and the master planning unit would assist in the implementation of all locally or foreign funded projects. The MPU will therefore become an integral part of the department and continue to work to ensure the implementation. Initially, the initiative will be financed through SDSSP and later on the LGD will have allocations for sustaining this unit through regular government budget/funding.

## **Establishment of Master Plan Unit (MPU)**

### **6. Master Plan Unit (MPU):**

MPU will be headed by PO (WSS) of SDSSP, responsible for Master Plan work and, will be housed in the local government secretariat. Space for MPU will preferably be on the ground floor of LGD, which would require necessary civil and electrical works for making the office functional. MPU will have adequate office equipment, furniture and vehicles to cater to its needs.

#### **6.1 Role of MPU:**

- (i) Review the existing work done for the master plans in various TMAs;
- (ii) Suggest appropriate strategy/ methodology for collection of data through surveys by TMAs and by private firms/consultants for preparation of Master plans and, for the development of GIS maps of all TMAs and towns in Sindh;
- (iii) The work of the preparation of Master plans and GIS, after due completion of codal formalities; and approve the bids, submitted by the consultants;
- (iv) Lay down policy guidelines and procedures for the appraisal of the Master plans and GIS, submitted by the consultants and, their approval by the Government of Sindh;
- (v) Revise the master plans, once every 5 years, to meet the development needs of TMAs and towns;
- (vi) Review the capacity building needs of TMAs and, develop plans for comprehensive training of the TMA and town staff;
- (vii) Conduct public awareness programs for sensitizing the importance of Master Plans in guiding the development growth of the communities;
- (viii) Establish a comprehensive network system, so that the survey data and the Master Plan data is shared with other stakeholders;
- (ix) MPU will organize the meeting of the technical committee, record its minutes and implement the decisions taken;

### **7. Constitution of Technical Committee**

In order to guide the planning process, a high-level technical committee is proposed. The committee will review the work of MPU and, would give strategic directions for sound master planning. The composition of the committee is given as follows:

- i. ACS / Secretary LGD- Chairman
- ii. three TMA representatives (Nazim Sukkur TMA, TMO Hala, TO(IS) Dadu)
- iii. DG EPA Sindh
- iv. Director General PHE– Hyderabad

- v. Director M&EC LGD
- vi. Chief PP&H, P&DD
- vii. PD-SDSSP
- viii. PO(WSS) -SDSSP / Incharge MPU– Secretary
- ix. Director Bureau of Statistics Sindh
- x. Director Town Planning Department, Hyderabad
- xi. Representative of two civil society organizations (IUCN, OPP)

*Note: Committee may coopt any member with the approval of chairperson*

## **7.1 TOR of the Technical Committee**

Members of the Technical Committee will act as focal persons in their respective departments for preparation of Master Plans. They will support TMAs technically and administratively in carrying forward the survey for Master Plans/ In recruitment of Consultants and other staff for MPU. The main responsibility of Technical Committee shall be:

- **Work** as a sub-committee to MPU on technical & budgetary matters of Master Planning of 97 TMAs
- **Act** as a bridge between LGs, TMAs, SDSSP and other Departments involved in Master Planning activities
- **Facilitate** institutional strengthening and capacity building of TMAs
- **Assist** institutional strengthening and capacity building at the local levels of the relevant district department
- **Make** recommendations to outsource the Master Planning Assignment to private consultants firms and make recommendations for hiring the specialists/staff required to work in MPU.
- **Put** together recommendations for removing inconsistencies within the devolved departments
- **Identify** clear strategies for development of Master Plans in three years of project time under (SDSSP-II)
- **Contribute** towards the implementation arrangements of the programme
- **Give** recommendations on evolving public-private partnership at all levels with an end objective to improve social services delivery

Secretary of the committee will coordinate, organize the meetings, issue minutes and implement decision and submit reports to the Technical Committee regularly.

## **8. Methodology**

The work of the development of master plans would be undertaken primarily by the TMAs, Specialists in MPU, existing Government agencies and/or by outsourcing.

Once MPU is established, complete Technical Proposal will be structured by MPU. The preparation of master plan documents, if decided by the Technical Committee, awarded to a number of reputed civil engineering firms, to complete the task within a reasonable time. The consultants would be required to train the officers and staff of TMAs, SDSSP and LGD, in the development of master plans.

In all 97 TMAs (excluding 18 TMAs of Karachi and 4 TMAs of Hyderabad cities) shall prepare their Master Plans.

For this purpose, the MPU would need to have an adequate support staff and specialists to examine, evaluate and assess the work of master plans. The support staff would include consultants in specialized fields (urban/rural development, town planning, water, sanitation, solid waste management, environment, transportation, MIS, GIS etc).

