

Project ALA-97/68

Upland Development Programme in Southern Mindanao (UDP)

Mission Report

of the

Watershed Management Specialist

Period September - October 2001

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Executive summary

The present mission focused on 2 aspects, namely the review of the Resource Management Activities and a support to the work of the GIS Programmer facilitating and simplifying GIS procedures. The inputs of the Watershed Management Specialist and the GIS Programmer intend both to facilitate and simplify procedures of land use planning and GIS/GPS use respectively, at the different levels of implementation, namely province, municipality and community.

The Province offices have been visited for on-the-job assessment and assistance of the UDP and LGU staff charged with Resource Management and GIS/GPS related activities.

The GIS programmer arrived on the 1st October and joined a visit to 2 Provinces to assess the GIS/GPS experiences, problems and needs in their support to Watershed Management and Land Use Planning.

The workload of all the UDP staff is very high. The capacity of the assigned staff of the LGU and PA to RM activities is also limited. This reduces both speed of the provincial activities and the facilitation of municipalities of adopting the procedures promoted by the UDP.

It is recommended to use only a limited number of maps and themes to be included in the Watershed Management Plans of the communities. For this purpose an extra guideline has been written, integrating the different themes prepared by the communities into principally 2 maps only: (1) The Existing Land Use Map including Problems and Issues and (2) The Proposed Land Use Map including planned Project/Activities. The Base Map items appear on both maps as reference. Some of the required information can be supplied by the LGU and can be plotted already on the large-scale reference base maps that are provided to the communities for sketching their plans.

The GIS programmer arrived only 2 weeks before the end of the Mission of the Watershed Management Specialist. Therefore co-operation could only take place on the discussion of his workplan and expected results. It is agreed that in the first mission the focus will be on the facilitation and simplification of GIS/GPS base mapping and land use mapping and planning procedures. Also a first try to link GIS maps and MIS Sitio Profiles will be undertaken.

The results of the GIS programming will be tested before being reviewed in another mission next year. In the 2nd mission monitoring and evaluation aspects of plan implementation may be developed.

The outputs of the mission include a review the Framework for Community Based Watershed Management and Land Use Planning and Annexes, including various Manuals and Technical Guidelines. The Technical Guidelines for GIS/GPS Use are still subject to a thorough review, depending the results of the GIS Programming activity.

For next year one or more feedback are recommended to support the implementation of the recently produced Land Use Mapping and Planning and the GIS/GPS procedures at the different levels, namely province, municipality and community.

It is also recommended to include more months for the programming of GIS/GPS use procedures to facilitate/simplify the work of the various staff. It is also regarded as necessary to extend the input of the trainer/operator for one more year. Especially direct support to the municipalities in the use of GIS/GPS seems the most appropriate response to the experiences, problems and needs at this level.

Introduction

The main activities of the present mission (3) are based on the terms of reference (1) and the review of the preceding activities (2). The outputs, being in fact the results of a monitoring and evaluation activity, are listed as a detailed list of problems and issues with recommendations (4). In addition some outputs have been presented as Annexes (5), namely the Synthesis of the different themes into maps for the Community Watershed Plan (CWP) and the Methodology and Forms of the Monitoring and Evaluation of maps and themes for the CWP.

1. Terms of reference

Two missions were required from the Watershed Management Specialist in 2001.

Mission 1: mid January – mid April 2001 (3 months)

Mission 2: September – October 2001 (2 months)

2 weeks of the 2nd mission have been appended to the 1st, leaving 6 weeks for the present.

The 1st mission was used to

- (1) finalise and conduct training on the different manuals prepared for sitio/watershed selection, perimeter survey, watershed management/land use planning and land tenure attainment

The 2nd TOR, the cooperation with the GIS Programmer, has been deferred to the present 2nd mission.

In the 2nd mission the consultant is asked to

- (1) design, establish and train, in close cooperation with the GIS programmer
 - (a) routines for the different GIS applications supporting the main activities of community based Watershed Management/Land use Planning.
 - (b) routines for the GIS supported monitoring and evaluation of the results of Resource Management and other project components.
- (2) evaluate all the resource management component activities and give recommendations for eventual improvements

2. Review of preceding activities

Last period the Framework and different manuals and technical guidelines have been finalised. The different phases of planning are on-going: sitio/watershed selection, sitio-profiling including land use mapping, community based watershed planning, the implementation of communal watershed management projects and activities as well as individually based farm planning and the execution of proposed sustainable agricultural practices and soil and water conservation measures.

