

# THE THIRD GENERAL MEETING OF NARBO

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## INTRODUCTION TO THE STUDY VISIT PROGRAM

(February 20, 2007)

### BEST PRACTICES ON PUBLIC PARTICIPATION AND BOTTOM-UP APPROACHES IN WATER RESOURCES PLANNING

#### I. OBJECTIVES OF THE STUDY VISIT

This handout serves as an introduction to the study visit program which is an integrated part of the Third General Meeting of the Network of Asian River Basin Organizations (NARBO). This introduction is aimed to provide participants with background on the public participation and bottom-up approaches in water resources planning as been applied in the Bengawan Solo River Basin. Even though this study will visit the Gemawang Village, at the Nguntoronadi District in the Wonogiri Regency, it is foreseen that issues of this study visit is at catchment area scale of the Wonogiri Reservoir.

Objectives of this study visit are as follows:

1. Sharing the present practice of public participation and bottom-up approaches in water resources planning in a typical river basin of a NARBO members' country.
2. Foster learning process on challenges, solutions and lessons learned in public participation and bottom-up approaches in water resources planning.

Study visit will be arranged as follows:

<u>Time</u>	<u>Schedule</u>	<u>Remarks</u>
07.45-08.00	Preparation for departure	
08.00-09.00	Travel to Wonogiri	By bus and coach
09.00-10.00	Meeting with the Wonogiri Regency Administration	
10.00-10.45	Travel to Gemawang Village	By bus and coach
10.45-12.00	Site visit at Gemawang & dialogue with stakeholders involved in the PCM process	Dialogue will be held at the village office
12.00-12.30	Lunch break	
12.30-14.00	Continue dialogue with stakeholders	
14.00-15.00	Travel back to the hotel	

## II. PUBLIC PARTICIPATION

### 1. Public Participation: a Framework to Decision Making

Like environmental planning in general, Integrated Water Resources Management (IWRM) is usually characterized by the involvement of numerous decision-makers operating at different levels and the large number of stakeholders with conflicting preferences and different value judgments (Lahdelma et al., 2000). This makes the development of policy implementation strategies and decision making in the context of IWRM a very complex issue, also because it requires a broader integration with other sectors such as environment, energy, industry, agriculture, tourism.

In a decision making process, it is possible to identify people, groups or institutions that can play a meaningful role in the final decision. In general, Feás (2004) classify these main actors as decision makers, people and groups affected, and analysts. But normally in the real life, not all of these actors are always involved in the decision making process. The decision maker is situated in the centre of the decision making process and is the one who has the institutional power and responsibility to select and implement a solution for a specific problem. People affected are all those whom will be influenced by the consequences of the solution adopted and implemented by the decision maker. The analyst is the person/group that helps and guides the decision maker to analyse and represent their preference structures and those from other interested groups.

One of the main issues in the field of environmental decision making is the need, sometimes the obligation imposed by the legislation, to communicate the decision process and make it more comprehensible and transparent. For the reasons described above, there is no doubt that public participation has become a major issue in IWRM. In order to facilitate the active involvement of all the stakeholders in water decision problems there is a challenge that has to be faced: the integration of scientific knowledge and public participation. This is not an easy task.

Facing water problems, decision makers find public participation important for various reasons, first of all because it is required by legislation. Moreover, decision makers are responsible of the selected decision and also its acceptance, for which public participation is essential. Nevertheless, major problems in IWRM like the lack of available information, the uncertainty about future effects or the incomplete knowledge of experts, create more difficulties on obtaining these goals. Decision makers have in general, little experience in sustainable water management. Because of this inexperience and the uncertainty inherent to these decision problems, public preferences need to be included in a more direct way by sharing part of the responsibility and trying to find compromise solutions that facilitate acceptance.

Once the crucial importance of the public participation in the decision making process in IWRM has been recognized, the next step must be to clarify the way public participation, decision making and science knowledge can be integrated.

For this integration, all the meaningful information has to be collected, structured and presented in an understandable way to help decision makers to integrate all the actors involved in the decision making process and all the scientific knowledge available. Several decision support systems have been developed in the last years to satisfy this need, for specific water resource planning activities such as prevention of water shortages (drought), surpluses (floods) and water impairment (pollution).