To have the systematic beginning, as already agreed amongst the stakeholders, the work would start with the Geographical Information System for the master planning and various surveys for data collection purpose.

## **9. Organizational Responsibilities**

Different relevant organizations will have some responsibilities and roles to play, when the MPU is finally established. To avoid over-lapping or duplication of roles, the responsibilities of each related organization, and the role of MPU itself, are specified below:

### **9.1 Role of LGD**

- (i) LGD will lead, guide, steer the Master Planning exercise, who will be overall responsible for the progress and outputs of MPU;
- (ii) To facilitate MPU in establishing coordination among different departments involved in Master Planning process;
- (iii) To coordinate with TMAs for conducting surveys and data collection;
- (iv) LGD will ensure that the TMAs extend full cooperation and support to MPU in the preparation of Master Plans; and
- (v) To decide the mode of outsourcing the work of the preparation of Master Plans and, once prepared, will be responsible for seeking the approval of the master plans; and

- (vi) Master Planning Unit will continue to operate in the LGD for ensuring the implementation, extending assistance to LGs in the implementation process, trainings

## **9.2 Role of TMA**

- (i) TO Planning of TMA will be the focal person for all the activities related to GIS mapping and Master Planning, under the overall guidance of TMA Nazim.
- (ii) Nazim and TO Planning will brief the council at various stages of Master Planning process to have their guidance in planning process
- (iii) Under the technical assistance of MPU, the TMAs will carryout all activities related to Master Planning.
- (iv) TMAs will be responsible for the dissemination of the Master Planning data, pertaining to their respective TMAs, to various stakeholders, civil societies, NGOs, public service officers, MPU etc, for obtaining their feedback and comments;
- (v) TMAs will be responsible for the implementation of Master Plans after seeking approval from their council.
- (vi) TMA will establish a unit which will maintain, update and operate GIS.

## **9.3 Role of SDSSP**

- (i) SDSSP will provide technical and financial assistance to MPU for Master Planning exercise as per financial plan.
- (ii) SDSSP will initiate the process for the establishment of MPU in LGD, after the approval of competent authority. This would include hiring of consultants and support staff; provision of office equipment and furniture, vehicles, etc.
- (iii) PO (WSS) SDSSP will work as incharge MPU. This assignment will be the part of his duties assigned to him by PSU-SDSSP

## **10. Financing**

With the approval of the concept paper, the LGD will notify the establishment of the Master Planning Unit. MPU will prepare a financing plan including detailed cost estimation and requirement of manpower for the development of Master Plans for TMAs (excluding TMAs of Karachi and Hyderabad districts as plans of these districts are already under process). MPU will also explore the avenues for funding from other sources i.e. government, donors, NGOs etc.

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# **Concept Paper of Geographical Information System (GIS) Maps for TMAs of Sindh**

## **Introduction:**

SDSSP is in the process of establishing Master Plan Unit in the Local Government Department, Government of Sindh (concept paper attached) to assist the TMAs of Sindh to prepare their Master Plans.

During the consultation process/meetings held in PSU-SDSSP and Local Government Department, Government of Sindh with relevant government departments, it was decided that following sectors and sub sectors will be included in the Master Plans of TMAs. GIS will used for all these sectors.

1. Demographic
2. Economic
3. Housing
4. Land Use Planning
5. Traffic and Transportation
6. Education
7. Health
8. Utility Services
9. Alternate Energy and Environment etc
10. Any other sector/sub-sectors as decided by Technical Committee

For the preparation of Master Plans of all the 119 TMAs, GIS mapping will be required since Geographical Information Systems is considered to be the basic tool for planning and management.

## **Geographical Information System**

A GIS is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information; that is, data identified according to location. Practitioners also define a GIS as including the procedures, operating personnel, and spatial data that go into the system.

Geographical Information system is a latest technology which has been developed to organize and analyze the data required for the development of any area or preparation of development/ Master Plans of Towns or Districts.

In order to introduce the GIS the prerequisite conditions are as under

1. Selection of sectors and sub sectors
2. Collection of data through physical surveys

3. Importing of data into maps with the joint efforts of officials working in the departments and the persons trained in GIS
4. Study of old Town maps, verification and modification of old maps and need of new maps through remote sensing
5. Searching of methodology to develop latest maps of all TMAs of Sindh

Maps of most of the Towns are outdated and carrying less information of the existing infrastructure like roads, boundaries and physical expansion. There is need to update maps of TMAs. Hence District Matiari may be taken as a model district for computerized mapping and implementation of Geographical Information System.

## **GIS applications**

### **Mapping locations**

GIS can be used to map locations. GIS allows the creation of maps through automated mapping, data capture, and surveying analysis tools.

### **Mapping quantities**

People map quantities, like where the most and least are, to find places that meet their criteria and take action, or to see the relationships between places. This gives an additional level of information beyond simply mapping the locations of features.