The Resource Management Component supports namely the following activities: Environmental Awareness Campaigning for the need of Watershed Management and Land Use Planning, Watershed Mapping and Selection, Community Based Watershed Management and Land Use Planning, Land Tenure provision/attainment. The component develops also the use of modern GIS/GPS techniques in planning and implementation, namely for base mapping, perimeter surveying and land use mapping.

At this stage in all these aspects experiences are gained, which can be evaluated and eventually improved.

3. Main Activities

TOR 1: Design, establish and train customised GIS routines

- a) Watershed Management and Land Use Planning**
- b) Monitoring and Evaluation**

Activity 1: GIS/GPS needs assessment for PMO/PPO/Regional DENR using ArcView

Activity 2: GIS/GPS needs assessment for PPO/MPO/PENRO-CENRO using ArcExplorer

Outputs:

Detailed terms of reference and a workplan have been worked out based on the experiences, problems and needs of the GIS/GPS users in the regional, provincial and municipal offices of UDP and Participating agencies.

Specific needs could be formulated for ArcView based GIS systems. However due to the limited experience with the use of GIS/GPS in the municipalities so far, few problems and needs are formulated for the ArcExplorer based GIS systems.

Nevertheless with the articulated need to delegate functions to from UDP to LGU and Participating Agencies and from the Provinces to the Municipalities, extra attention will be given to how GIS/GPS functions can be undertaken by the municipalities, such as the GPS reading, downloading and plotting on maps.

Specific documents:

- Needs for GIS Programming

TOR 2: Evaluate all the Resource Management Component Activities and give recommendations for eventual improvements

Activity 1: Assess awareness raising for the need of watershed management & land use planning
- *IEC in collaboration with DENR CBFM approach*
- *EAC in collaboration with UDP SCDP process*

Activity 2: Assess capacity building of area selection for watershed management & land use planning
- *Base mapping with GPS/GIS*
- *Procedure of endorsement through TWG/COC*

Activity 3: Assess capacity building in watershed management and land use planning
- *Sitio Profiling including Sketch-mapping AE-transecting and NR-data collection*
- *Thematic mapping of Existing and Proposed land use using GPS/GIS*

Activity 4: Assess capacity building in land tenure provision
- *Perimeter survey with GPS/GIS*
- *Procedure of obtaining Tenure Instrument*

Outputs:

A strong need for more prominent EAC is expressed and being already the focus of the Resource Management component staff. Partly this can be linked up with IEC facilitated by DENR in the scope of the Community Based Forest Management Programme, which comprises also a watershed approach. However it may be useful to request for an external support from a TA or Institution for which some budget has been allocated in 2000 but not yet used.

The procedure of watershed selection including the evaluation of maps and other data according a defined set of criteria and using GIS/GPS techniques is already quite well established. There are few problems on the technology. However the participation of the LGU and Participating Agencies needs more strengthening. Only recently the regional offices of DENR are equipped with GIS systems and the use of the GIS viewer and GPS at the municipalities needs further strengthening. The system with Technical Working Groups and Consultative and Overseeing Committees works satisfactorily.

Sitio-Profiling, including sketch mapping, agro-ecological zoning/transecting and the collection of natural resources data, is fully integrated in the participatory Sustainable Community Development Process (SCDP) facilitated through the component for Community Institutional Development and Extension (CIDE) and the TA in the field. Detailed one-page technical guidelines have been prepared to support the facilitators in their task conducting the SCDP. The only backlash is that these sitio-profile data facilitated by the CIDE are not always satisfactorily used in the succeeding land use planning exercise technically supported by the Resource Management component. This means that it needs more emphasis that the sitio-profile should be the basis for analysis, diagnosis and visioning for land use planning. Similarly, the land use mapping activity that is supported by RM as part of the land use planning is essentially the sitio-profiling activity facilitated by CIDE. The Agricultural Technicians (AT) apparently think that they have to facilitate the components, forgetting that the components only give sectoral supports to one and the same SCDP planning process leading to the CWP.

The land use mapping and planning procedures obtained a very practical 'how -to-do' guidelines for the field/community prepared by the local consultant and based on experiences from the field (PPO1). The communities now prepare a set of themes. It is still very early to see how these techniques can be absorbed by the communities and partners. However some lessons are learned already. The different themes should not be regarded as different maps. Further, each thematic map needs a set of base map items (contour lines, sitio and watershed boundaries rivers, roads, and settlements). To evaluate the existing land use situation, also a set of several themes is required (land cover, protected areas and problems/issues) and finally the proposed land use can also be better presented combining of the themes long-term 5-25 year prospects based on agro-ecological zoning and short-term 1-5 year projects and activities. A handout is written in addition to the Framework's Technical Guidelines - Annex 1. It explains how the themes prepared by the community can be compiled and synthesized into the 2 major maps required for the CWP, which production is facilitated and technically supported by the LGU, eventually with the help of GIS.