In order to assess whether policies will be working and to fine-tune them in order to reach the ultimate objective, conceptual frameworks are needed. They facilitate the understanding and exchange of information between policy-makers, stakeholders and technical and scientific support. Public participation could be also involved in the identification of alternatives. But as political decision makers, they need an overall view of the problems. Frameworks that structure collections of indicators and that communicate their application are being developed, at different analytical levels.

A conceptual framework applied to water management could help to identify the decision level related with the specific

problem and the range of alternatives that could solve it. Conceptual framework allows to have a common understanding of the problem that is a basic step for an effective decision making process and the basis to propose.

In order to obtain the analysis matrix, decision makers have to reflect their value judgements and preferences by the public utility functions. As in the selection of the criteria, decision makers have the problem of lack of information about this point. That is why at this point public participation is needed. By public participation, asking directly all the actors involved in the decision process about their individual preferences, the general form of the public utility function for each criterion previously selected can be obtained.

Public participation is also needed in the selection of the aggregation procedure. Several aggregation methods are available and the analyst should help to select the most suitable method based on the preferences of the actors involved and, depending on the problem faced. Not all the problems are the same and each specific context requires a specific method.

The last point where public participation could play an important role in the decision process is in the assessing of weights to aggregate all the information. In this step, some conflict may arise because of the different interest of the actors involved in the process. Public participation could increase the acceptance of the final decisions, making clear the individual preferences and giving the basis for possible compromise solutions. Public participation could play an important role in the decision making process related to IWRM, where the environmental tools could be also helpful. There is not a consensus about the involvement of public in the decision process. Different levels of public participation have their advantages and disadvantages and they must be clearly established for each particular type of problem.

## **2. Application in the Bengawan Solo River Basin**

When it works well, public participation has many benefits: it can allow for a democratization of decision-making through improved stakeholder inclusiveness, transparency and accountability. Appropriately implemented, it can empower people, particularly those lacking the social and political clout and financial means to have a voice and take part in decisions that define their livelihood opportunities. It can also encourage the integration of traditional knowledge and practices with innovative technologies and science to promote fair and efficient management of water resources and services.

The principle of public participation has acquired increasing prominence in a variety of development activities, as also in the management of river basins, which is to a certain extent, a decentralization issue. Although river basin decentralization is expected to benefit the people residing and operating within the ecological area, case studies point to mixed results. For example, greater efficiency with respect to storage capacity and power production can result where decentralization allows upstream and downstream hydropower producers to negotiate the quantity of flow of water in the river. On the other hand, since all issues of allocation cannot be resolved through negotiation alone, as with high priority user rights among competing users of river water, the intervention of higher level of authority might be necessary, and a decentralized river basin is not effective. Successful decentralization depends on negotiated voluntary arrangements, conflict resolution mechanisms, and the institutions necessary to support them.

In Indonesia, public participation in the water resources sector has been given attention under the institutional and structural reforms at national, provincial and regency/municipal levels. In this connection, bottom-up approaches to planning are being very actively promoted. Public consultation is a mandatory requirement for incorporating the various demands and needs of communities and stakeholders (user groups) into the process of official development planning. The consultation process is therefore of great importance. Law of The Republic of Indonesia No. 7 of 2004 regarding Article 34 Paragraph (4) stipulates that the implementation of water resources development shall be carried out through public consultations, through stages of survey, investigation, planning, and based on technical feasibility, environmental and economic considerations. In addition, Article 84 Paragraph (1) stipulates the community members shall have equal opportunities to take a role in the process of planning, implementation and supervision of water resources management.

The bottom-up approach is aimed at empowering the community in project identification and implementation. The approach is being implemented nation-wide for water resources development and management projects at both study and implementation stages. Coordination of a basin-wide public consultation process for water resources planning has been an important learning experience for the Bengawan Solo River Basin Development Project (previously the PIPWS Bengawan Solo, and currently Balai Besar Wilayah Sungai or BBWS Bengawan Solo).