### **Mapping densities**

While you can see concentrations by simply mapping the locations of features, in areas with many features it may be difficult to see which areas have a higher concentration than others. A density map lets you measure the number of features using a uniform area unit, such as acres or square miles, so you can clearly see the distribution.

### **Finding distances**

GIS can be used to find out what's occurring within a set distance of a feature.

### **Mapping and monitoring change**

GIS can be used to map the change in an area to anticipate future conditions, decide on a course of action, or to evaluate the results of an action or policy.

## **Geospatial data**

Geospatial data has both **spatial** and **thematic** components.

Conceptually, geographic data can be broken up in two elements:

**observation or entity** and **attribute or variable**.

GIS have to be able to manage both elements.

### **Spatial component:**

The observations have two aspects in its localization: absolute localization based in a coordinates system and topological relationship referred to other observations.

### **Thematic component:**

The variables or attributes can be studied considering the thematic aspect (statistics), the locational aspect (spatial analysis) or both (GIS)

### **Methodology:**

GIS – Specialist will be hired by SDSSP who will work in MPU to guide the MPU at provincial level and departments at Town and District level in carrying out surveys for the collection of data, coordinate with private firms through incharge MPU and PD-SDSSP for the preparation of GIS maps and importing of data. The person's qualification/experience and duties and responsibilities shall be as follows

### **GIS Specialist:**

#### **Qualification & Experience:**

- i. BE-Civil or BSC Town Planning preferably ME Civil or Environmental Engineering f
- ii. Diploma/Masters In Geographical Information System
- iii. 5 years of experience in GIS mapping, surveying and data analysis

#### **Skills:**

- a) In-depth knowledge of the GIS, its tools and techniques
- b) In-depth Knowledge of MS office, GIS based software and hardware
- c) Must have knowledge of
  - Using color coding in GIS
  - Mapping rates for areas
  - Converting points to surface

- Standard data sources
  - Geographical searches, combinations and Analysis
  - Map projection
  - Computerized mapping
- d) Complete knowledge of physical survey conduction, methodology
- e) Experience in GIS mapping

### **Duties and Responsibilities**

1. He will be responsible to prepare concept paper on GIS for Master Planning
2. He will assist for preparation of GIS maps of all the 119 TMAs
3. He will guide / brief the technical committee and higher authority on the GIS systems
4. He will work in MPU and observe office timings and assist incharge MPU in day to day affairs related to Master Planning
5. He will visit the TMAs and hold meetings with TMA officers with regard to Master Planning, surveys, data collection and GIS mapping
6. He will organize/ impart training to the staff of TMAs/PSU on GIS
7. He will prepare contract documents with regard to hiring of firms for
  - GIS Maps
  - Surveys in TMAs
8. He will report to MPU and PD-SDSSP
9. Any other job assigned to him by incharge MPU and PD-SDSSP

### **Advantages of Geographical Information System:**

GIS is a multidimensional computer technique which can facilitate Managers and planners to make decision and carry out plans successfully. Following are the some of the areas in which GIS can be used very effectively.

#### **Water Supply**

Once computerized maps of TMAs are available, it will be very easy to identify all the water supply schemes and population coverage around the existing schemes.

The importing of data into the GIS maps of TMAs will make the planning easy, useful and effective. GIS will help to rank the need base schemes on high priority to low priority.

All the water supply lines and water courses will be identified and marked on map and it becomes very easy to supply drinking water to the needy people from closest water sources. The distance of water courses to the residential areas shall be known by measuring the length directly on computer etc.

**Sanitation:**

The coverage of sanitation in Sindh is very poor especially in the rural areas. It is identified that Sindh has a very poor coverage but no map exist which recognized the highest sanitation coverage areas to lowest sanitation coverage areas.

The maps developed through GIS will show all the water and sewerage lines by layers. Once all the sewerage lines are identified, decisions, for the identification of area for effluent treatment plant and final disposal point of treated effluent, will be taken easily. Preliminary identification of landfill site and transportation system of waste will also be possible through GIS techniques.

**Transport and Transportation:**

GIS will guide the planners to plan new roads, keeping view of the shortest routes in Intra-TMA and Inter TMAs. GIS can identify the congestion areas and planners can guide and develop ideas by analyzing potential of growing traffic using GIS facility. Bus Terminals/Routes can also be identified through GIS Mapping.

**Health and Education:**

All the health facilities and schools can be visualized on the computerized maps which will help the planners and decision makers to identify future needs and suggest expansion of facilities.

**Housing:**

The GIS Mapping will identify the planned and unplanned areas on computer screens which will certainly be useful for future planning in horizontal expansion of TMAs. However TMAs will develop/adopt/follow the building control authority rules/guidelines for future horizontal expansion of TMAs.