Land tenure attainment requires several technical documents. UDP provides all the necessary documents through the preparation of the Community Watershed Plan and a Perimeter survey in line with the requirements of the Community Based Forest Management (CBFM) of DENR and similar requirements of the NCIP.

The perimeter surveys encountered in the start several problems. Especially the use of the Promark X including post-processing appeared very time consuming. Moreover, in the beginning there was only one system (GPS Promark X rover and base) for each Province.

Due to the slow project results of the perimeter surveys, the sitio boundaries could not serve the land use planning, seriously affecting the outputs of this activity.

With accepting a lower accuracy, by the Land Tenure awarding agencies, the perimeter surveying can now be expected to be much faster with low-cost GPS through direct measurement. The project bought already from the same budget low-cost GPS systems for each municipality. The boundary mapping, i.e. perimeter surveys, can be done very much faster in the future.

It is now strongly advised to undertake the boundary mapping with GPS very early during the sitio-profiling, serving for both the 'perimeter survey' required for the land tenure attainment as well as for the sitio boundaries for the land use mapping and planning required for the CWP. The boundary mapping should precede the land use mapping. Further, the land use mapping should be regarded as a part of the Sitio-Profiling (see above).

The AT has no direct involvement in speeding up the formal procedures for land tenure attainment and awarding, which activity is sought out by the UDP Resource Management counterpart staff.

The monitoring and evaluation and emerging recommendations are also used as inputs for the AWP 2002, namely main problems/issues in 2001 with recommendations per GWP result for 2002, Objectively Verifiable Indicators for Activities in 2002 and the Main Activities/Schedule for 2002.

Specific documents:

- Methodology and Forms for the Monitoring & Evaluation of Land Use Mapping and Planning
- Framework for CBWM-LUP - Annex 1: Technical guidelines for CBWM-LUP
- Guide for the integration of land use mapping & planning themes into CWP maps
- Inputs for AWP 2002

Meetings and field trips

1. TOG meeting at PMO Office on 10 and 24 September
2. Meeting of the Biodiversity Conservation and Sustainable Development Partners at the Mercure Grand Hotel in Davao on 14 September
3. Visits to the provinces on 6-7 September (PPO3, PPO4) on 20-21 September (PPO1, PPO2) on 25 September (PPO5) on 4-5 October (PPO3, MPO Santa Cruz, PPO4).
4. Meeting of the Consultative and Overseeing Committee (COC) of UDP and Participating Agencies DENR, NCIP and DAR at the DENR Office on 19 September
5. AWP Workshop from 8-10 October
6. Debriefing to the EU and DA in Manila on 12 October and to the UDP in Davao on 15 October.

Activities for feed-back missions

1. Evaluation, Review and Continuation of Programming GIS/GPS procedures for production, use and maintenance of maps for the CWP.
2. Evaluation and Review of the Watershed Management and Land Use Planning implementation for the CWP.

4. Detailed list of Problems, Issues and Recommendations

The following Problems, uses and Recommendations arose mainly from the assessment and on-the-job assistance with the provincial Resource management staff, UDP and LGU, and are already talked through with them.

GENERAL

- 1) The Proposed Land Use is often not very realistic and incomplete. Mostly long-term planning through agro-ecological zones/transects is missing. Often Problems/Issues do not result in Project and Activities targets.
 - ☞ Land use planning (the Proposed Land Use Map with long-term 5-25 year agro-ecologically-zoned land use prospects and 1-5 year short-term Project/Activity targets) should be based on land use mapping (the Existing Land Use Map with the existing land cover, protection/production areas and problems/issues). Land Use Planning should be based on the assessment of the agro-ecological and socio-economical situation, so namely on the Sitio-Profiling, which includes also the land use map. The community facilitators need to be thoroughly trained on these procedures, preferably by the Provincial Resource Component staff ('echo-training).
- 2) PPO-GIS tasks may become overwhelming, too ambitious, not facilitating but implementing, with tasks that are meant for LGU and Communities.
 - ☞ Implementing functions should be transferred as much as possible from the UDP to the LGU and Participating Agencies. Appropriate training must precede such transfer (echo-training).
 - ☞ DENR could digitize/print perimeter survey maps as they are now equipped with GIS also
 - ☞ 20 m contour digitizing should be done only for farm plans and only if required (screen-digitizing facility has been proposed to be developed)
 - ☞ Only the reference base maps at an approximate scale of 1: 10.000 with contour and GPS landmarks are required as a reference for sketching existing and proposed land use.
 - ☞ DENR could provide digitized maps with protection areas. These can be produced already during the watershed selection phase. Otherwise the integration of this item should be reconsidered.
 - ☞ LGU should be more clearly involved in the preparation/provision of the required barangay base maps (for the sitio/watershed selection) and the sitio/cluster basemaps (for the land use planning). Again, appropriate training must precede such transfer (echo-training).
 - ☞ The digitisation of the different themes in the land use mapping and planning should be optional. Also manually drawn maps and plans may suffice. The AT's should finalize products, which do not need anymore further interpretation if any digitisation has to be done.
- 3) The Staff of the LGU RM/GIS counterpart is not-permanent/contractual and apparently underpaid. The staff may be replaced with the change of the political scene after elections. The staff will easily leave if better job opportunities arise, even more after being trained in new technologies such as GIS/GPS.
 - ☞ Require a statement and ensure that the selected staff will serve at least during the project term.