The bottom-up approach assumes a greater focus on public consultation and stakeholder participation (representatives of various water users such as farmer's groups, local governments, non-local governments (NGOs), universities, etc.) in formulating new water resources development policies and strategies. This bottom-up or participatory approach is expected to lead to more sustainable and equitable water resources development and management.

The importance of participation and bottom-up approaches and the critical role of local community initiatives for resolving water challenges have been demonstrated by Ministry of Public Works, Government of Indonesia. This introduction will provide information on:

- Public consultation meetings (PCMs) held under the Comprehensive Development and Management Plan (CDMP) Study for Bengawan Solo River Basin Under Lower Solo River Improvement Project completed in 2001.
- National partnership on water safe guarding or in Indonesian, Gerakan Nasional Kemitraan Penyelamatan Air (GNKPA) that was exercised in the upper Bengawan Solo River Basin as part of the civil society development in 2005-2006.

### **III. PUBLIC CONSULTATION MEETING UNDER THE CDMP STUDY (2001)**

#### **1. Objectives of the Public Consultation Meeting**

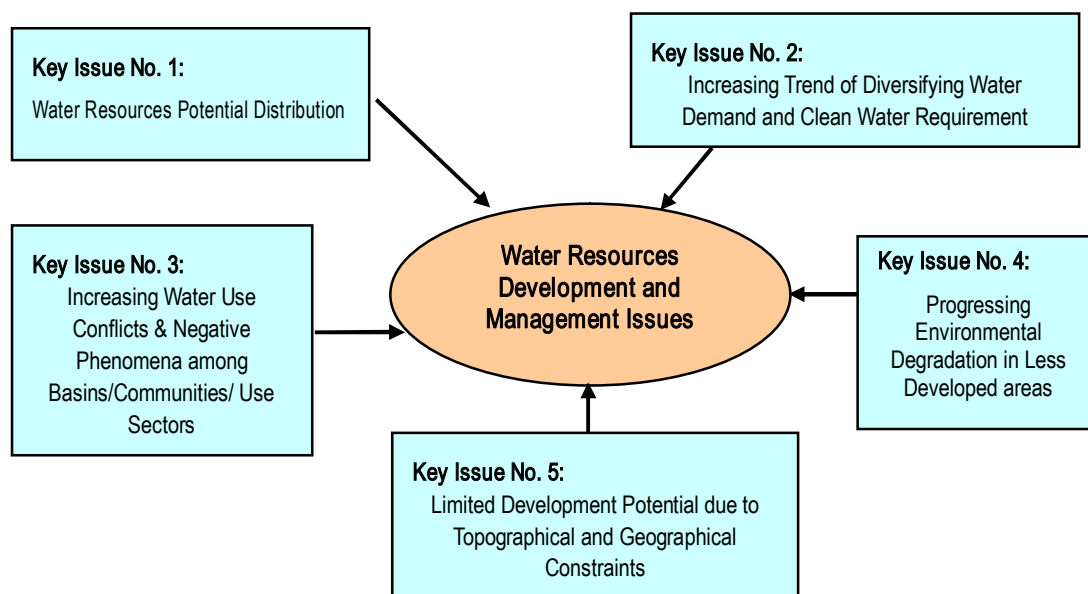
Objectives the public consultation meetings under the CDMP Study were to:

- Get wide-range information about actual local problems, constraints, voices, opinions, needs, aspirations and proposals in water resources development and management through direct discussions with the local people (stakeholders),
- Gain understanding of the seriousness of such water stress situations and other water-related issues from local people,
- Identify the differing water management problems and individual development needs of each river sub-basin,
- Increase the local peoples' awareness of the objectives and activities of the CDMP Study,
- Familiarize Basin Water Resources Management Committee (or Panitia Tata Pengaturan Air abbreviated as PTPA) together with the local people with the new bottom-up approach through encouraging public involvement by means of public consultation meetings, and,
- Use the identified water management problems and development needs to formulate needs based water resources development and strategies for master planning.

The public consultation meetings (PCM) were held as follows at Surakarta on February 29, 2000 and March 11, 2000; Madiun on March 07, 2000, and Bojonegoro on March 02, 2000. The total involvement for PCM including Pre-PCM counted for as many as 534 persons from 20 regencies and municipalities.

#### **2. Identified Issues through Public Consultation Meeting**

Many valuable water resources development and management concerns have been raised by participants through the PCM. A number of comments and opinions were herein analyzed incorporating the results of «face-to-face» interviews, the questionnaire survey and field observations to identify many water resources development and management issues that are currently being experienced at the community level in the CDMP Study area. In conclusion, five key issues can be identified as schematically shown in Figure 1 below.



**Figure 1** Schematic review on the key issues apprehended in the PCMs

### 3. Expected Requirements for Water Resources Development and Management from the Public Consultation Meeting

Based on major five key issues as addressed before, «key words» summarizing the expected requirements for comprehensive water resources development and management in the Bengawan Solo River basin is as follows.

**Key word:** Strong needs for water resources development in the Bengawan Solo River Basin, which can be understood as: (i) maximized efforts to develop any available water resources shall be needed; (ii) necessity to satisfy «variety sectors development requirements»; and (iii) the importance to make intensified efforts for «water use efficiency improvement».

In summary, basic requirements for formulating a comprehensive development and management master plan in the Bengawan Solo River basin are expected to comprise **five key requirements** as briefed below.

**Requirement No. 1:** development priority and principle under «equitable regional development» concept, whereas:

- «Equitable water resources development among basins and regencies» shall be taken into account to support «equitable regional development».
- Water resources development in «less developed» and/or «undeveloped» regencies/basins/communities shall be prioritized as far as expected water resources are available and/or accessible.
- As many improvement and/or rehabilitation activities as possible shall be needed for securing the «sustainable development benefits».

**Requirement No. 2:** necessity of watershed management at upland/water catchment areas, whereas:

- An integrated watershed management including socio-economic development in upland/catchment areas shall be

reinforced.

- Water resources development in upland/catchment areas shall be supported as much as possible by maximized mobilization of their resources potential.
- Introducing effective soil conservation and land rehabilitation practices in deteriorated watersheds shall be an urgent need to prevent irreversible and harmful changes to the stream flow regime (reduction in base flows and increase of flash flooding) and associated erosion and sedimentation.

**Requirement No. 3:** institutional scheme of water allocation rule and coordination management, whereas:

- «Coordination and management rules of water allocation» for various kinds of water uses including among basins/sub-basins/communities shall be reviewed.
- «Water use efficiency» among the existing beneficiaries/water use sectors shall be reviewed to guide more reasonable and equitable water allocation management.

**Requirement No. 4:** necessity of special supportive consideration for «development-barriers watersheds» coordination management, whereas:

- «Community development» by mobilizing the limited water resources through constructive allocation of water shall be considered to overcome various constraints for regional developments in watersheds with various topographic and geographic barriers.

**Requirement No. 5:** water allocation and management for various development sectors, whereas:

- «Coordination and management rules of water allocation» for various kinds of water uses including among basins/sub-basins/communities shall be reviewed.
- The increasing and diversifying water use requirements from «variety sector developments» other than the agricultural sector shall be considered under the «coordination and management rules of water allocation».
- Special attentions to «water quality monitoring and management» shall be considered in order to alleviate deterioration of river water quality.

The PCM, also envisaged the preferred sector development scenarios to the year 2025 and the goals and strategy for formulating master plan of water resources development and management in the CDMP Study area were totally conceived and agreed to by the stakeholders. Main points of comments and suggestions are summarized below.

- The CDMP Study proposed that implementation of the Jipang Multipurpose Dam would be ruled out from the development time frame to 2025 because of serious issues to the natural environment (the planned inundation area is 14,200 ha) and to the local communities (the required relocation was 13,760 families, or 65,500 persons in 1986).
- Full attention to socio-economic environmental issues shall be paid to minimizing the impacts on the natural environment and regional society that requires relocation of local inhabitants.
- Large-scale water resources development schemes already studied and/or planned (such as Bendo Multipurpose Dam Project, Badegan Multipurpose Dam Project, Solo Valleiwijken, Sembayat Barrage Project, long-channel storage scheme, etc.) shall be given high priority for development options.
- In view of equitable water resources development, development of small water storage reservoirs (embung, pond, swamp, etc.) in tributaries shall be promoted to overcome the water shortage in the dry season where the extremely limited water resources is a limiting factor for regional development.