LAND USE MAPPING

The community facilitators need to be thoroughly trained on these land use mapping procedures, preferably by the Provincial RM staff ('echo-training'). The Framework's Technical Guidelines for the preparation of CWP required data by the supporting offices and the Guidelines for conducting land use planning with the communities should be familiarized.

- 4) The maps have often very patchy indications of existing uses

- ☞☞ Preferably direct delineation of units should take place with a minimum size of 1 Ha or 100 x 100 m or 1 cm x 1 cm in map at a scale of 1:10,000.
- 5) The concepts of land use and land cover were mixed.
 - ☞☞ Use standard classifications, namely those accepted for the Sitio-Profile
 - ☞☞ Use land cover (what you see) for Existing land use: Classification BSWM: Forest, Bush, Grass, Crops: Corn, Coconut etc.
 - ☞☞ Use land use (what you do) for Proposed land use: Classification HLURB, or major land use categories such as Forestry, Agro-Forestry, Agriculture, with Soil and Water Conservation if necessary, Settlement etc.
- 6) Land use mapping units are often not covering the whole sitio-area 'wall-to-wall'
 - ☞☞ Existing land use mapping should have land cover (!) zones and problem/issues sites
 - ☞☞ Proposed land use mapping land use with long term agro-ecologically zoned prospects and projects/activities sites for short term targets
- 7) Proposed Land Use Maps are often not very realistic, and the existing sitio-profile information is often not used.
 - ☞☞ Existing Land Use should be the basis for Proposed Land Use, through holistic assessment of
 1. Existing land cover, such as forest, bush, grass, crops etc.
 2. Problems/Options, such as erosion, boundary conflicts, road access etc.
 3. Protection (by law), such as riverine zones, slopes>50%, nature reserves etc.
 4. Production, indicated by e.g. Agro-Ecological Zones/Transects of Sitio-Profiling
 - ☞☞ Proposed Land Use should result in
 - 'Zones' for long-term 5 - 25 year prospects deducted from existing land cover (forest, crops, etc.) and translated into future land use (timber, food/cash crop etc.)
 - 'Sites' for short-term 1-5 year targets, expressed in projects and activities.

GIS/GPS SUPPORT

The recommendations will be partly integrated in the tasks of the GIS programmer

- 8) GIS system in PMO and PPO not maintained and used as should be: causing infestations with wrong file formats, files having no standard filename coding so that files cannot be found, etc.
 - ☞☞ Respect Directory-structure for GIS/GPS and eventually other uses (not recommended)
 - ☞☞ Respect File naming/coding conventions
- 9) Connection of GIS -equipment not properly as should be
 - ☞☞ AC-AVR-UPS-GIS (!)
 - ☞☞ Careful moving/reinstall equipment: wrong cable connections may damage easily equipment
 - ☞☞ Keep batteries full and do not drain completely, use not more than 1 hour after power-cut
- 10) GPS readings may not be precise as wished/expected by community (errors 30-50m possible)
 - ☞☞ Record most important Landmarks, e.g. Sitio centres/Barangay Hall with GPS Promark X as reference points (through post-processing) and read these in every time if a GPS survey is done. If these points are used/plotted on a Reference Base Map¹, these points can also be used for the geo-referencing of new GPS data on Bitmaps and ArcView-shape files.

ANNEXES

1. Needs for GIS Programming
2. Methodology and Forms for the Monitoring & Evaluation of Land Use Mapping and Planning
3. Framework for CBWM-LUP
4. Guide for the integration of land use mapping & planning themes into CWP maps
5. Inputs for AWP 2002

¹ The Reference Base Map is the first Barangay Base map produced during the Watershed Selection having the Barangay Hall Sitio Centers and other important land marks.