- Some of the existing river and drainage structures, such as revetments and groundsills, have been damaged due to poor maintenance and require urgent repairs and rehabilitation.
- Although the present land use within the basin is almost saturated by over-dependence on paddy farming, there still strong needs for further paddy development.
- Increasing concerns at the existing irrigation systems are to improve the irrigation efficiency by overall management (more efficient in-field water use), and to promote system rehabilitation and upgrading.
- Environmental degradation in the watersheds has raised as a basin-wide concern requiring strict and effective watershed management focusing on the conservation and protection of land and water. A comprehensive approach for watershed management incorporating structural (re-greening, soil conservation, reforestation, vegetation, gully plugging, construction of retention dams, etc.) and non-structural (public involvement and participation, public awareness, promotion of environmental awareness, making inventory, etc.) elements shall be promoted with a main focus on the critical areas suffering from serious environmental deterioration and poor watershed management.
- Strengthening and reinforcement of the existing water quality management framework is becoming basin-wide concern from the public awareness that significant water quality deterioration is progressing within some parts in the Bengawan Solo River system, and that facilitation of more multi-sector approach to pollution control and water quality management is a key factor at both provincial and regional levels.
- Stakeholders' awareness on the bottom-up approach through encouraging public involvement is surely increasing and being familiarized. Their concerns and aspirations are addressing for improvement of public awareness (socialization), enforcement of laws and enhancement of community participation and local government involvement in various management on water quality, watershed, environment, water allocation, etc.
- Expansion of public water supply service areas in rural areas is strongly expected to improve social well-being within the CDMP Study area (Wonogiri, Boyolali, Ponorogo, Ngawi, Bojonegoro, Tuban, Rembang, Lamongan). Additional water allocation for diversifying water demands is also expected for industrializing and urbanizing areas.
- Groundwater exploitation will be still needed for irrigation development in the areas where the available water resources is extremely limited although substantial volumes of groundwater have been being exploited. Further a management framework for groundwater development is expected to control environmental impacts due to unrestricted groundwater exploitation (Surakarta, Boyolali, Ponorogo, Madiun, Blora, and Gresik).
- Some regency has perception that human resources development and human empowerment are a vital key factor for effective regional development as well as water resources development and management. (Surakarta, Bojonegoro, Lamongan).
- Under the on-going regional autonomy legislation, the Government's policy statement to establish an organizational and financial framework for self-financing and autonomous river basin management corporation is well aware to the stakeholders. Major twenty five (25) rivers in the Bengawan Solo River basin was included in the operational area of Jasa Tirta I Public Corporation by the Presidential Decree No. 129/2000. In this connection, the stakeholders expect that inter-regional and inter-sector coordination framework for more reasonable and equitable water management within the Bengawan Solo River basin becomes important with the involvement of institutional entities concerned and stakeholders (Surakarta, Bojonegoro).

## IV. NATIONAL PARTNERSHIP ON WATER SAFE GUARDING

Civil society development is another part of the public participation that is important to deliver real bottom up aspirations and to maintain control of the public on the execution of the designated master plan. In water resources development, this command-control process of the public is necessary to be strengthened. In order to provide successful results in the planning process, the RBOs should take into account civil society involvement in decision-making process, to empower and resonate the voice of the people through various means.

In relatedness to the development of public participation, a civil society development plan with the aim to reduce erosion and sedimentation was initiated in the upper reaches of the Bengawan Solo River Basin, at the catchment area of the Wonogiri Reservoir. This includes the Gemawan Village, Nguntoronadi District, Wonogiri Regency, that will be visited.

This plan was executed under the national partnership on water safe guarding, in 2005. Civil society of villages in the designated area were involved in the planning process of to countermeasure erosion in the Wonogiri Reservoir catchment area. Method applied to involve public participation is the participatory rural assessment (PRA) technique.

### 1. Village Assessment

Goal of this activity is to identify the villages' condition, problems and resources associated with community's economic and social life and village's soil erosion, and prepare a village action plan on soil conservation. Output of the assessment is a detailed analysis on soil-conservation problems related the condition of the community.

Primary data found through participatory rural appraisal (PRA) techniques and village workshop in 24 villages (including the Gemawang Village). This primary data used to assess how heavy the existing problem affect the erosion, and how enough the potentials available are developable and sufficient to support those efforts. Selection the 24 survey villages was done together between the team and stakeholders through a day common workshop, by showing the representation of watershed, upper stream, middle and lower stream of each sub watershed, and their contribution of sediment into the Wonogiri Reservoir.

The secondary collected from formal publication from Local Government, Statistic Board, and result of some studies done before by other parties related with sedimentation in Wonogiri Reservoir issues

Selected techniques used in the participatory rural appraisal (PRA) comprises:

- Participatory mapping, to explore general condition of the surveyed villages, and distribution of erosion locations and to identify the existing conservational structure at village.
- Village history in relatedness to the forest condition and soil conservation activities in the past, to understand trend and changes of village, soil and water conservation relation to the community.
- Discussion to develop institutional relation diagram, to assess the multi-stakeholder's role correlated with erosion management and the conservational effort in the village.
- Field transects to identify the eroded location in the catchment area of the Wonogiri Reservoir. This is used to identify and assess the field eroded location directly from number, size, condition aspect and alternative solution selected by the community to overcome the erosion problems in the eroded location.
- Livelihood and gender role assessment, to identify the kind of business and works that existing in the villages and become the villager's livelihoods and their influences to the existing erosion and conservational efforts.
- Seasonal calendar assessment, to identify agriculture common practices and habits of villagers in relation to develop

an effective conservation method for solving soil and water problems in their lands.

- Matrix ranking is used to assess the level of priority from problems faced by the community and their selected solution. This technique also become as base to draft the village action plan on soil and water conservation.
- Informal interviews were conducted to clarify some fact findings that need to be consulted with the related stakeholders either in village or Government levels.
- Focussed group discussions (FGDs) were also used to explore some information for a typical topic deeply. It used either when PRA process and Village Workshop one. It used by presenting the topic and made the casual and effect analyses based on limited existing information.



**Figure 2** Participatory rural assessment process in the designated villages

Analyses model used in this study is stratified qualitative model. In the first level, some fact finding in the village levels would be classified into problems, potentials and solution chosen by the community. The identified problems then ranked by three criteria: felt by common people, urgent to solve, and availability of self reliance to do. From this matrix, then drafted to the Village Action Plan on Soil Conservation. In the second level, some fact finding every village analyzed and correlated with the sub watershed context in which the villages are located. Then, in the third level, some problems and potential that met during the study brought into to the sedimentation countermeasure in the Wonogiri Multipurpose Dam and Solo Watershed. By this model of analyze, the problem of sedimentation could be considered sharply in their locus, and context with other factors that affect sedimentation.

## 2. Village Potentials

The catchment area of Wonogiri Reservoir is populated by low educated people. The older people (more than 55 years) are just being literate, or even illiterate. Meanwhile the productive age just have graduated from elementary education. People who graduated in college or higher education are less than 1%. At the Wonogiri Regency level, illiterate people are close to 123,656 of the population.

Village governance is led by the village chief and assisted by the village-representative-board. These institutions plays an important role in public services.

Farmers group are found in every village, even at the sub-village levels. Farming credit has supported development of these groups. Eventhough, the farmers group varies in their development degree. This condition affected by three important factors: (1) unclear job description within themselves; (2) low accountability of financial report to the group's members, and (3) no integrated planning that combine conservation and economic activities.

Two forest conservation groups is present in most of every village. Most of these groups were established under the national movement on land and forest conservation program (2005), and relies financially on the government fund.

Eventhough, there are also conservation groups that were established by the people and remain independent. In the Wonogiri Regency, there are two forest conservation groups that has received acknowledgment as sustainable community based forest management, such as in the Temon sub-watershed. Another 8 groups, are also keen in preparing themselves like in the Upper Solo sub-watershed and Wuryantoro sub-watershed.

### **3. Natural Resources**

Water resources are available in every village, mostly groundwater and abstracted by open wells simply enough to serve the community. Some wells in certain villages serves water for domestic purposes at other villages. In contrary, 4 villages (Pracimantoro, Paranggupito, Giritontro and Eromoko) are depended on water supply from other village during the dry season that last April to October every year. The water managed by the community itself to fulfill the local need in traditional manner. There is bilateral initiative between Wonogiri Regency and Gunungkidul Regency to interchange the water supply through a memorandum of understanding.

State-owned forest in Wonogiri Regency is close to 16,000 hectares, meanwhile the community-owned is close 27,000 hectares. Both plays an important role in conserving water, soil and maintain the biodiversity. There is a present trend that state forest decreases, while the community-owned shows increasing results.

However, rill erosion is dominant in the Wonogiri Reservoir catchment area. This is caused by the high demand for sawn timber, which is close to 150,000 m<sup>3</sup> annually, while supply of teak wood and mahogany wood of the remaining forest is close only to 36,000 m<sup>3</sup> annually.

Micro business is developing in Wonogiri, based on agriculture product and managed in domestic scale with traditional manner. The kind of products sold are local traditional snacks, cassava, cashew nut, furniture, small restaurant, and transportation effort.

### **4. General Problem**

The general problems faced by the villagers can be divided into three main parts, i.e: village peasant's economy, peasant's and village conservation's institution, and social and politic in the public services and social relationship. Based on the general problems noted by the community during the PRA, then effort chosen by the community are as following.

#### **Economic Sector**

- Job opportunities based on agriculture and conservation.
- Improve the local trading scheme enable to add the agriculture's product value in order to eliminate the gap with industrial product's price.
- Develop the domestic's economy micro-business that manageable and developable by the women in villages.

#### **Institutional Sector**

- Re-arrange the local peasant groups in supporting the land conservation in the upland area for a seasonal planting.
- Develop the conservation groups based on village forest that supporting income generating, land and water conservation.
- Improve the relationship pattern between Conservation Groups, Govern Field Officers, and NGO Activists in managing the erosion issues collaboratively.
- Assist the Local Groups in managing the erosion issues from planning until evaluating process and supporting resources to Community economic empowerment and Village's Land Conservancy.

## **Social and Politic Sectors**

- Erosion issues needs to be highlighted into the village's development plan in annual or multi years planning system.
- Increase Village Government and Local Organization's capacity building in managing the erosion and conservation problems.
- Increase the community's commitment and sense of belongingness in maintaining and developing the conservation infrastructure and vegetation.

## **5. Erosion Problems**

The community has been selecting some action to countermeasure erosion problems as follows:

### **Rill /Sheet Erosion**

- Terracing in the community and state's forests.
- Improving small gully plugs and drop structure to manage the rill erosion that enlarge to gully erosion.
- Planting the teak, mahogany, acacia and multi purpose tree species (MPTs) to improve the land covering and soil structure to the erosion effects.
- Making the small water tandons on the sloppy land.
- Strengthening land terracing with grass that can be fed for livestock.

### **Bank Erosion**

- Planting the bamboo, teak, mahogany in the community land adherent with rivers.
- Making road side protection, gully plugs and stream bank protection

### **Gully Erosion**

- Making water drop structure, check dams and gully plugs.
- Improving the land coverage by vegetative manner.
- Making diverting channels.

Result of village assessment is stipulated in the village action plan on soil conservation and will be advocated to become one of village development document. General meeting held for discussing of watershed conservation implementation were conducted regularly in the Gemawang Village. Various institutions, either from the national and regency level gets involved in this activity. Community group for water and soil conservation **Tirta Martani** was established officially by the civil society of the Gemawang Village on March 3, 2007

## **V. QUESTIONS FOR DISCUSSION**

1. Kindly share with us the practice of public participation and or civil society development based on the water resources issues within your respective countries. How is it conducted?
2. Are there legal and institutional instruments to conduct the public participation and or civil society development process in water resources?
3. Are public participation and bottom-up approaches on water resources development and management planning in your respective basin/country effective?

4. How do you expect to raise public participation on water resources management in your respective basin/country?

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